及び静止画データを記録したＡディスク、オーディオデータのみを記録したＤＳＤディスクを互換再生するために、コンピュータプログラムを再生するプログラム再生部と、ビデオデータを再生するビデオ再生部と、静止画データを再生する静止画再生部と、オーディオデータを再生するオーディオ再生部とを有するディスク再生装置において、再生するディスクがＤＳＤディスクであるか否かを判定する判定手段と、この判定手段によってＤＳＤディスクであると判定された場合、前記プログラム再生部、ビデオ再生部、静止画再生部への電源の供給を停止するパワーセーブ手段とを備えたことにある。

【０００７】この第１の発明によれば、ＤＳＤディスクを再生する場合、オーディオデータを再生するオーディオ再生部のみに電源を供給し、他のプログラム再生部、ビデオ再生部、静止画再生部への電源の供給を停止するため、ＤＳＤディスクの再生に不要な再生系が無駄な電力を消費することがなくなり、省電力化を図ることができる。

【０００８】第２の発明の特徴は、コンピュータプログラム、ビデオデータ、静止画データ及びオーディオデータの一部又は全部を記録したＡｖｄディスク、オーディオデータ及び静止画データを記録したＡディスク、オーディオデータのみを記録したＤＳＤディスクを互換再生するために、コンピュータプログラムを再生するプログラム再生部と、ビデオデータを再生するビデオ再生部と、静止画データを再生する静止画再生部と、オーディオデータを再生するオーディオ再生部とを有するディスク再生装置において、ディスクから再生されるデータの種類を判別する判別手段と、前記プログラム再生部とビデオ再生部と静止画再生部とオーディオデータ再生部の中の前記判別手段によって判別されたデータを再生しない再生部への電源の供給を停止するパワーセーブ手段とを備えたことにある。

【０００９】この第２の発明によれば、ＤＶＤディスクを再生する時、記録されているデータを再生するに必要な再生系のみに電源を供給し、他の不要な再生系への電源の供給を停止するため、木目の細かい省電力化を図ることができる。

【００１０】第３の発明の特徴は、コンピュータプログラム、ビデオデータ、静止画データ及びオーディオデータの一部又は全部を記録したＡｖｄディスク、オーディオデータ及び静止画データを記録したＡディスク、オーディオデータのみを記録したＤＳＤディスクを互換再生するために、コンピュータプログラムを再生するプログラム再生部と、ビデオデータを再生するビデオ再生部と、静止画データを再生する静止画再生部と、オーディオデータを再生するオーディオ再生部とを有するディスク再生装置において、再生するディスクがＤＳＤディスクであるか否かを判定する判定手段と、この判定手段によってＤＳＤディスクであると判定された場合、前記プログラム再生部、ビデオ再生部、静止画再生部への電源の供給を停止する第１のパワーセーブ手段と、前記判定手段によって再生するディスクがＤＳＤディスク以外の他のディスクである場合、このディスクから再生されるデータの種類を判別する判別手段と、前記プログラム再生部とビデオ再生部と静止画再生部とオーディオデータ再生部の中の前記判別手段によって判別されたデータを再生しない再生部への電源の供給を停止する第２のパワーセーブ手段とを備えたことにある。

【００１１】この第３の発明によれば、ＤＳＤディスクを再生する場合、オーディオデータを再生するオーディオ再生部のみに電源を供給し、他のプログラム再生部、ビデオ再生部、静止画再生部への電源の供給を停止し、また、ＤＳＤディスク以外のディスクを再生する場合、記録されているデータを再生するに必要な再生系のみに電源を供給し、他の不要な再生系への電源の供給を停止するため、木目の細かい省電力化を図ることができる。

【００１２】第４の発明の特徴は、前記請求項１乃至３いずれかに記載のディスク再生装置において、前記オーディオ再生部には装置が電源オンである期間は常時電源を供給して前記パワーセーブ手段の制御外とすることにある。

【００１３】この第４の発明によれば、いずれの種類のＤＶＤディスクにおいても、オーディオ信号は必ず記録され、これを再生するため、前記オーディオ再生部には装置が電源オンである期間は常時電源を供給して、無駄な電力を消費することにはならず、パワーセーブ手段の制御対象が減った分、パワーセーブ手段を簡単化することができる。

【００１４】第５の発明の特徴は、前記請求項１乃至４いずれかに記載のディスク再生装置において、前記オーディオ再生部は、再生データから文字データを抽出して再生することにある。

【００１５】第６の発明の特徴は、前記請求項１乃至５いずれかに記載のディスク再生装置において、前記パワーセーブ手段はユーザからのパワーセーブ指示があった場合のみ動作し、パワーセーブ指示がない場合は、全ての再生系に電源が供給されることにある。

【００１６】この第６の発明によれば、パワーセーブをするかしないかをユーザの判断で行うことができる。

【００１７】

【発明の実施の形態】以下、本発明の実施の形態を図面に基づいて説明する。図１は、本発明のディスク再生装置の一実施の形態を示したブロック図である。ディスク再生装置は、ＤＶＤディスク１００を再生するディスク記録／再生部１、このディスク記録／再生部１で読み出されたデータをデコードして再生する複数の再生部を有する再生ブロック２、ディスク記録／再生部１や再生ブロック２を個別に制御したり、装置全体を制御する制御部３、電源をいずれの再生部に供給するかを制御する内

部電源スイッチ制御部４、内部電源スイッチ制御部４によりオンオフされる内部電源スイッチＳＷ１、ＳＷ２、ＳＷ３（以降、単にＳＷと称することもある）、ユーザの指示を入力する操作部５、ＰＣＭデコードプログラム６１、ＤＳＤデコードプログラム６２を格納したＲＯＭ６、ユーザの指示を遠隔から入力するリモートコントローラ７及びＤＶＤディスク１００にデータを記録する記録系８を有している。

【００１８】上記した再生ブロック２は、コンピュータのプログラムデータを再生するプログラム再生部２１、ビデオデータを再生するビデオ再生部２２、静止画データを再生する静止画再生部２３及びオーディオデータを再生するオーディオ再生部２４を有している。

【００１９】オーディオ再生部２４は、オーディオデコーダ２４１、ローパスフィルタ２４２、Ｄ／Ａ変換器２４３及び画像変換器２４４を有している。尚、オーディオ再生部２４は内部電源スイッチ制御部４の制御を受けず、装置の電源がオンである限り、電源が供給されているものとする。

【００２０】次に本実施の形態の動作について説明する。図１に示した装置の電源がオンになると、装置は図２のステップ２０１にてシステムイニシャライズされた後、制御部３はステップ２０２にて、操作部５又はリモコン７からのユーザの指示により、記録モードであるかどうかを判定し、記録モードであった場合はステップ２０３へ進み、ディスク記録／再生部１にセットされているＤＶＤディスク１００に記録系８によりデータを記録する。

【００２１】一方、ステップ２０２にて、記録モードでないと判定された場合はステップ２０４に進み、ディスク記録／再生部１にセットされているＤＶＤディスク１００に記録されているデータを再生する。

【００２２】以降、図１に示した装置の再生モードにおける動作全般を図３に示したフローチャートに従って説明する。制御部３はディスク記録／再生部１にセットされたＤＶＤディスク１００のディスク識別子をステップ３０１で読み取り、セットされたＤＶＤディスクがＤＳＤディスク、Ａｖｄディスク、Ａディスクの中のいずれであるかを判断し、ステップ３０２にて前記セットされたディスクの種類によりパワーセーブモードにするかしないかを判定し、ＤＳＤディスクであった場合はパワーセーブモードであると判定して、ステップ３１２の内部電源制御処理に移行する、パワーセーブモードでない場合はステップ３０３の内部電源制御処理に移行する。

【００２３】ステップ３０３の内部電源制御処理では図４に示した制御を行うと共に、オーデイオデコーダ２４１にＰＣＭデコードプログラム６１をセットした後、ステップ３０４に進んで、ディスク記録／再生部１のディスクにアクセスして、コンピュータプログラム、ビデオ、静止画、オーディオデータ或いは文字データを再生する処理に入る。

【００２４】この際、オーディオ再生部２４は内部電源スイッチ制御部４の電源供給停止制御から独立し、装置が電源オン時には、常に電源が供給されて、動作可能になっている。これにより、オーディオ再生部２４はディスク記録／再生部１から入力される再生データからオーディオデータを分離し、オーディオデコーダ２４１によりデコードし、更にＬＰＦ２４２で不要な高域性分をカットした後、Ｄ／Ａ変換器２４３でアナログのオーディオ信号に変換し、このオーディオ信号５００を出力する。また、画像変換部２４４はオーディオデコーダ２４１の出力から文字情報データを分離して復調することにより、文字情報信号５５０を得て、これを出力する。

【００２５】また、プログラム再生部２１はステップ３０５にて、再生データからプログラムデータを分離し、これをステップ３０６でデコードしてプログラム信号２００を得、これをステップ３０７で外部のＨＤＤ（図示せず）などに出力する。また、ステップ３０８で、ビデオ再生部２２は再生データからビデオデータを分離し、これをステップ３０９でデコードしてビデオ信号３００を得、これをステップ３１８で別途オーディオ再生部２４で再生したオーディオ信号５００などの他の信号と同期させる。

【００２６】また、ステップ３１０で、静止画再生部２３は再生データから静止画データを分離し、これをステップ３０９でデコードして静止画信号４００とし、これをステップ３１８で別途オーディオ再生部２４で再生したオーディオ信号５００などの他の信号と同期させる。ステップ３１９で、他の信号と同期されたビデオ信号３００や静止画信号４００が図示されないテレビモニタなどに出力され、処理が終了する。

【００２７】一方、ステップ３０２にてパワーセーブモードと判定されて、ステップ３１２に進んだ場合、この内部電源制御処理では図５に示した制御を行うと共に、オーデイオデコーダ２４１にＤＳＤデコードプログラム６１をセットした後、ステップ３１３に進んで、ディスク記録／再生部１のディスクにアクセスして、オーディオデータ或いは文字データを再生する処理に入る。

【００２８】オーディオ再生部２１はステップ３１４にて、再生データからオーディオデータを分離し、これをステップ３１５でデコードしてオーディオ信号５００とし、これをステップ３１８で文字情報信号がある場合はこの文字情報信号５５０と同期させる。

【００２９】また、ステップ３１６で、オーディオ再生部２１によりオーディオデコーダ２４１の出力から文字情報データを分離し、これをステップ３１７で復号化して文字情報信号５０１とし、これをステップ３１８でオーディオ再生部２４で再生したオーディオ信号５００と同期させる。ステップ３１９で、同期がとれたオーディオ信号５００と静止画信号３００を図示されないテレビ

モニタなどに出力し、静止画信号３００がない場合は、オーディオ信号５００を単独でオーディオアンプ（図示せず）などに出力して、処理を終了する。尚、上記のＤＶＤディスク１００の再生において、頭出しを行う場合、図7に示したＴＯＣファイルのＦ３が利用される。

【００３０】図4はステップ３０３に示した処理の詳細を示したサブルーチンである。ＤＶＤディスク１００がＤＳＤディスク以外のディスクであった場合、内部電源スイッチ制御部４はステップ４０１にて、ＳＷ１をオンして、プログラム再生部２１へ電源を供給し、ステップ４０２にて、内部電源スイッチ制御部４はＳＷ２をオンして、ビデオ再生部２２へ電源を供給し、ステップ４０３にて、内部電源スイッチ制御部４はＳＷ３をオンして、静止画再生部２３へ電源を供給し、パワーセーブでない通常モードとする。その後、ステップ４０４へ進んで、制御部３はＲＯＭ６からＰＣＭデコードプログラム６１を読み出してオーディオ再生部２４のオーディオデコーダ２４１にセットする。

【００３１】また、図5はステップ３１２に示した処理の詳細を示したサブルーチンである。ステップ５０１にて、内部電源スイッチ制御部４はＳＷ１をオフして、プログラム再生部２１への電源供給を停止し、ステップ５０２にて、内部電源スイッチ制御部４はＳＷ２をオフして、ビデオ再生部２２への電源供給を停止し、ステップ５０３にて、内部電源スイッチ制御部４はＳＷ３をオフして、静止画再生部２３への電源供給を停止する。その後、ステップ５０４へ進んで、制御部３はＲＯＭ６からＤＳＤデコードプログラム６２を読み出し、オーディオ再生部２４のオーディオデコーダ２４１にセットする。

【００３２】本実施の形態によれば、ＤＳＤディスクを再生する場合、不必要なプログラム再生部２１、ビデオ再生部２２、静止画再生部２３への電源の供給を停止して、無駄な電力の消費を無くすことができ、省電力化を図ることができる。特に、図１の装置が携帯型で、その電源がバッテリーであるような場合、この省電力化により、充電後、又は電池交換からの装置の再生可能時間を長時間化することができる。

【００３３】尚、上記実施の形態では、ＤＳＤディスクを再生する場合は必ずパワーセーブモードにしたが、ユーザが操作部５又はリモートコントローラ７により、パワーセーブモードを指定した場合のみ、前記ＤＳＤディスクの再生時にパワーセーブモードとするようにしても良い。

【００３４】また、本実施の形態は記録系８を備えているため、正確にはディスク記録再生装置と称すべきであるが、本発明はディスク再生時の省電力化にあり、記録系８の有無は発明の実現に無関係であるため、また、ディスク記録再生装置であっても、再生時はディスク再生装置として動作するため、ディスク再生装置という名称にしてある。

【００３５】図6は本発明のディスク再生装置の他の実施の形態を示したフローチャートである。但し、本例の構成は図１に示した実施の形態と同様であるため、以降、図１の構成を借用して説明する。本例も、ディスク記録／再生部１にセットされたＤＶＤディスク１００の識別子により、制御部３はステップ６０１にて、前記セットされたＤＶＤディスク１００がＡディスクであるかどうかを判定し、Ａディスクである場合は、ステップ６０５に進み、そうでない場合はステップ６０２に進む。制御部３はステップ６０２で、パワーセーブモードであるかどうかを操作部５又はリモートコントローラ７からのユーザの指示により判定し、パワーセーブモードである場合は、ステップ６０３に進み、パワーセーブモードで無い場合はステップ６０７に進む。

【００３６】制御部３はステップ６０７に進み、通常モード（ＳＷ１，２，３全てオン）を内部電源スイッチ制御部４に指示して、ＤＶＤディスク１００の再生を行う。

【００３７】一方、制御部３はステップ６０３に進んだ場合、現在セットされているＤＶＤディスク１００がＤＳＤディスク（ＳＡＣＤディスク）かどうかを判定し、ＤＳＤディスクの場合は、ステップ６０４に進んで、内部電源スイッチ制御部４に完全パワーセーブモード指示を出して、処理を終了する。

【００３８】これにより、内部電源スイッチ制御部４はスイッチＳＷ１，ＳＷ２，ＳＷ３をオフにして、プログラム再生部２１、ビデオ再生部２２、静止画再生部２３への電源の供給を停止するため、再生ブロック２の中で電源が供給されているのはオーディオ再生部２４だけになる。

【００３９】一方、現在セットされているＤＶＤディスク１００がＤＳＤディスクでなかった場合、制御部３はステップ６０５に進み、現在セットされているＤＶＤディスク１００に記録されているデータの種類を判別し、ステップ６０６にて記録されているデータの種類に対応したパワーセーブモードを内部電源スイッチ制御部４に指示して、処理を終了する。これにより、内部電源スイッチ制御部４は指示されたパワーセーブモードに従ってスイッチＳＷ１，ＳＷ２，ＳＷ３をオン又は、オフする。

【００４０】更に、ステップ６０１にて、Ａディスクであると判定された場合、制御部３はステップ６０５に進み、上記と同様の処理を行い、ステップ６０６にて、選択されたパワーセーブモードで、ＤＶＤディスク１００の再生を行う。

【００４１】ここで、上記したステップ６０６のパワーセーブモードの処理について、更に詳細に説明する。ステップ６０５にて、ＤＶＤディスク１００に記録されているデータが、プログラムデータ、静止画データ及びオーディオデータであった場合、内部電源スイッチ制御部

４はスイッチＳＷ１、２、３をオンにし、プログラム再生部２１、ビデオ再生部２２、静止画再生部２３への電源の供給を行い、プログラムデータ、ビデオデータ、静止画データ及びオーディオデータを再生できるようにする。これは、結果的に、通常モードと同様となる。

【００４２】次に、ＤＶＤディスク１００に記録されているデータが、ビデオデータ、静止画データ及びオーディオデータであった場合、内部電源スイッチ制御部４はスイッチＳＷ１をオフ、ＳＷ２、３をオンにし、ビデオ再生部２２と静止画再生部２３への電源の供給を行い、ビデオデータ、静止画データ及びオーディオデータを再生できるようにする。

【００４３】尚、ＤＶＤディスク１００に記録されているデータの中で、ビデオデータのみが記録されていない場合はＳＷ２のみがオフとなり、また、静止画データのみが記録されていない場合はＳＷ３のみがオフとなり、上記と同様のパワーセーブが行われる。

【００４４】次に、ＤＶＤディスク１００に記録されているデータが、静止画データ及びオーディオデータであった場合、内部電源スイッチ制御部４はスイッチＳＷ１、２をオフ、ＳＷ３をオンにし、静止画再生部２３への電源の供給を行い、静止画データ及びオーディオデータを再生できるようにする。

【００４５】尚、ＤＶＤディスク１００に記録されているデータの中でオーディオデータの他に、プログラムデータのみが記録されている場合はＳＷ１のみがオンとなり、また、ビデオデータのみが記録されている場合はＳＷ２のみがオンとなり、上記と同様のパワーセーブが行われる。

【００４６】更に、ＤＶＤディスク１００に記録されているデータが、オーディオデータだけであった場合、内部電源スイッチ制御部４はスイッチＳＷ１、２、３をオフにし、プログラム再生部２１、ビデオ再生部２２、静止画再生部２３への電源の供給を停止し、オーディオデータのみを再生できるようにする。

【００４７】制御部３は、内部電源スイッチ制御部４により上記のような動作が行われた後、ディスク記録／再生部１からＤＶＤディスク１００に記録されているデータを読み出して再生ブロック２に入力することにより、ＤＶＤディスク１００を前実施の形態と同様に再生する。

【００４８】本実施の形態によれば、ＤＶＤディスク１００に記録されているデータの種類に応じて、必要な再生部のみに電源を供給することにより、前実施の形態よりも、更に木目の細かいパワーセーブを行うことができ、同様の効果を得ることができる。

【００４９】

【発明の効果】以上詳細に説明したように、本発明のディスク再生装置によれば、ディスクから再生されるデータの種類に応じて必要な再生系のみ電源を供給して省電力化を図ることができ、特に携帯型のディスク再生時間を延ばすことができる。

【図面の簡単な説明】

【図１】本発明のディスク再生装置の一実施の形態を示したブロック図である。

【図２】図１に示した装置の電源オン時の動作を示したフローチャートである。

【図３】図１に示した装置の再生モードにおける動作全般を示したフローチャート

【図４】図３のステップ３０３に示した処理の詳細を示したサブルーチンである。

【図５】図３のステップ３１２に示した処理の詳細を示したサブルーチンである。

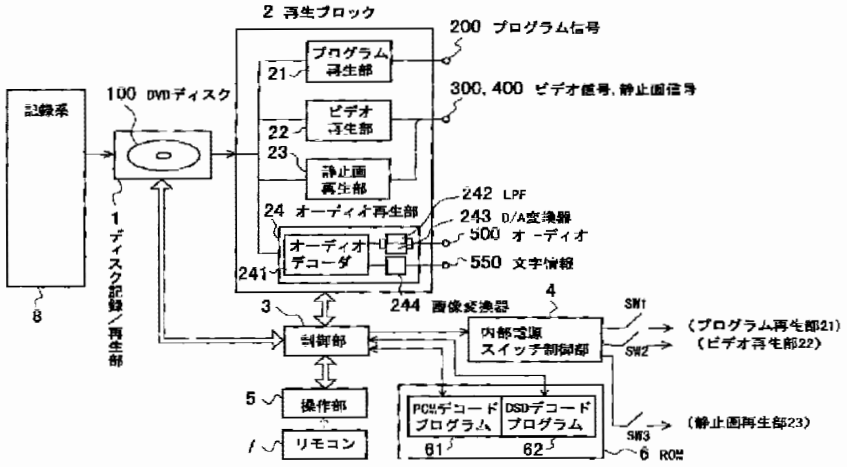
【図６】本発明のディスク再生装置の他の実施の形態を示したフローチャートである。

【図７】ＤＶＤディスクのディスク構造を示した図である。

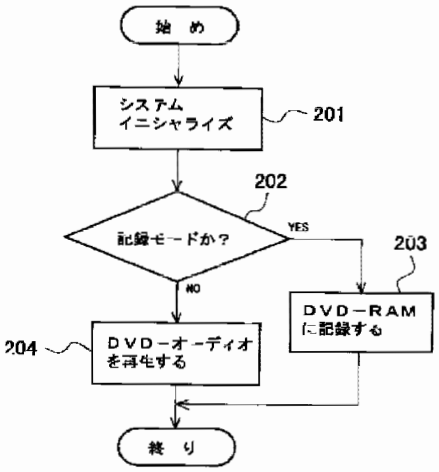
【符号の説明】

１　ディスク記録／再生部
２　再生ブロック
３　制御部
４　内部電源スイッチ制御部
５　操作部
６　ＲＯＭ
７　リモコン
８　記録系
２１　プログラム再生部
２２　ビデオ再生部
２３　静止画再生部
２４　オーディオ再生部
６１　ＰＣＭデコードプログラム
６２　ＤＳＤデコードプログラム
１００　ＤＶＤディスク
２４１　オーディオデコーダ
２４２　ＬＰＦ
２４３　Ｄ／Ａ変換部
２４４　画像変換器
ＳＷ１～ＳＷ３　内部電源スイッチ

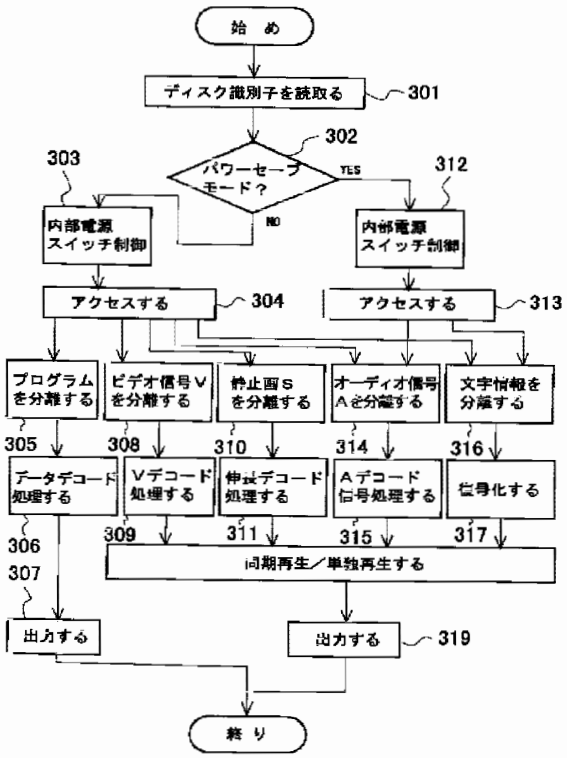
【図１】


2 再生ブロック
200 プログラム信号
プログラム再生部
21
100 DVDディスク
300, 400 ビデオ信号, 静止画信号
記録系
ビデオ再生部
22
23
静止画再生部
242 LPF
24 オーディオ再生部
243 D/A変換器
500 オーディオ
オーディオデコーダ
550 文字情報
241
244 画像変換器
1 ディスク記録/再生部
8
3
4
制御部
内部電源スイッチ制御部
SW1
SW2
SW3
(プログラム再生部21)
(ビデオ再生部22)
(静止画再生部23)
5
操作部
リモコン
PCMデコードプログラム
DSDデコードプログラム
61
62
6 ROM

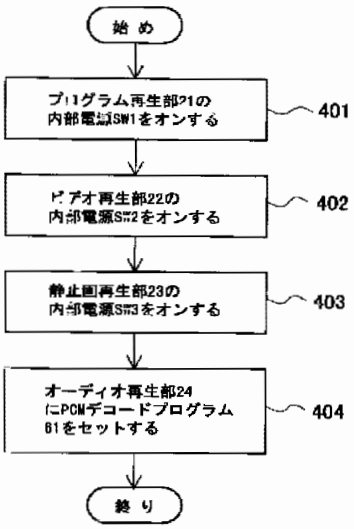
【図２】


始め
システムイニシャライズ
201
202
記録モードか？
YES
NO
203
DVD−RAMに記録する
204
DVD−オーディオを再生する
終り

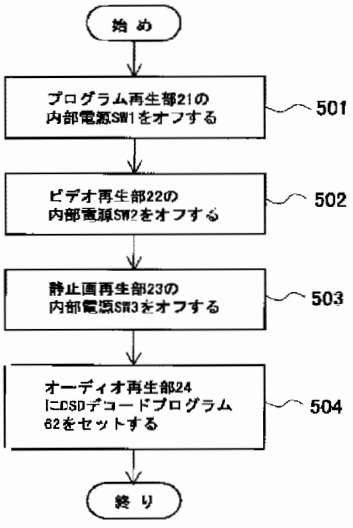
【図３】


始め
ディスク識別子を読取る
301
302
パワーセーブモード？
YES
NO
303
312
内部電源スイッチ制御
内部電源スイッチ制御
アクセスする
304
アクセスする
313
プログラムを分離する
ビデオ信号Vを分離する
静止画Sを分離する
オーディオ信号Aを分離する
文字情報を分離する
305
308
310
314
316
データデコード処理する
Vデコード処理する
伸長デコード処理する
Aデコード信号処理する
信号化する
306
307
309
311
315
317
同期再生／単独再生する
出力する
出力する
319
終り

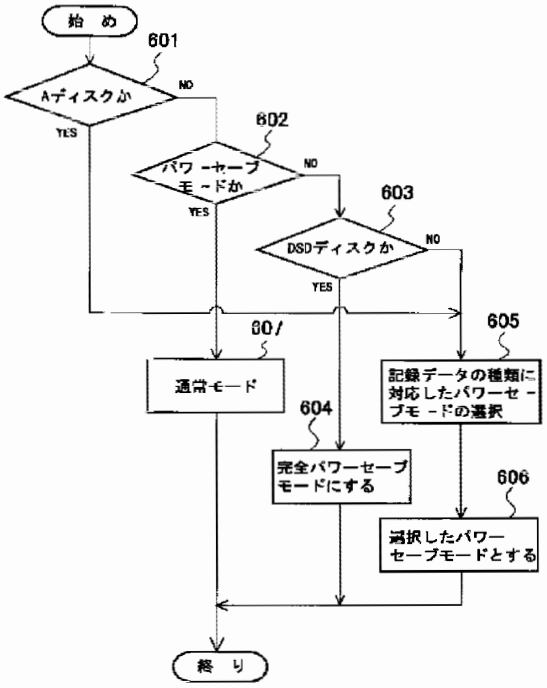
【図4】


始め
プログラム再生部21の内部電源SW1をオンする
401
ビデオ再生部22の内部電源SW2をオンする
402
静止画再生部23の内部電源SW3をオンする
403
オーディオ再生部24にPCMデコードプログラム61をセットする
404
終り

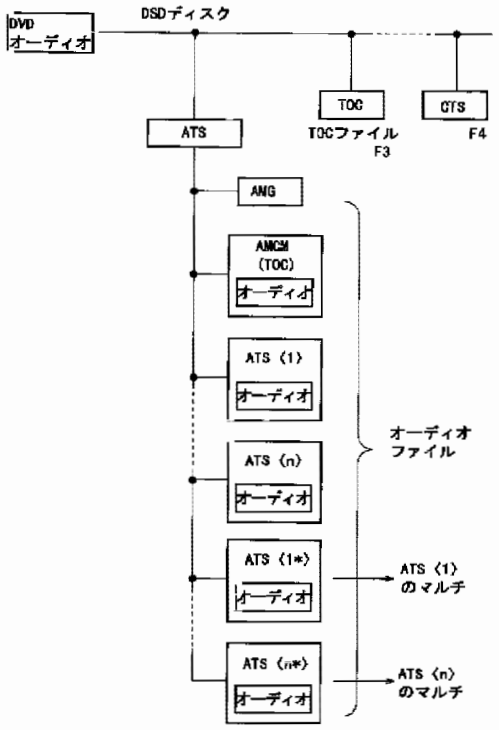
【図5】


始め
プログラム再生部21の内部電源SW1をオフする
501
ビデオ再生部22の内部電源SW2をオフする
502
静止画再生部23の内部電源SW3をオフする
503
オーディオ再生部24にDSDデコードプログラム62をセットする
504
終り

【図6】


始め
601
Aディスクか
NO
YES
602
パワーセーブモードか
NO
YES
603
DSDディスクか
NO
YES
607
通常モード
605
記録データの種類に対応したパワーセーブモードの選択
604
完全パワーセーブモードにする
606
選択したパワーセーブモードとする
終り

【図7】


DVD オーディオ
DSDディスク
ATS
TOC
TOCファイル
F3
CTS
F4
ANG
AMGM (TOC)
オーディオ
ATS〈1〉
オーディオ
ATS〈n〉
オーディオ
ATS〈1*〉
オーディオ
ATS〈n*〉
オーディオ
オーディオファイル
ATS〈1〉のマルチ
ATS〈n〉のマルチ

⑲日本国特許庁（JP）　⑪特許出願公開

⑫公開特許公報（A）　昭63－269633

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⑤4発明の名称　自動車電話

⑳特　願　昭62－103252

㉒出　願　昭62(1987)4月28日

⑦2発明者　平田　栄志　広島県安芸郡府中町新地3番1号　マツダ株式会社内

⑦2発明者　谷口　龍昭　広島県安芸郡府中町新地3番1号　マツダ株式会社内

⑦1出願人　マツダ株式会社　広島県安芸郡府中町新地3番1号

⑦4代理人　弁理士　大塚　康徳　外1名

明　細　書

1．発明の名称

自動車電話

2．特許請求の範囲

自動車に搭載される自動車電話において、

移動機本体と、

この移動機本体に接続され、自動車の車内に設けられた送話器と、

前記車内に設けられ、少なくとも低音再生用スピーカを含む複数のスピーカ及び、これらスピーカを夫々駆動するための駆動アンプを備えたオーディオ機器と、

前記移動機本体の送受信状態において、前記移動機本体をオーディオ機器に接続し、受信された音声をこのオーディオ機器のスピーカから出力されるように接続する接続手段と、

前記移動機本体を介しての通話時に、低音再生用スピーカの駆動アンプの電源をカットするカット手段とを具備する事を特徴とする自動車電話。

3．発明の詳細な説明

［産業上の利用分野］

この発明は、自動車に搭載される自動車電話、特に、自動車電話の使用に際して、自動車のバッテリの無用な消耗を防止することのできる自動車電話に関する。

［従来の技術］

従来、自動車電話の使用に際して、自動車のバッテリの無用な消耗を防止するため、例えば、特開昭61－42141号公報に示されるように、バッテリの出力電圧の低下した場合には、この自動車電話の送信出力を低下して、バッテリの消耗を少なくする構成が開示されている。

［発明が解決しようとする問題点］

このような構成においては、確かにバッテリの消耗を少なくすことが出来るものであるが、しかしながら、このような送信出力の低下により、通話状態が悪化して、良好な通話が出来なくなる不都合が指摘されている。

この発明は上述した問題点に鑑みてなされたも

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ので、この発明の目的は、通話に際しての不必要な電力供給を防止して、バッテリが無用に消耗されないようにした自動車電話を提供することである。

［問題点を解決するための手段］

上述した問題点を解決し、目的を達成するため、この発明に係わる自動車電話は、第１図に示すように、移動機本体と、この移動機本体に接続され、自動車の車内に設けられた送話器と、前記車内に設けられ、少なくとも低音再生用スピーカを含む複数のスピーカ及び、これらスピーカを夫々駆動するための駆動アンプを備えたオーディオ機器と、前記移動機本体の送受信状態において、前記移動機本体をオーディオ機器に接続し、受信された音声をこのオーディオ機器のスピーカから出力されるように接続する接続手段と、前記移動機本体を介しての通話時に、低音再生用スピーカの駆動アンプの電源をカットするカット手段とを具備する事を特徴としている。

［作用］

以上のように構成される自動車電話においては、移動機本体の送受信モードにおいて、音声の再生を、オーディオ用の２－ウエイスピーカの中で、高音再生用のスピーカのみを使用して行なうようになされている。このようにして、音声の再生の際に、低音再生用のスピーカの電源を切ることにより、この低音再生用の増幅器において消費される電力はカットされ、従つて、全体としての消費電力は低く押えられることになる。

［実施例］

以下に、この発明に係わる自動車電話の一実施例の構成を添付図面の第２図乃至第４図を参照して、詳細に説明する。

第２図に示すように、この一実施例の自動車電話１０は、自動車１２内に配設され、基地局と無線で送信・受信可能に接続された移動機本体１４と、自動車１２の外面に取付けられた無線通信用のアンテナ１６と、自動車１２内の通話者が通話するために用いられる電話機１８と、運転席の近傍に配設された応答保留ボタン２０とを備えている。

る。この応答保留ボタン２０は、一人運転時に電話がかかつてきた場合に、交通上の安全のため使用するもので、電話着信時にこの応答保留ボタン２０を押すことにより、所定の信号が無線既知局に送り出され、この信号に基づいて、自動車電話交換局から、現在運転中である旨の所定のメツセイジが電話をかけてきた人に対して行なわれるように構成されている。尚、このように応答保留ボタン２０を押した後で、自動車を停止させるなどにより安全に通話できる状態となつてから、後述するハンドセット２２を取り上げれば、直ちに通常の通話状態に入ることが出来るように構成されている。

また、前述した移動機本体１４は、詳細は図示していないが、送受信部、制御部等から構成され、どの無線基地局のどの送受信機とも対向通信できるように、シンセサイザにより無線周波数を６００チヤンネル切替え可能である他、通話の際に、無線基地局との間で複雑な制御信号を短時間の内に自動的にやりとりし、通話回線を設定する

機能を備えているものである。

前述した電話機１８は、送話器と受話器とを一体に接続された状態で備えた送受話器２２（以下、ハンドセットと呼ぶ。）と、車内の後席用の所定位置に固定され、このハンドセット２２が掛けられる掛け部２４とから構成される所謂ハンドタイプ電話器２６及び、運転席の近傍に配設された所謂フリーハンドタイプ電話器２８とを備えている。

このハンドセット２２は、所謂ミニプツシユホンタイプに構成され、詳細は図示していないが、ダイヤル・ボタンの他、自動車が電波の届かないエリアなどに移動した場合に、通話可能エリア外にあることを示す圏外表示ランプ、電源スイツチ、電源ランプ、受話音量の切替えスイツチと共に、このハンドセット２２が掛け部２４に掛けられた際に押し込められて閉成し、移動機本体１４を送受信モードから待機モードに切り替えるようにセツトする通話スイツチとが設けられている。

一方、フリーハンドタイプ電話器２８は、第３

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図に示すように、運転席側のフロントサイドピラー３０に取付けられた送話器としての通話用マイク３２と、運転席のフロントパネルに設けられた自動車用ラジオチユーナ３４用の２－ウエイスピーカ３６（第４図に示す。）と、ステアリングホイール３８の中心部に配設された制御操作部４０とを備えている。

ここで、この制御操作部４０には、後席にあるハンドタイプの電話器２６から、このフリーハンドタイプ電話器２８に接続状態を切り替えると共に、移動機本体１４を待機モードから送受信モードに切り替えて、通話可能状態とする切り替えボタン４２と、通話の終了を指示し、移動機本体１４を待機モードに復帰させる通話終了ボタン４４とが設けられている。

この切り替えボタン４２は、第４図に示すように、一方の端子がインバータ４６を介してオアゲート回路４８の一方の入力端子に、また、他方の端子がグランドに夫々接続されている。また、通話終了ボタン４４の一方の端子を、オアゲート回路４８の他方の入力端子に、また、他方の端子がグランドに夫々接続されている。更に、これらボタン４２、４４の夫々の一方の端子は、所定の抵抗４９を介してバッテリ５０（第２図に示す）のプラス端子（第４図において、符合＋Ｂで示す。）に接続されている。また、前述したオアゲート回路４８の出力端子は、移動機本体１４に接続されている。ここで、移動機本体１４は、オアゲート回路４８から「１」レベル信号が入力された際に、待機モードに設定され、「０」レベル信号が入力された際に、送受信モードに設定されるように構成されている。

このような構成により、切り替えボタン４２は、通話すべく押し込むことにより開成されて、「１」レベル信号を一方の端子に出すと共に、インバータ４６を介して反転されて、オアゲート回路４８の一方の入力端子には、「０」レベル信号が入力される。ここで、通話終了ボタン４４は閉成されたままであるので、これの一方の端子が接続されたオアゲート回路４８の他方の入力端子には、「０」レベル信号が入力される。このようにして、オアゲート回路４８からは、「０」レベル信号が出力され、この結果、移動機本体１４は、送受信モードに切り替えられる。

一方、通話終了ボタン４４は、通話を終了すべく押し込むことにより開成されて、「１」レベル信号をオアゲート回路４８の他方の入力端子に入力する。このようにして、オアゲート回路４８からは「１」レベル信号が出力され、この結果、移動機本体１４は、待機モードに復帰されることになる。このようにして、切り替えボタン４２、通話終了ボタン４４を押すことにより、移動機本体１４は、待機モードと送受信モードとの間で切り替え動作されることになる。

一方、前述した２－ウエイスピーカ３６は、第４図に示すように、フルレンジの音域の音を再生する第１のスピーカ３６ａと、低音域の音を専用に再生する第２のスピーカ３６ｂとを備えている。ここで、第１のスピーカ３６ａは、フルレンジ用のアンプ５２、接続手段としてのミキシング回路５４、ミューティング回路５６を順次介して、前述したラジオチユーナ３４のフルレンジ出力端子に接続されている。また、第２のスピーカ３６ｂは、低音用アンプ５８を介して、ラジオチユーナ３４の低音出力端子に接続されている。

ここで、移動機本体１４における、送受信時の相手からの音声出力は、上述のミキシング回路５４を介して、フルレンジ用アンプ５２で増幅され、第１のスピーカ３６ａで再生されるように構成されている。即ち、この一実施例においては、フリーハンドタイプの電話器２８で通話する際には、相手の声は、ラジオ用のスピーカ３６で再生されるように構成され、フリーハンドタイプの電話器２８の受話器を省略するように構成されている。この構成により、本来設けられる受話器のアンプが省略されて、省電力化が図られ、バッテリ５０の負担が軽減されると共に、オーディオ用のスピーカは一般に音質が良く形成されているので、格段と聞き易くなる効果が達成されることになる。

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尚、この自動車電話１０のラジオシステムにおいては、両スピーカ３６ａ，３６ｂの夫々のアンプ５２、５８に、アクセサリスチツチがオンされることにより、常時バツテリ５０から電流が流れる構成となつているのが一般である。しかしながら、このような構成では、電話の音声の特徴となる低音域がカツトされた音の再生に際しても、低音域再生専用のアンプ５８を、動作状態に維持しておく事になり、省電力化の観点から好ましくない。

そこで、この一実施例においては、第４図に示すように、移動機本体１４を介しての通話時に、低音再生用の第２のスピーカ３６ｂの電源をカツトして、更に省電力化を図るカット手段としてのカット回路６０が設けられている。即ち、このカツト回路６０は、アンドゲート回路６２を備え、このアンドゲート回路６２の一方の入力端子は、切り替えボタン４２の一方の端子に接続され、他方の入力端子は、通話終了ボタン４４の一方の端子にインバータ６４を介して接続されている。こ

のアンドゲート回路６２の出力端子は、ドライバ回路６６に接続され、このドライバ回路６６は、このアンドゲート回路６６から「１」レベル信号が入力されることにより、後述するコイル６８を励磁するように、また「０」レベル信号が入力されることによりコイル６８を消磁するように、構成されている。

ここで、前述したフルレンジ用のアンプ５２は、直接にバツテリ５０に接続されており、低音用のアンプ５８は、スイツチ７０を介してバツテリ５０に接続されている。このスイツチ７０は、常時閉成状態に設定されており、バツテリ５０からの電流がこの低音用のアンプ５８に流れるようになされている。また、このスイツチ７０は、前述したコイル６８の励磁により、開成されて、バツテリ５０との接続を切るように構成されている。

このような構成により、フリーハンドタイプの電話器２８を用いていない状態においては、両ボタン４２，４４は、共に閉成されており、この結

果、アンドゲート回路６２の出力端子からは、「０」レベル信号が出力される。このようにして、ドライバ回路６６は、付勢されずに、コイル６８は消磁された状態となされている。従つて、スイツチ７０は閉成されており、低音用アンプ５８にはバツテリ５０から電流が流れて、第２のスピーカ３６は、第１のスピーカ３６ａと同様に、再生可能状態となされている。

一方、フリーハンドタイプの電話器２８を介して通話すべく切り替えボタン４２が開成されることにより、アンドゲート回路６２の出力端子からは、「１」レベル信号が出力される。このようにして、ドライバ回路６６は付勢され、コイル６８は励磁された状態となされる。従つて、スイツチ７０は開成されることにより、低音用アンプ５８は、バツテリ５０との接続をカツトされ、第２のスピーカ３６ｂは、再生不能状態となされる。尚、この状態において、フルレンジ用アンプ５２はバツテリ５０と接続された状態が維持されているので、第１のスピーカ３６ａは、再生可能状態

に設定され続けていることになる。

このようにして、この一実施例においては、スピーカ３６をフリーハンドタイプの電話器２８の受話器として兼用するように機能させる際には、移動機本体１４の待機モードから送受信モードへの切り替えに際して、低音用アンプ５８への電力の供給をカットするようになされている。従つて、電話器１８による通話の際にカットされている低音の音域用のアンプ５８への電力の供給をカットしたとしても、相手の声を再生するに際して何等不都合を生じることなく、この低音用のアンプ５８への電力供給をカットする分だけ、省電力化が図られ、バツテリ５０の負担を確実に減じることが出来るようになる。

尚、第１のスピーカ３６ａを介して電話器２８の音を再生するに際して、ラジオチユーナ３４からの音や音楽が一緒に再生されたのでは、相手の声を聞きとり難くなるので、大変に不都合となる。このため、この一実施例においては、第４図に示すように、ミキシング回路５４とラジオチ

ユーナ３４との間に、音量を減衰させるミューテイング回路５６が接続されている。そして、このミューテイング回路５６に、前述したアンドゲート回路６２の出力端子が接続されており、このミューテイング回路６２は、「１」レベル信号が入力されることにより、減衰動作を実行し、「０」レベル信号が入力されることにより、減衰動作を実行しないように構成されている。

このような構成により、移動機本体１４が待機モードから送受信モードに切り替えられた際に、ラジオチユーナ３４からの音を減衰させて、第１のスピーカ３６ａからは、実質的に相手からの音のみが再生されるようになされ、また、移動機本体１４が送受信モードから待機モードに切り替えられた際には、ラジオチユーナ３４からの音の減衰動作を中止して、この音が良好に第１及び第２のスピーカ３６ａ，３６ｂから再生されるようになされている。

以上のように構成される自動車電話１０における、スピーカ３６の使用動作を説明する。

先ず、フリーハンドタイプの電話器２８を使用していない状態においては、上述したように、アンドゲート回路６２の出力端子からは、「０」レベル信号が出力されている。従つて、コイル６８は消磁されており、低音用アンプ５８は閉成されたスイツチ７０を介してバツテリ５０と接続されている。このようにして、第１及び第２のスピーカ３６ａ，３６ｂは共に再生可能状態に設定されている。一方、ミューデイング回路５６においても、「０」レベル信号がアンドゲート回路６２から入力されているので、このミューテイング回路５６は、減衰動作を実行せず、ラジオチユーナ３４からの音は、良好に両スピーカ３６ａ，３６ｂで再生されることになる。

また、フリーハンドタイプの電話器２８で通話をする場合には、移動機本体１４が送受信モードに設定されることになるが、このような送受信モモドが設定されている間は、アンドゲート回路６２から「１」レベル信号が出力される。従つて、コイル６８は励磁されて、スイツチ７０は開

成されることになる。このようにして、低音用アンプ５８とバツテリ５０との間はカツトされ、低音用アンプ５８にバツテリ５０から電力が供給されない状態となる。

一方、ミューテイング回路５６においては、「１」レベル信号が入力されることにより、減衰動作が実行され、ラジオチユーナ３４からの音は減衰されて実質的に聴こえない状態となる。この状態において、移動機本体１４からの相手からもたらされた音は、ミキシング回路５４を介してフルレンジ用のアンプ５２で増幅され、第１のスピーカ３６ａで良好に再生されることになる。

以上詳述したように、この一実施例によれば、ハンドフリータイプの電話器２８を使用して通話する際には、低音再生用のアンプ５８への電力がカツトされ、このカツトされた分だけ、バツテリ５０への負担を軽減することが出来、バツテリ５０の無用な消耗を押えることが可能となる。

この発明は、上述した一実施例の構成に限定されることなく、この発明の要旨を逸脱しない範囲で種々変形可能であることは言うまでもない。

例えば、上述した一実施例においては、フリーハンドタイプの電話器２８において、受話器をオーデイオ用のスピーカ３６と兼用するように説明したが、このような構成に限定されることなく、ハンドセツト２２を用いるタイプの電話器２６においても、このハンドセツト２２に備えられた受話器を用いずに、オーデイオ用のスピーカ３６により相手の声を再生するように構成しても良い。このように構成することにより、自動車への同情者は、全員、相手の声を聞けることになり、場合によつて便利となる。

また、上述した一実施例においては、オーデイオ用のスピーカ３６の音源として、ラジオチユーナ３４を用いるように説明したが、これに限定されることなく、例えば、カセットテープレコーダ、コンパクトデイスクプレイヤ、デイジタルオーデイオテープレコタ等、音をスピーカを介して再生するオーデイオ機器であれば、何でも良い。

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［発明の効果］

以上詳述したように、この発明に係わる自動車電話は、移動機本体と、この移動機本体に接続され、自動車の車内に設けられた送話器と、前記車内に設けられ、少なくとも低音再生用スピーカを含む複数のスピーカ及び、これらスピーカを夫々駆動するための駆動アンプを備えたオーディオ機器と、前記移動機本体の送受信状態において、前記移動機本体をオーディオ機器に接続し、受信された音声をこのオーディオ機器のスピーカから出力されるように接続する接続手段と、前記移動機本体を介しての通話時に、低音再生用スピーカの駆動アンプの電源をカットするカット手段とを具備する事を特徴としている。

従つて、この発明によれば、不必要な移動機本体への電力供給を防止して、バッテリが無用に消耗されないようにした自動車電話が提供されることになる。

4．図面の簡単な説明

第1図はこの発明に係わる自動車電話の構成を示すブロック図；

第2図はこの発明に係わる自動車電話の一実施例の構成を、自動車に取り付けた状態で概略的に示す斜視図；

第3図は運転席の構成を概略的に示す正面図；そして、

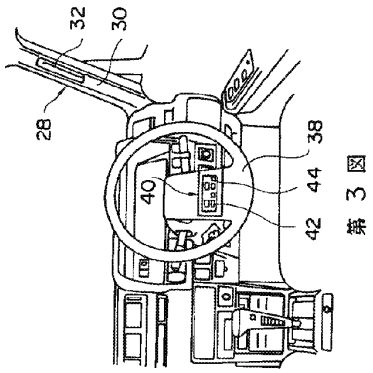
第4図は一実施例の自動車電話の具体的な構成を示すブロック図である。

図中、10…自動車電話、12…自動車、14…移動機本体、16…アンテナ、18…電話器、20…応答保留ボタン、22…ハンドセット、24…掛け部、26…ハンドセットタイプ電話器、28…フリーハンドタイプ電話器、30…フロントピラー、32…通話用マイク、34…ラジオチューナ、36…スピーカ、36a…第1のスピーカ、36b…第2のスピーカ、38…ステアリングホイール、40…制御操作部、42…切り替えボタン、44…通話終了ボタン、46…インバータ、48…オアゲート回路、49…抵抗、

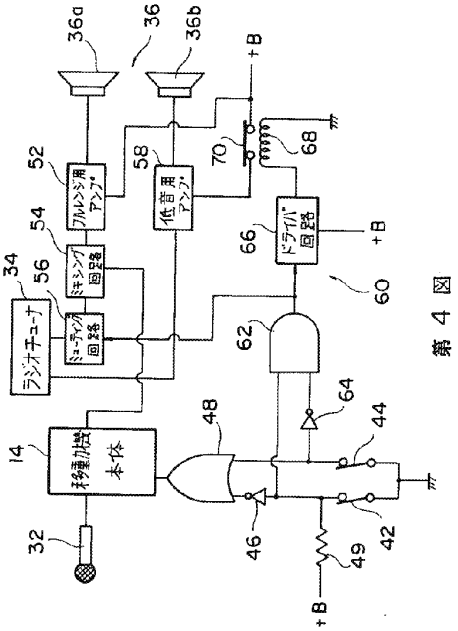
50…バッテリ、52…フルレンジ用アンプ、54…ミキシング回路、56…ミューティング回路、58…低音用アンプ、60…カット回路、62…アンドゲート回路、64…インバータ、66…ドライバ回路、68…コイル、70…スイッチである。

特許出願人　　マツダ株式会社
代理人　弁理士　　大塚康徳（他1名）

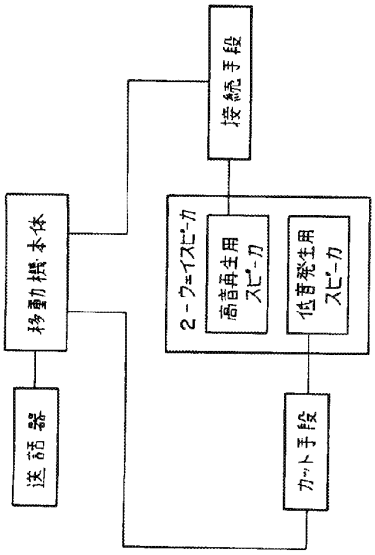
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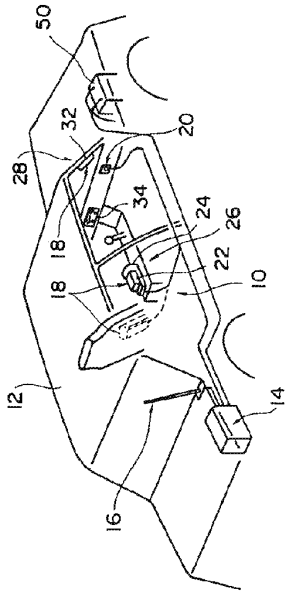
第 3 図



第 4 図



第 1 図



第 2 図

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Espacenet

Bibliographic data: TW439027 (B) — 2001-06-07

Power-saving device of audio-frequency processing circuit and its control method

Inventor(s): SHR MIN-TIAN [TW] ± (SHR, MIN-TIAN)

Applicant(s): MITAC TECHNOLOGY CORP [TW] ± (MITAC TECHNOLOGY CORPORATION)

Classification: **- international:** ***G06F1/32; G06F11/00;*** (IPC1-7): G06F1/32; G06F11/00

- cooperative:

Application number: TW19980112180 19980724

Priority number (s): TW19980112180 19980724

Abstract of TW439027 (B)

There are provided a power-saving device of audio-frequency processing circuit and its control method. The device includes an audio-frequency sensing circuit for generating an indication signal based on the audio-frequency input signal to indicate whether the audio-frequency input signal has audio-frequency message, and a power control circuit for controlling the voltage source to supply power to the audio-frequency amplifying circuit based on the indication signal. When the audio-frequency input signal has no audio-frequency message, the indication signal controls the audio-frequency amplifying circuit to stop operating. When the audio-frequency input signal has audio-frequency messages, the indication signal controls the audio-frequency amplifying circuit to continue to operate. As such, the operation of the audio-frequency amplifying circuit depends on whether the audio-frequency input signal has effective audio-frequency messages. Therefore, the audio-frequency amplifying circuit is turned off when power consumption is not required, thereby achieving the purpose of power saving.

公告本

申請日期	87.7.24
案號	87112180
類別	G06F 1/32, 1/00

（以上各欄由本局填註）

A4
C4
439027

發明 新型 專利說明書

一、發明新型名稱	中文	音頻處理電路省電裝置和其控制方法
	英文	
二、發明創作人	姓名	史旻田
	國籍	中華民國
	住、居所	台北市士林區前街 43 巷 1 號
三、申請人	姓名（名稱）	神基科技股份有限公司
	國籍	中華民國
	住、居所（事務所）	新竹科學園區研發二路一號四樓
	代表人姓名	苗豐強

經濟部中央標準局員工消費合作社印製

本紙張尺度適用中國國家標準（CNS）A4規格（210×297公釐）

裝 訂 線

五、發明說明（ 1 ）

本發明係有關於一種音頻處理電路省電裝置和其控制方法，特別是提供一種能夠根據聲音訊息的狀態來控制音頻處理電路的省電裝置以及其控制方法。

對於一般筆記型電腦或是其他可攜式電子產品而言，電源管理是相當重要的課題。這是因為大部分的操作情況下，筆記型電腦或其他可攜式電子產品是以電池(或是可充電電池)來提供所需要的電力。因此，電力消耗的有效控制是設計者必要面對的問題。

在筆記型電腦系統中，傳統的音頻處理電路在系統開機後，一般是一直處在啟動的狀態。換言之，無論系統目前確實在進行聲音的撥放，或是沒有進行聲音的撥放，音頻處理電路都是一直維持著啟動的狀態，自然也會持續地消耗著電力。這種情況對於電源管理而言，是相當不利並且也需要解決的問題。

有鑑於此，本發明的主要目的，在於提供一種音頻處理電路省電裝置和其控制方法，能夠在需要提供聲音撥放時，維持音頻處理電路的啟動狀態，同時也能夠在不需要提供聲音撥放時，暫停音頻處理電路的動作，藉此節省不需要浪費的電力。

根據上述之目的，本發明所提出之第一種音頻處理電路省電裝置，是適用在音頻處理電路中具有一音頻放大電路，其由一電壓源提供電力之情況。此省電裝置包括一音頻感測電路，其接收一音頻輸入信號，並且根據此音頻輸入信號產生一指示信號，用以表示此音頻輸入信號是否存在音頻訊息；以及一電源控制電路，耦接於音頻感測電路以及提供音

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五、發明說明（2 ）

頻放大電路電力之電壓源，其根據指示信號，控制電壓源是否提供電力至音頻放大電路。當指示信號表示音頻輸入信號不存在音頻訊息時，則電源控制電路控制電壓源，使其不提供電力至音頻放大電路。當指示信號表示音頻輸入信號存在音頻訊息時，電源控制電路則控制電壓源，使其提供電力至音頻放大電路。藉此，音頻放大電路是否維持動作，需視目前的音頻輸入信號是否存在有效的音頻訊息而定。

本發明所提供之第二種音頻處理電路省電裝置，是適用在音頻處理電路中具有一音頻放大積體電路，其具有一關閉控制端，可以用來控制此音頻放大積體電路的動作狀態和暫停狀態。此省電裝置包括一音頻感測電路，其耦接於音頻輸入信號和音頻放大積體電路之間，用來根據此音頻輸入信號產生一指示信號，以表示音頻輸入信號是否存在音頻訊息，而此指示信號則輸出到音頻放大積體電路的關閉控制端。當音頻輸入信號不存在音頻訊息時，則指示信號可以控制此音頻放大積體電路，使其為暫停狀態。當音頻輸入信號存在音頻訊息時，則指示信號可以控制此音頻放大積體電路，使其為動作狀態。藉此，音頻放大積體電路是否維持動作，需視目前的音頻輸入信號是否存在有效的音頻訊息而定。

本發明所提供之一種音頻處理電路之省電控制方法，其包括下列步驟。首先，判斷此音頻輸入信號是否存在音頻訊息，接著根據此判斷結果，產生一指示信號，用以表示此音頻輸入信號是否存在任何音頻訊息。最後，根據此指示信號，控制音頻處理電路中的音頻放大電路為動作狀態或是暫停狀態。當指示信號表示不存在音頻訊息時，則控制為暫停狀態；

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五、發明說明（3）

當指示信號表示存在音頻訊息時，則控制為動作狀態。要控制音頻放大電路為動作狀態或暫停狀態，則可以利用控制提供電力至該音頻放大電路之電壓源，或是控制此音頻放大電路中的關閉控制端，藉此達到狀態控制的目的。

圖式之簡單說明：

為使本發明之上述目的、特徵和優點能更明顯易懂，下文特舉一較佳實施例，並配合所附圖式，作詳細說明如下：

第 1 圖表示本發明第一實施例中音頻處理電路和省電裝置的詳細電路圖。

第 2 圖表示本發明第二實施中音頻處理電路和省電裝置的詳細電路圖。

第 3 圖表示本發明之音頻處理電路省電控制方法的流程圖。

符號說明：

1~揚聲器；2~音頻放大電路；3~緩衝電路；5~前置放大電路；7~音頻感測電路；9~延遲電路；10~電源控制電路；1a~右聲道揚聲器；1b~左聲道揚聲器；3a、3b~緩衝電路；5a、5b~前置放大電路；7a、7b~音頻感測電路；20~音頻放大積體電路。

實施例：

本發明之音頻處理電路省電裝置，主要是透過對目前音頻輸入信號的監視，來判斷出目前音頻輸入信號中是否包含

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五、發明說明(4　)

有需要進行聲音播放的音頻訊息，或是不包含任何音頻訊息，也就是判斷目前系統是否要進行聲音的播放。當需要進行聲音播放時，可以維持音頻處理電路的動作；當不需要進行聲音播放時，則可以暫停音頻處理電路的動作，以節省電力的消耗。由於本發明中用來監視音頻輸入信號的相關感測電路和控制電路是處於小訊號的處理，因此可以利用低電壓源進行操作，而使得耗電量較少；相對地，可以節省音頻放大電路對於電力消耗，所以整體而言，仍可以達到節省電力的目的。以下配合圖式，對於本發明實施例進行詳細的說明。

【第一實施例】

第 1 圖表示第一實施例中音頻處理電路和省電裝置的詳細電路圖。在第一實施例中所處理的情況中，主要特徵在於單聲道(mono)的音頻輸入信號 V1，以及音頻放大電路是以個別(discrete)電子零件所構成。

整個音頻處理電路是由揚聲器 1、音頻放大電路 2 以及緩衝電路 3 所構成。緩衝電路 3 為一選擇性設置的電路，其為運算放大器 OP2 所構成，主要用來緩衝音頻輸入信號 V1 的輸入。音頻放大電路 2 則連接於緩衝電路 3，用來接收處理後的音頻輸入信號 V1，在經過放大後，輸出到揚聲器 1 進行聲音的播放。

如前所述，在本實施例中，音頻放大電路 2 是由個別電子零件所構成，其中包括運算放大器 OP1、電阻器 R1~R4 以及電容器 C1~C3。其中，電容器 C1 和電容器 C2 是做為直流阻絕(DC-blocking)電容，而電容器 C3 則是做為高頻耦合電容。電阻器 R1~R4 和運算放大器 OP1 則是構成主要的

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五、發明說明（5 ）

音頻放大部分，其中電阻器 R1 和電阻器 R2 以分壓方式，提供一參考電壓至運算放大器 OP1 的非反相輸入端(non-inverting terminal)。因此，可以根據此參考電壓值，以及耦接在反相輸入端(inverting terminal)和輸出端之電阻器 R3 和電阻器 R4 間電阻值比例，決定出音頻放大電路 2 對於音頻輸入信號 V1 的放大增益。在音頻放大電路 2 中另一重要參數，是提供至運算放大器 OP1 的電壓源 VA。電壓源 VA 較一般電壓源 VCC(例如對運算放大器 OP2 提供電力的電源)為高，而運算放大器 OP2 唯有在提供電壓源 VA 的情況下，才可以進行放大的動作。在本實施例中，主要即透過電壓源 VA 的控制，來達到啟動或是關閉音頻放大電路 2 的目的。

在第 1 圖中，整個省電裝置則包括前置放大電路 5、音頻感測電路 7、延遲電路 9 以及電源控制電路 10。以下依序說明各電路之實際結構以及其對應的功能和動作。

前置放大電路 5 為一選擇性設置的電路，其主要是用來將接出的音頻輸入信號 V1 進行初步的放大。前置放大電路 5 包括運算放大器 OP3、電阻器 R5~R8 以及電容器 C4、C5。前置放大電路 5 中各電子零件的作用類似於音頻放大電路 2，故此處不再重複敘述。前置放大電路 5 與音頻放大電路 2 的主要差別，在於使用的偏壓電壓源不同。前置放大電路 5 主要是採用電壓值較低的電壓源 VCC，這是因為其作用並不是提供功率上的放大，所以其耗電量仍遠低於音頻放大電路 2。最後，前置放大電路 5 將放大後音頻輸入信號 V2 輸出到下一級的音頻感測電路 7。

音頻感測電路 7 主要是用來檢測音頻輸入信號上是否有

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五、發明說明（6 ）

實際的音頻訊息，其包括運算放大器 OP4 以及電阻器 R9~R11。電阻器 R9 和電阻器 R10 構成一分壓電路，用來產生一參考電壓送到運算放大器 OP4 的反相輸入端。來自前置放大電路 5 的放大後音頻輸入信號 V2 則是送到運算放大器 OP4 的非反相輸入端。運算放大器 OP4 根據其反相輸入端和非反相輸入端上電壓的差異，產生指示信號 V3。當音頻輸入信號 V1 中不包含任何音頻訊息時，則放大後音頻輸入信號 V2 會低於由電阻器 R9 和 R10 所分壓產生的分壓電壓，而運算放大器 OP4 的輸出端則輸出低準位的指示信號 V3，用來表示此一情況。另一方面，當音頻輸入信號 V1 中包含音頻訊息時，則放大後音頻輸入信號 V2 會高於由電阻器 R9 和 R10 所分壓產生的分壓電壓，而運算放大器 OP4 的輸出端則會輸出高準位的指示信號 V3。藉此，指示信號 V3 即可以表示音頻輸入信號 V1 內是否包含音頻訊息。

延遲電路 9 亦為一選擇性設置的電路，用來延遲指示信號 V3，並且輸出延遲後指示信號 V4 到電源控制電路 10。延遲電路 9 包括處理指示信號 V3 的部分(亦即電阻器 R12、電阻器 R13、二極體 D1 和電容器 C6)以及比較電路部分(電阻器 R14、電阻器 R15 以及運算放大器 OP5)。

電源控制電路 10 則是根據輸入的延遲後指示信號 V4，以便控制電壓源 VA 是否提供電力至音頻放大電路 2 上。如圖所示，電源控制電路 10 主要是由一個提昇電阻 R16(耦接到電壓源 VH)以及功率電晶體 P1 所構成。在本實施例中，功率電晶體 P1 是做為一功率開關之用，可以利用像是 SI9410DY 之功率電晶體進行組裝。當延遲後指示信號 V4

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五、發明說明（7 ）

表示目前的音頻輸入信號 V1 有任何音頻訊息時，功率電晶體 P1 會使電壓源 VA 繼續提供電力至音頻放大電路 2，使其進行音頻放大。當延遲後指示信號 V4 表示目前的音頻輸入信號 V1 沒有音頻訊息時，功率電晶體 P1 則會將電壓源 VA 導向另一端，而使得音頻放大電路 2 沒有足夠的電力繼續進行啟動，藉此來暫停音頻放大電路 2。

第 1 圖中省電裝置的整體動作可以簡單描述如下。當指示信號 V3 表示音頻輸入信號 V1 中不存在音頻訊息時，則電源控制電路 10 可以控制電壓源 VA，使其不提供電力至音頻放大電路 2。當指示信號 V3 表示音頻輸入信號 V1 存在音頻訊息時，電源控制電路 10 則可以控制電壓源 VA，使其提供電力至音頻放大電路 2。藉此，音頻放大電路 2 是否維持動作，必須視目前的音頻輸入信號 V1 是否存在有效的音頻訊息而定，所以便能夠達到本發明之目的。

【第二實施例】

第 2 圖表示第二實施例中音頻處理電路和省電裝置的詳細電路圖。在第二實施例中所處理的情況中，主要在於音頻輸入信號(包括右聲道音頻信號 V1a 和左聲道音頻信號 V1b)為立體聲，以及實際音頻放大電路是以音頻放大 IC(integrated circuit，積體電路)所構成。

整個音頻處理電路是由處理右聲道音頻信號 V1a 之緩衝電路 3a、處理左聲道音頻信號 V1b 的緩衝電路 3b、音頻放大 IC 20、右聲道揚聲器 1a 和左聲道揚聲器 1b 所構成。類似與第一實施例中的情況，緩衝電路 3a 和 3b 為一選擇性設

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五、發明說明（8 ）

置的電路，分別利用運算放大器 OP2a 和 OP2b 所構成，藉以緩衝右聲道音頻信號 V1a 和左聲道音頻信號 V1b 的輸入。音頻放大 IC 20 則透過端點 RLINE 和 LLINE 連接於緩衝電路 3a 和 3b，分別接收處理後的右聲道音頻信號 V1a 和左聲道音頻信號 V1b。在經過放大後，則分別由端點 ROUT 和 LOUT 透過右聲道揚聲器 1a 和左聲道揚聲器 1b 進行聲音的播放。

第二實施例與第一實施例之音頻處理電路間主要差異，是在於利用現有的音頻放大 IC 20 來進行音頻放大。因此，除了可以利用類似於第一實施例中以電源控制來關閉音訊放大相關電路之外，也能夠利用一般音頻放大 IC 所具有關閉控制端(shutdown)來進行開關控制。在本實施例中，便是以音頻放大 IC 的關閉控制端來進行開關控制。

本實施例中的省電控制裝置則包括用來處理右聲道音頻信號 V1a 的前置放大電路 5a 和音頻感測電路 7a、用來處理左聲道音頻信號 V1b 的前置放大電路 5b 和音頻感測電路 7b、以及延遲電路 9。在電路結構上，第 2 圖中的前置放大電路 5a 和前置放大電路 5b 與第 1 圖中的前置放大電路 5 相同，第 2 圖中的音頻感測電路 7a 和音頻感測電路 7b 則與第 1 圖中的音頻感測電路 7 相同，並且第 2 圖中的延遲電路 9 則與第 1 圖中的延遲電路 9 相同，因此其內部動作不再贅述。

右聲道音頻信號 V1a 和左聲道音頻信號 V1b 一方面透過緩衝電路 3a 和緩衝電路 3b 送到音頻放大 IC 20 的輸入端 RLINE 和 LLINE，另一方面則是送到前置放大電路 5a 和 5b 進行初級放大後(V2a、V2b)，再利用音頻感測電路 7a 和 7b

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五、發明說明（9 ）

進行檢測，產生所需要的指示信號 V30。音頻感測電路 7a 和 7b 是以 wire-OR 方式產生指示信號 V30。亦即，當右聲道音頻信號 V1a 或是左聲道音頻信號 V1b 中任一者包含音頻訊息，指示信號 V30 就會呈高準位；反之，當右聲道音頻信號 V1a 和左聲道音頻信號 V1b 都不包含音頻訊息時，指示信號 V30 即呈低準位。

電阻器 R17 為提昇電阻。指示信號 V30 在經過延遲電路 9 延遲之後，送出延遲後指示信號 V30 到音頻放大 IC 20 的關閉控制端 SD。藉此即可根據左/右聲道的音頻訊息來繼續或暫停音頻放大 IC 20。

第 2 圖中省電裝置的整體動作可以簡單描述如下。當目前右聲道音頻信號 V1a 和左聲道音頻信號 V1b 中都不存在任何音頻訊息時，則指示信號 V30 可以控制音頻放大 IC 20，使其關閉。當目前右聲道音頻信號 V1a 或是左聲道音頻信號 V1b 中任一者存在音頻訊息時，則指示信號 V30 可以控制音頻放大 IC 20，使其繼續動作。藉此，音頻放大電路 2 是否維持動作，必須視目前的音頻信號 V1a 和 V1b 是否存在有效的音頻訊息而定，所以便能夠達到本發明之目的。

第 3 圖表示本發明之音頻處理電路省電控制方法的流程圖。如圖所示，首先，接出由外部所輸入之音頻輸入信號(S1)，再判斷此音頻輸入信號中是否包含有音頻訊息(S2)。上述的音頻輸入信號在立體聲的情況下包括右聲道音頻信號和左聲道音頻信號。當音頻輸入信號中確實包含有音頻訊息時，則產生一指示信號，用來表示目前音頻輸入信號中包含音頻訊息(S3)，所以根據此指示信號，需要繼續維持音頻放

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五、發明說明 (10)

大電路的動作(S4)。另一方面，當音頻輸入信號中沒有包含音頻訊息時，則產生一指示信號，用來表示目前音頻輸入信號中不包含音頻訊息(S5)，所以根據此指示信號，就可以暫停音頻放大電路的動作(S6)，藉此來節省電力的消耗而達到本發明的目的。

本發明雖以一較佳實施例揭露如上，然其並非用以限定本發明，任何熟習此項技藝者，在不脫離本發明之精神和範圍內，當可做些許的更動與潤飾，因此本發明之保護範圍當視後附之申請專利範圍所界定者為準。

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四、中文發明摘要（發明之名稱：音頻處理電路省電裝置和其控制方法）

一種音頻處理電路省電裝置和其控制方法，其包括一音頻感測電路，其根據音頻輸入信號產生一指示信號，用以表示此音頻輸入信號是否存在音頻訊息，以及一電源控制電路，其根據指示信號，可以控制電壓源是否提供電力至音頻放大電路。當音頻輸入信號不存在音頻訊息時，則指示信號可以控制音頻放大電路暫停。當音頻輸入信號存在音頻訊息時，則指示信號可以控制音頻放大電路繼續動作。藉此，音頻放大電路是否維持動作，需視目前的音頻輸入信號是否存在有效的音頻訊息而定，所以在不需要消耗電力時關閉音頻放大電路，而達到省電的目的。

英文發明摘要（發明之名稱：）

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六、申請專利範圍

1. 一種音頻處理電路之省電裝置，該音頻處理電路具有一音頻放大電路，其由一電壓源提供電力，用以接收一音頻輸入信號並且輸出放大後之聲音信號，以及一揚聲器，耦接於該音頻放大電路並且根據該聲音信號發出聲音；該省電裝置包括：

音頻感測電路，其接收該音頻輸入信號，並且根據該音頻輸入信號產生一指示信號，用以表示該音頻輸入信號是否存在音頻訊息；以及

電源控制電路，耦接於該音頻感測電路以及該電壓源，其接收並且根據該指示信號，控制該電壓源是否提供電力至該音頻放大電路，當該指示信號表示該音頻輸入信號不存在音頻訊息時，該電源控制電路控制該電壓源，使其不提供電力至該音頻放大電路；當該指示信號表示該音頻輸入信號存在音頻訊息時，該電源控制電路控制該電壓源，使其提供電力至該音頻放大電路。

2. 如申請專利範圍第 1 項所述之省電裝置，其中尚包括一前置放大電路，其連接於該音頻輸入信號和該音頻感測電路之間，用以放大該音頻輸入信號並將放大結果輸出至該音頻感測電路。

3. 如申請專利範圍第 1 項所述之省電裝置，其中尚包括一信號緩衝電路，其連接於該音頻輸入信號和該音頻放大電路之間，用以緩衝該音頻輸入信號。

4. 如申請專利範圍第 1 項所述之省電裝置，其中尚包括一延遲電路，其連接於該音頻感測電路和該電源控制電路之間，用以延遲該指示信號輸入至該電源控制電路。

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六、申請專利範圍

5. 如申請專利範圍第 1 項所述之省電裝置，其中尚包括：

前置放大電路，其連接於該音頻輸入信號和該音頻感測電路之間，用以放大該音頻輸入信號並將放大結果輸出至該音頻感測電路；

信號緩衝電路，其連接於該音頻輸入信號和該音頻放大電路之間，用以緩衝該音頻輸入信號；以及

延遲電路，其連接於該音頻感測電路和該電源控制電路之間，用以延遲該指示信號輸入至該電源控制電路。

6. 如申請專利範圍第 1 項所述之省電裝置，其中該音頻輸入信號包括一左聲道音頻信號和一右聲道音頻信號。

7. 一種音頻處理電路之省電裝置，該音頻處理電路具有一音頻放大積體電路，用以接收一音頻輸入信號並且輸出放大後之聲音信號，該音頻放大積體電路具有一關閉控制端，用以控制該音頻放大積體電路之動作狀態和暫停狀態；以及一揚聲器，耦接於該音頻放大積體電路並且根據該聲音信號發出聲音；該省電裝置包括：

音頻感測電路，其耦接於該音頻輸入信號和該音頻放大積體電路之間，其接收並且根據該音頻輸入信號產生一指示信號，用以表示該音頻輸入信號是否存在音頻訊息，並且輸出至該音頻放大積體電路之關閉控制端，當該音頻輸入信號不存在音頻訊息時，該指示信號控制該音頻放大積體電路，使其為暫停狀態；當該音頻輸入信號存在音頻訊息時，該指示信號控制該音頻放大積體電路，使其為動作狀態。

8. 如申請專利範圍第 7 項所述之省電裝置，其中尚包括一前置放大電路，其連接於該音頻輸入信號和該音頻感測電

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六、申請專利範圍

路之間，用以放大該音頻輸入信號並將放大結果輸出至該音頻感測電路。

9. 如申請專利範圍第 7 項所述之省電裝置，其中尚包括一信號緩衝電路，其連接於該音頻輸入信號和該音頻放大積體電路之間，用以緩衝該音頻輸入信號。

10. 如申請專利範圍第 7 項所述之省電裝置，其中尚包括一延遲電路，其連接於該音頻感測電路和該音頻放大積體電路之間，用以延遲該指示信號輸入至該音頻放大積體電路之關閉控制端。

11. 如申請專利範圍第 7 項所述之省電裝置，其中尚包括：

前置放大電路，其連接於該音頻輸入信號和該音頻感測電路之間，用以放大該音頻輸入信號並將放大結果輸出至該音頻感測電路；

信號緩衝電路，其連接於該音頻輸入信號和該音頻放大積體電路之間，用以緩衝該音頻輸入信號；以及

延遲電路，其連耦接於該音頻感測電路和該音頻放大積體電路之間，用以延遲該指示信號輸入至該音頻放大積體電路之關閉控制端。

12. 如申請專利範圍第 7 項所述之省電裝置，其中該音頻輸入信號包括一左聲道音頻信號和一右聲道音頻信號。

13. 一種音頻處理電路之省電控制方法，該音頻處理電路具有一音頻放大電路，用以接收一音頻輸入信號並且輸出放大後之聲音信號，以及一揚聲器，耦接於該音頻放大電路並且根據該聲音信號發出聲音；該省電控制方法包括下列步

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六、申請專利範圍

驟：

判斷該音頻輸入信號是否存在音頻訊息；

根據該判斷結果，產生一指示信號，用以表示該音頻輸入信號是否存在音頻訊息；以及

根據該指示信號，控制該音頻放大電路為動作狀態或是暫停狀態，當該指示信號表示該音頻輸入信號不存在音頻訊息時，則控制該音頻放大電路為暫停狀態，當該指示信號表示該音頻輸入信號存在音頻訊息時，則控制該音頻放大電路為動作狀態。

14. 如申請專利範圍第 13 項所述之省電控制方法，其中控制該音頻放大電路為動作狀態或暫停狀態之步驟，係利用控制提供電力至該音頻放大電路之電壓源來達成。

15. 如申請專利範圍第 13 項所述之省電控制方法，其中該音頻放大電路係為一音頻放大積體電路，其具有一關閉控制端，用以控制該音頻放大積體電路之動作狀態和暫停狀態，並且控制該音頻放大電路為動作狀態或暫停狀態之步驟，係利用控制該關閉控制端來達成。

16. 如申請專利範圍第 13 項所述之省電控制方法，其中尚包括一前置放大步驟，用以放大該音頻輸入信號並將放大結果由該判斷步驟進行判斷。

17. 如申請專利範圍第 13 項所述之省電控制方法，其中尚包括一信號緩衝步驟，用以緩衝該音頻輸入信號輸入至該音頻放大電路。

18. 如申請專利範圍第 13 項所述之省電控制方法，其中尚包括一延遲步驟，用以延遲該指示信號。

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六、申請專利範圍

19. 如申請專利範圍第 13 項所述之省電控制方法，其中該音頻輸入信號包括一左聲道音頻信號和一右聲道音頻信號。

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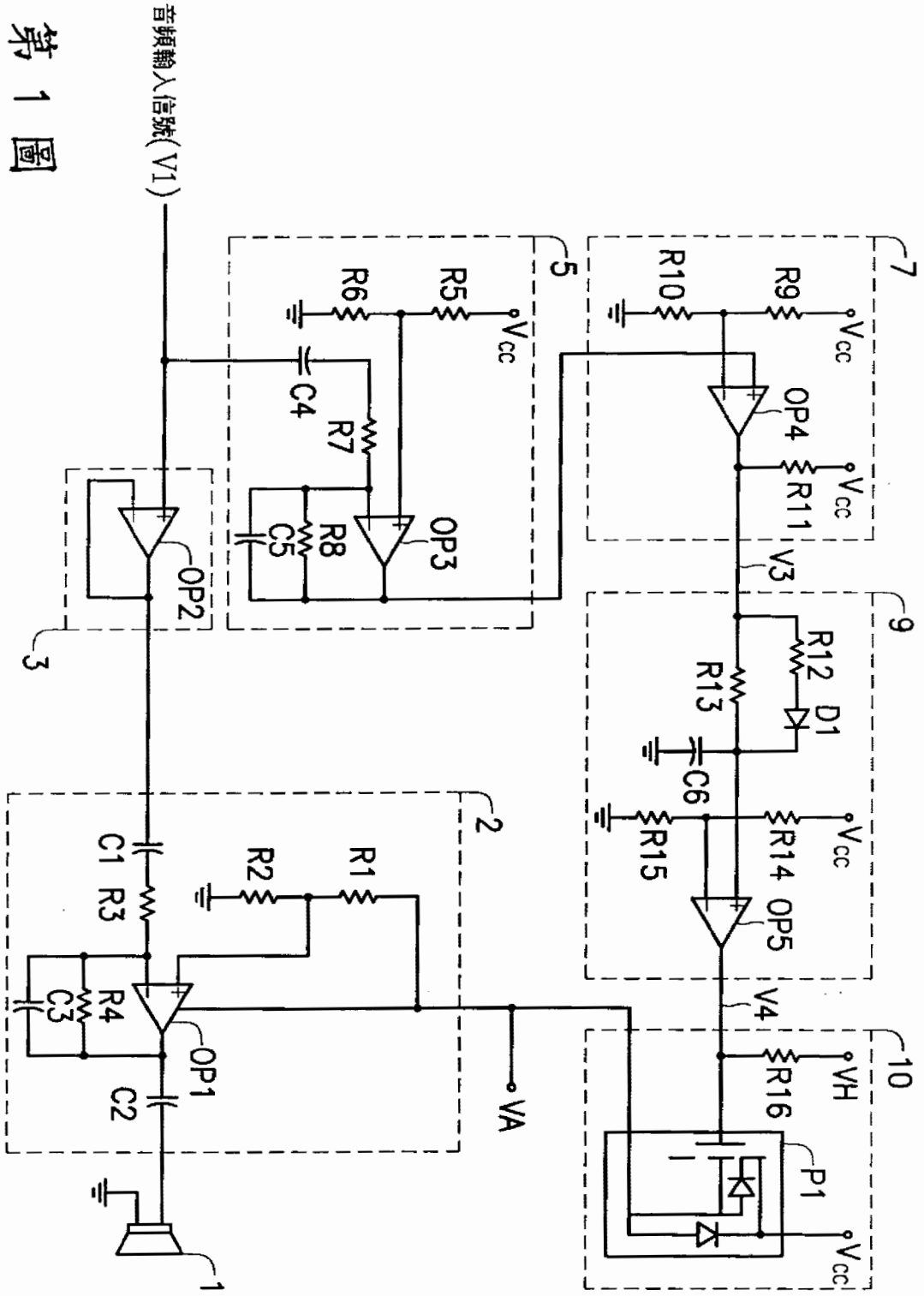
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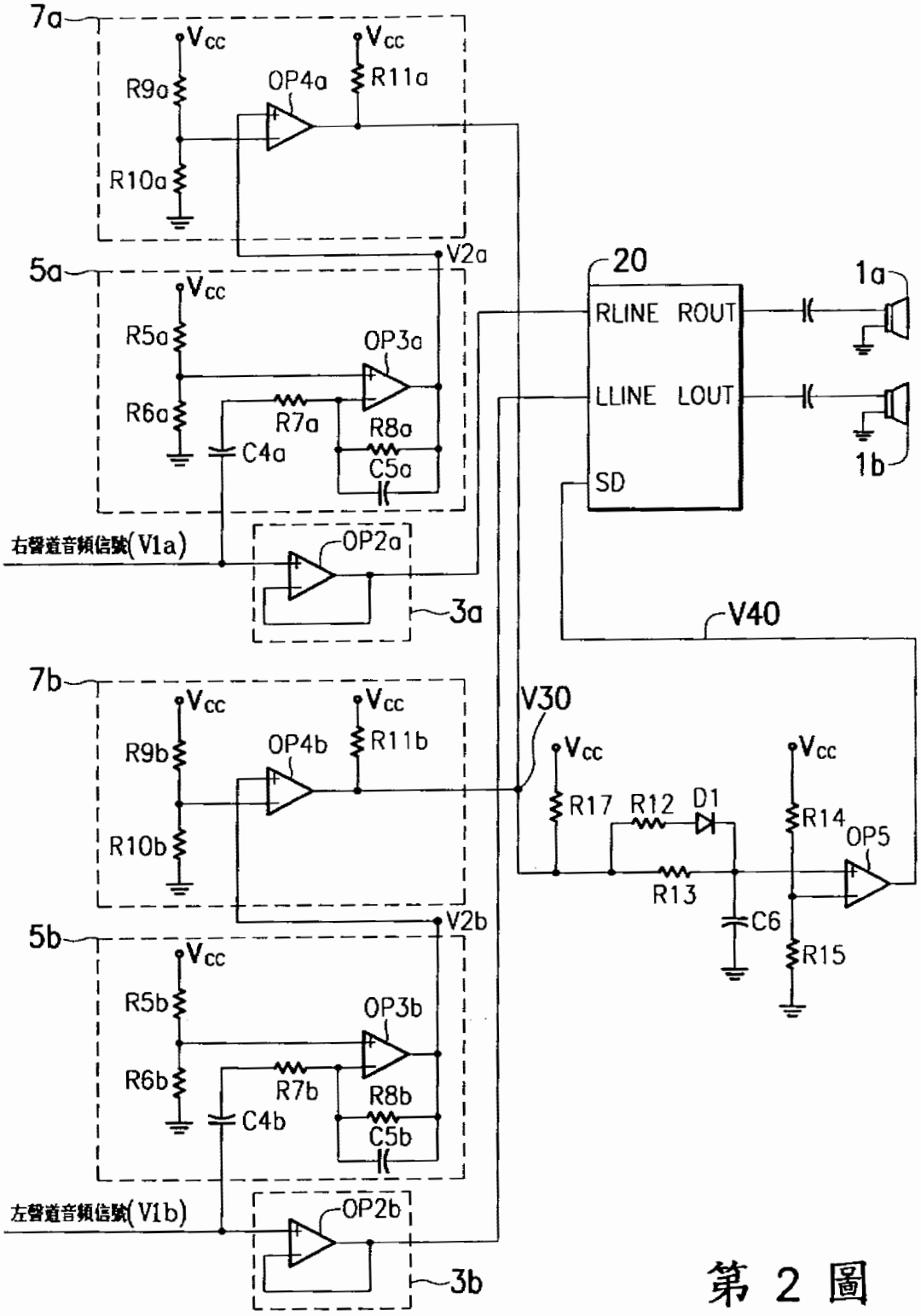
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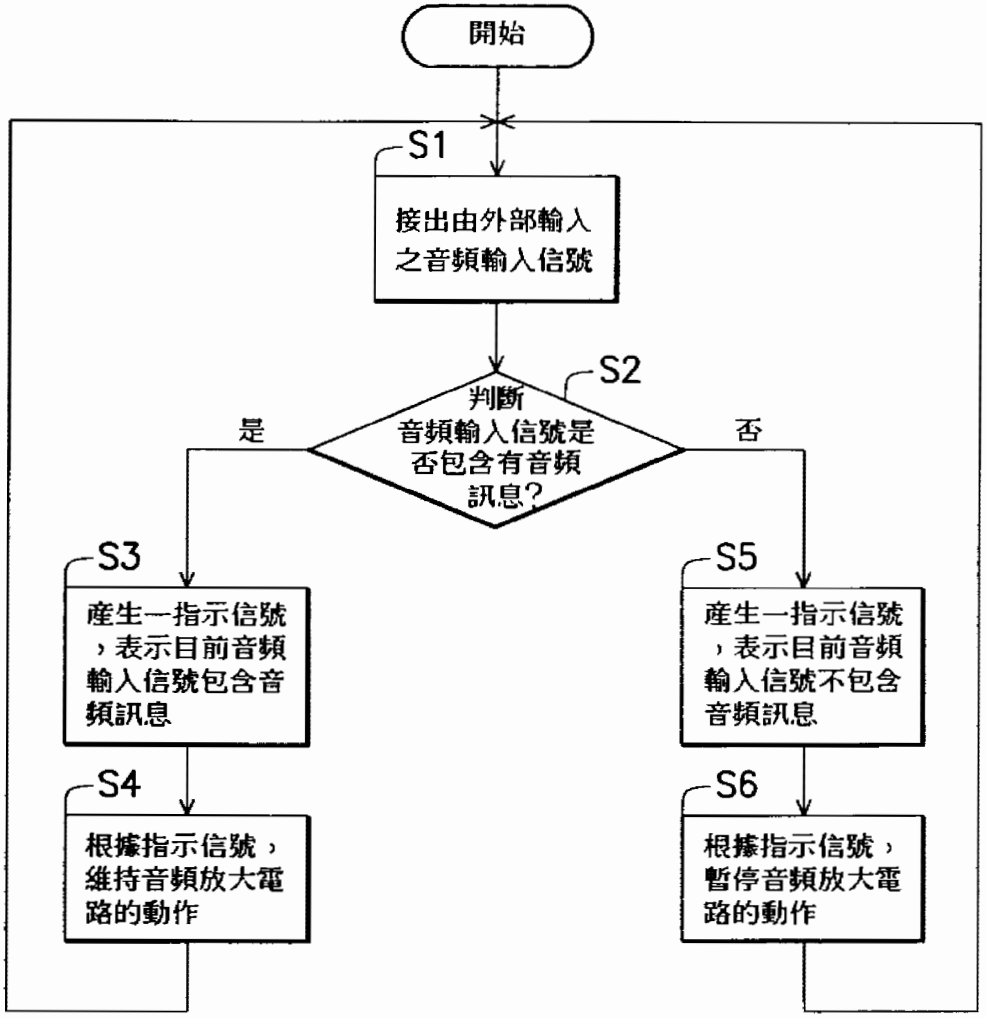
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第 1 圖


音頻輸入信號(V1)
1
2
3
5
7
9
10
C1
C2
C3
C4
C5
C6
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
D1
P1
OP1
OP2
OP3
OP4
OP5
V3
V4
VA
VH
Vcc


7a
Vcc
Vcc
R9a
OP4a
R11a
R10a
V2a
5a
Vcc
R5a
OP3a
R6a
R7a
R8a
C4a
C5a
右聲道音頻信號(V1a)
OP2a
3a
20
RLINE ROUT
LLINE LOUT
SD
1a
1b
V40
7b
Vcc
Vcc
R9b
OP4b
R11b
R10b
V30
Vcc
R17
R12
D1
R13
C6
Vcc
R14
OP5
R15
V2b
5b
Vcc
R5b
OP3b
R6b
R7b
R8b
C4b
C5b
左聲道音頻信號(V1b)
OP2b
3b

第 2 圖


開始
S1
接出由外部輸入之音頻輸入信號
S2
判斷音頻輸入信號是否包含有音頻訊息?
是
否
S3
產生一指示信號，表示目前音頻輸入信號包含音頻訊息
S4
根據指示信號，維持音頻放大電路的動作
S5
產生一指示信號，表示目前音頻輸入信號不包含音頻訊息
S6
根據指示信號，暫停音頻放大電路的動作

第 3 圖

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(71) Applicant *(for all designated States except US)*: WIRELESS SYSTEM TECHNOLOGIES, INC. [CA/CA]; Suite 601, 205 Richmond Street West, Toronto, Ontario M5V 1V3 (CA).

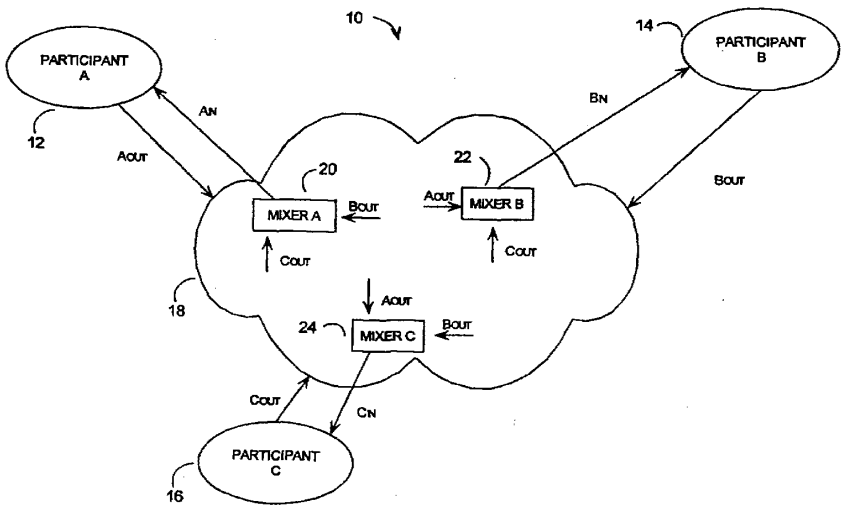
(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: SNELGROVE, William, Martin [CA/CA]; Apartment 603, 90 Sherbourne Street, Toronto, Ontario M5A 2R1 (CA). STUMM, Michael [CA/CA]; 3 Belvale Avenue, Toronto, Ontario M8X 2A6 (CA). DE SIMONE, Mauricio [CA/CA]; Apartment 702, 10 Queen's Quay West, Toronto, Ontario M5J 2R9 (CA).

(74) Agents: O'NEILL, Gary et al.; Gowling, Strathy & Henderson, Suite 2600, 160 Elgin Street, Ottawa, Ontario K1P 1C3 (CA).

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(57) Abstract

The present invention relates generally to telecommunications, and more specifically, to a system and method of teleconferencing. Existing telephony systems suffer from a number of problems including system complexity, limited access and implementation of services on fixed hardware which results in long time to bring new products to market. Internet applications implement teleconferencing on end user personal computers, without the network performing any processing of data streams or guaranteeing quality of service in the transmission. The invention provides for an intelligent server which executes a separate mixer for each user, where the mixer is dedicated to the resources available to that user. This allows for an open and flexible teleconference system which can operate over multiple networks.

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Method and System of Teleconferencing

Field of Invention

The present invention relates generally to telecommunications, and more specifically, to a system and method of teleconferencing.

Background of the Invention

Teleconferencing systems allow people at different locations to converse as if they were in the same room. In spite of the currently high cost and complexity of these systems, they are commonly used for business applications, because of the resulting reductions in travel time and cost. However, the cost and complexity can not generally be rationalized in other applications such as academia and private use, so teleconferencing is not common in these areas.

Traditional teleconferencing systems consisted of single microphone and monophonic speaker arrangements at each physical location participating in the teleconference, and the methodology was to broadcast the loudest voice to all other participants, blocking the remainder of the voices. However, the art has been evolving and systems are now available which offer such added features as video signals of the participants and stereo sound. Generally though, these new features present even greater demands on the carrier networks in terms of higher bandwidth and lower latency, which results in even higher cost and complexity. This largely explains the limited availability and use of such advanced teleconferencing systems.

Generally, each teleconferencing system is designed to be used with a specific communication network. Presently, two communication networks are dominant: the public switched telephone network for voice, and the Internet for data. These systems are typically composed of terminal equipment such as telephones or personal computers, an access network such as a telephony local loop or a radio link, and a backbone network such as the public switched telephone network (PSTN) or the intercity data networks. Although the needs of users at the terminals vary greatly, the backbone networks must handle highly standardized loads in order to operate reliably and efficiently. Therefore, traditional communication networks focussed on the provision of single services rather than differentiation. There is no incentive for telephone companies to offer varied features or to serve small niche

markets as the revenues would not offset the substantial cost of developing and implementing these additional products.

In voice telephony, services are implemented by having large computer programs running on centralized switches which interrogate local and distributed databases. The local databases specify which features are enabled on a given line, the switch software interprets these feature lists and implements the switch behaviour, and the switch software also interrogates the distributed databases via Common Channel Signalling System No. 7 (SS7) queries. SS7 is a global standard for telecommunications that defines the procedures and protocol by which network elements in the public switched telephone network (PSTN) intercommunicate control messages for basic call setup, management, and tear down, as well as for special intelligent or database services such as local number portability (LNP), toll-free (800/888) services and call forwarding.

In PSTN, a user only has access to services provided by the local exchange carrier, which in turn may only function within the bounds of the SS7 protocol. Therefore, users can only access the switches in a limited way, and new features can not be added by outside parties.

Telephony features, such as teleconferencing, may only be implemented by adding code to the programs running the switches or by adding specialized hardware to the telephony network. The features available to particular users are defined in the local databases accessed by the switch software, and adding a new type of feature may involve changing these databases together with the switch software that uses them, and may also involve purchasing and installing new types of hardware in the network.

This limits the speed with which new features can be introduced since new hardware and software must be designed, tested, manufactured and deployed. The inflexible assignment of tasks also makes it impossible to share loads between different types of hardware, for example to use idle tone-decoding hardware to help with an overload of voice-conferencing or to provision a new teleconferencing feature.

A traditional PSTN teleconferencing system provides each user with a bidirectional audio communication link with each of a plurality of remote transceivers. Typically, the system includes a microphone at each location for producing an audio signal from that location and a transport network such as the public switched

telephone network (PSTN) which deliveries each voice signal to a conference bridge This conference bridge mixes the voice signals and returns them to audio amplifiers and speakers at each location.

The conference bridge is implemented as a new hardware component connected to the switch providing the service. Adding a new feature such as Dolby noise reduction or bass boosting requires a physical change to the hardware and/or software in every switch that offers the service.

Changes to existing telecommunication networks are therefore very complicated to make. There is a rigid model and hardware structure is difficult to extend, so existing telephone companies are forced to focus on broad services. When they do develop new products they inevitably take a long time to bring to market and are expensive to implement.

Telecommunications systems need to process the data flowing through in complex ways, often with processing occurring on computer systems separated both geographically and administratively. Many communications paths are simultaneously active, and the processing applied to the various flows of data changes frequently and in a wide variety of ways. The software needed to control these computer systems is generally large, complex and difficult to change.

The complexity of present telecommunications systems software, and the extensive interactions between its software components, makes the development of new features very difficult. As well, telecommunication services have traditionally been provided by large monopolies who employed proprietary equipment that only they had access to. Large telephone companies hesitate to allow open access to the control of their switches and servers due to the risk of failures and the resulting damages that would occur; therefore, only very limited access is allowed.

Software development for telephone companiesis therefore limited to a "closed" group of trusted developers, which reduces the talent pool available and shuts out developers with new ideas for niche markets.

In summary, problems with the PSTN include:

1. system complexity results in long time to bring new products to market;
2. cost of services results in focus on few specific services rather than diversity and niche markets;

3. existing services are provided by dedicated hardware and software which are inflexible and must be physically, and often manually, modified to offer new services or features; and

4. only proprietary access to switches and their software code is allowed.

The implementation of software applications in an Internet environment is generally done by the software running at the endpoints, and the IP (Internet Protocol) network is treated merely as a conduit for transfer of data packets between the two points. The routers in the IP network merely index internal routing tables using the address of data packets so that they know how to forward them, and do not generate data for either of the endpoints, or react to instructions from either of the endpoints. The Internet itself may be envisioned as a series of routers interconnected by an Internet backbone network designed for high-speed transport of large amounts of data. Users may access the Internet using personal computers in a number of manners including modems connected to the Public Switched Telephone Network (PSTN), or set top boxes connected to existing telephone or television cable networks.

Communications over the Internet can be administered using various protocols, over a variety of physical transfer media. A protocol is a set of conventions or rules that govern transfer of data between hardware devices. The simplest protocols define only a hardware configuration while more complex protocols define data formats, error detection and correction techniques and software structures.

The key advantages of a protocol like IP are that it allows a large network to function efficiently and that it offers a standardized means by which applications software can use that network. The main disadvantages are:

1. that it does not allow processing to be performed on data streams; and

2. that it does not allow quality of service to be specified.

For example, the Internet generally will not let a user run an applet on a node or server. This limitation is due to the architecture of the Internet which is based on the international OSI (Open Systems Interconnection) standard. The OSI standard describes communication systems using a seven layer model, each layer being operable to perform certain functions. Although OSI is not always strictly adhered to in terms of keeping related functions together in a well-defined layer, most telecommunication products make an attempt to place themselves in relation to the OSI model. The OSI standard is not likely to change dramatically, nor is the

Internet's use of the standard, so the Internet will not likely become an active component in the provision of telecommunication services.

More importantly, the Internet does not allow quality of service to be specified. Internet communications generally rely on the transport of data packets over various heterogenous networks, so even though certain links may have predictable data rates, for example, a privately owned T1 line, total end to end transfer rate is still not predictable or dependable.

Some protocols such as resource reservation protocol (RSVP) set tags and priorities which can influence the routers on an Internet path a little, but not a great deal. The RSVP is an extension to IP that permits specification of quality of service at a technical level, in terms of parameters such as data rates and latencies. It has had limited acceptance due to the complexity it adds to backbone networks and the need for their switching hardware to be updated. As well, little is accomplished unless all switches in the end to end connection are responsive to the protocol, which is not generally the case.

Therefore, typical software applications operating over the Internet, such as teleconferencing, look at the Internet as simply a transport network without any processing capability and all functionality is placed at the participant's locations. Implementations of teleconferencing over Internet, for example, have software at each user's personal computer (PC) that acts as the interface with the user, converting voice to data packets for IP transmission to each of the other participants in the teleconference. Accordingly, the user's PC also receives streams of voice data from each of the other participants in the teleconference and plays them through a sound card.

This implementation suffers from severe scalability problems. For example, if there are ten participants in a teleconference, then each participant would require sufficient bandwidth to download nine simultaneous voice data streams from the other participants, in real time. As the bandwidth to each user would increase linearly with the number of participants, and the load on the network increase with the square of the number of participants, there would be an immense load on the network resources. Clearly, this is impractical for teleconferences with a large number of parties or services which themselves require high bandwidth such as video or high quality voice. Even if the bandwidth could be obtained, there is no way to ensure that

it is consistently available, as there is no way to specify quality of service (QoS) in Internet applications.

As noted above, typically, each existing teleconferencing system is designed to operate over a particular network and is not capable of cooperating with the many varied networks now available. These networks include public switched telephone network (PSTN), Internet, cellular telephone systems, satellite communications, local area networks (LANs) and wide area networks (WANs). Within these networks there are a variety of media including optical fibre, wireless or hardwired electrical connections, which execute communications over these networks in analogue or digital format using a variety of different protocols. Many of these networks have been widely implemented, at considerable capital cost, so it is unlikely that they will be quickly abandoned and a new, standard, world-wide telecommunications network constructed. Therefore, there is a need for a system which is capable of implementing teleconferencing over a mixed combination of communications networks.

Asynchronous Transfer Mode (ATM) networks, for example, use standard protocols for addressing packets of data and setting up connections, and have typically been deployed in the core of backbone networks because of the high speeds at which ATM equipment operates. Because ATM routers are not directly accessible and because of the complexity of their mechanisms for describing QoS, these mechanisms have not been used by applications software.

Besides the IP and ATM networks mentioned above, there are other data networks such as Frame Relay and Ethernet. As well, the PSTN may also be used to carry data, for example using trellis coding which maps digital data onto an analogue signal commonly; which is commonly used by Personal Computer modems. Variants are also evolving of each major type of network, and engineering differences between implementations of these networks result in different performance. The complexity induced by this variety makes it difficult for users and application software to exploit all the networks available, and to exploit any to its fullest extent.

Feature development is already difficult for the simple application of teleconferencing over voice networks. As new media such as videophone, typed messaging, shared files and whiteboards are mixed with traditional teleconferencing products, and new applications such as distance learning, Internet Relay Chat and Internet gaming, develop, the problem is becoming even more severe. This problem

will grow even greater as expectations develop for features from one domain to be mapped into another, as when customers expect a feature similar to call-waiting to apply in videoconferencing or Internet gaming.

Furthermore, even for a single application, different users may have different needs, for example, requiring different degrees or forms of encryption. Therefore, there is a need for a system which can allow many cases and features without becoming complex, slow to develop and slow in operation.

There is therefore a need for a method and system of teleconferencing that may be implemented over mixed telecommunications networks, and addresses the complexity of such existing networks to provide an open, scalable and flexible architecture.

Summary of the Invention

It is therefore an object of the invention to provide a method and system of teleconferencing which addresses the problems described above, at least in part.

One aspect of the invention is broadly defined as a system for teleconferencing comprising: three or more user terminals, each having an audio input and an audio output; a telecommunications network interconnecting the user terminals and operable to transport data to and from the user terminals; separate modular mixing software for each respective user terminal, executing on the telecommunications network, and operable: to receive separate audio signals from the audio outputs of the others of the user terminals; and to combine the separate audio signals into a signal for the audio input of the respective user terminal which correlates to the needs of the respective user terminal.

Another aspect of the invention is defined as: a server for teleconferencing comprising: means for interconnecting user terminals and transporting data to and from the user terminals; means for executing separate modular mixing software for each respective user terminal, the separate modular mixing software including: means for receiving separate audio signals from the audio outputs of the others of the user terminals; and means for combining the separate audio signals into a signal for the audio input of the respective user terminal which correlates to the needs of the respective user terminal.

An additional aspect of the invention is defined as: a method of teleconferencing comprising the steps of: receiving, at a separate modular mixer

representing a respective one of three or more user terminals and executing on a telecommunications network, separate audio signals from audio outputs of the others of the user terminals; and combining the separate audio signals into a signal for an audio input of the respective user terminal which correlates to the needs of the respective user terminal.

A further aspect of the invention is defined as: a computer data signal embodied in a carrier wave, said computer data signal comprising a set of machine executable code being executable by a computer to perform the steps of: receiving, at a separate modular mixer representing a respective one of three or more user terminals and executing on a telecommunications network, separate audio signals from audio outputs of the others of the user terminals; and combining the separate audio signals into a signal for an audio input of the respective user terminal which correlates to the needs of the respective user terminal.

A still further aspect of the invention is defined as: a computer readable storage medium storing a set of machine executable code, the set of machine executable code being executable by a computer server to perform the steps of: receiving, at a separate modular mixer representing a respective one of three or more user terminals and executing on a telecommunications network, separate audio signals from audio outputs of the others of the user terminals; and combining the separate audio signals into a signal for an audio input of the respective user terminal which correlates to the needs of the respective user terminal.

Brief Description of the Drawings

These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings in which:

Figure 1 presents a physical layout of a teleconferencing system in a broad manner of the invention;

Figure 2 presents an exemplary physical layout of a teleconference system in a preferred embodiment of the invention;

Figure 3 presents a block diagram of exemplary signal processing software in a preferred embodiment of the invention; and

Figure 4 presents a block diagram of an exemplary operating system architecture in a preferred embodiment of the invention.

Detailed Description of Preferred Embodiments of the Invention

A system which addresses the objects outlined above, is presented as a physical layout in **Figure 1**. This figure presents a system **10** for teleconferencing between three or more user terminals **12, 14 , 16,** each having an audio input and an audio output. The phrase "terminal" is used generally in the art to describe any suitable manner of user audio input and output device including telephones, cellular telephones, and personal computers with microphones and speakers or headsets. The audio input and output refer to the connections between the terminal and the telecommunications network, and not to the audio interface between the user and the terminal.

A telecommunications network **18** interconnects these user terminals **12, 14 , 16** and has the necessary functionality to transport data packets between them. The telecommunications network **18** also executes separate modular mixing software for each respective user terminal **12, 14 , 16**. These separate mixers **20, 22, 24** are operable to receive separate audio signals from each of the other user terminals and to combine those separate audio signals into one signal. This one mixed signal is transported to the audio input of the respective user terminal, in a manner that correlates with the needs of that respective user terminal.

That is, if there were three participants in the teleconference, there would be three mixers, a first mixer for participant A, which mixes the audio output signals of participants B and C, a second mixer for participant B, which mixes A and C, and a third mixer for participant C, which mixes A and B.

The use of individual mixers **20, 22, 24** executing on the telecommunications network **18** addresses a number of the problems noted above.

Firstly, having individual mixers **20, 22, 24** allows each mixer to be dedicated to its own user and to be tailored to the limitations of the user's resources and the resources of the network and network connection that services that user. For example, the mixer of a user having a high bandwidth connection may provide digital quality stereo to its user, with balanced mixing of all participant's voices. Another user connection via an analogue, monophonic, PSTN connection may send only the strongest voice to its user, blocking voice signals from other participants and thereby reducing noise.

Having a single mixer for all participants, as taught in the PSTN art, would require an immense piece of software code if all of the variations in user

requirements were to be handled in a single piece of software. As this piece of software code would be unmanageably large, complex and slow, existing systems have simply not offered such diverse services.

Similarly, the use of mixers **20, 22, 24** executing on the telecommunications network **18** offers a substantial improvement over existing Internet based teleconferencing as well. Typically, Internet methods broadcast all voice streams to all participants, so each terminal receives up to (N - 1) streams where there are N participants. This places a tremendous demand on the bandwidth of the final connection to each user and a tremendous load on the network. In contrast, the invention requires only the number of audio channels that the user requires at his audio output, to be sent to the user. That is, if the user desires monophonic output, only one channel is required, and if stereo is desired, two channels. Quadraphonic sound, surround sound, central bass and other audio arrangements would require corresponding numbers of audio channels. This greatly reduces the bandwidth required to each user and the loading on the network.

Thirdly, it is also significant that the mixers of the invention are implemented in a modular manner. As will be described in greater detail hereinafter, all of the software components of the invention are implemented in small modules. Having small modules designed to handle very specific tasks results in a far simpler system than those like the existing PSTN. The more defined the task that a module addresses, the easier it is to design that module and later, to integrate it into the rest of the software system. This is fundamental to the provision of a system that is flexible and open.

Other advantages of the invention will become more apparent from the description of the preferred embodiment which will be presented in terms of an example.

Figure 2 presents an exemplary physical layout of a teleconference in the preferred embodiment of the invention, having four participants. Two participants have direct access to an active network, while two are connected to the PSTN. The term "active network" refers to a network that is operable to execute the mixer software and other related software components described hereinafter.

Participant A has a personal computer (PC) **26** connected to a first active network **28** via a wireless connection **30**. The entity on the active network **28** which serves Participant A is called a NetPort **32**. The specific role of the NetPort **32** within

the active network **28** will be described in greater detail hereinafter. The PC **26** is running a stereo-enabled Web browser with a RealAudio plugin that implements streaming audio and is output at speaker **34**. The PC **26** also has a simple microphone plugin that passes samples from the on-board microphone **36** back to an IP address. Participant A also has a WebCam **38** connected to her PC **26**.

Participant B is connected directly to a second active network **40**, but in a location geographically remote from the first active network **28**. Participant B also listens from a speaker **42** connected to his PC **44** through a streaming-audio application, but is talking through a wireless telephone **46** for its boom microphone. Participant B is plugged into a second NetPort **48** through a telephone jack and hardwired connection **50**.

Participant C is connected to the POTS **52** (plain old telephone system) via a plain black rotary-dial telephone **54**.

Participant D has two speaker phones **54, 56** fed by two separate POTS lines. He also has an Internet connection via a PC **60** which runs a Web browser, but his Internet Service Provider (ISP) does not provide good enough quality of service (QoS) for voice, so he just uses it for the graphic user interface (GUI).

A GUI is piece of software that presents data to users in a graphical manner, allowing for easy interpretation and modification. It is preferred that the invention be implemented in such a manner, where possible. The GUI runs as Java in the PC browser, and communicates with call processing applications running on the active network by means of sockets. Invoking it involves typing a URL (uniform resource locator such as "coolPhones.com"), after which it sits in a window waiting for an incoming call or a user input event to place a call. Inputs can be made via a mouse, keyboard, trackball, touchscreen, joystick or other similar manner. The GUI is strictly an interface, though, since it is unacceptable, for example, to have voice-mail fail when the PC is not active. Therefore, the real call processing decisions are made on the active network side.

This exemplary system also includes an Internet network **62**, which is connected to the PSTN using, for example, H.323 and SIP (Session Initiation Protocol) connections. These connections are known in the art, as are others. The Internet network **62** is also shown to be connected to both active networks **28, 40**, but many other system topographies are also possible. The invention is not limited by any particular topography.

While the teleconference is in progress, Participant A hears Participant B on the left, Participant C in the middle and Participant D on the right, because Participant A is mixing the other participant's monophonic voice streams into a metaphorical stereo spectrum. The use of the stereo output has two major advantages. Firstly, it aids in identifying which participant is currently speaking. Secondly, it allows higher noise levels to be tolerable to participants due to the "cocktail party" effect. This effect acknowledges that people are able to converse comfortably with one another in an environment where there is considerable background noise, provided that they have a means for identifying and focussing their attention on a particular speaker. The use of stereo sound has been shown to provide this identification.

Stereo sound can be synthesized in a number of manners. In a simple implementation, amplifier gain can be varied between the left and right channels, for example: one participant may be played at full volume on the left channel and none at all on the right, a second may be played with full volume on the right channel and none on the left, while a participant may be played at equal volume in both channels. More complex implementation of stereo may, for example, introduce a delay to the audio signal before playing it on one of the channels, simulating the additional time the sound takes to travel to the farther of the listener's two ears in a regular physical environment. Such methods are generally known to those skilled in the art.

Accordingly, Participant A's GUI screen shows a Web page with Participant B's picture on the left, Participant C's number in the middle and Participant D's caller-ID name on the right. In each case, the GUI displays the best identification information that it has available for each participant. This identification may include a URL or telephone number. As well, "screen-pop" information could be provided which identifies personal information about the participant such as his address.

As well, via the GUI, Participant A can click on "ear" and "eye" icons for each of the three participants on her screen to enable or disable their ability to hear her or to see her through the WebCam. Participant A can also drag on a "mouth" icon to set the volume level at which they speak to her, and drag participants left and right to adjust their stereo imaging. Alternatively, the volume level of participants could be governed by their physical location on the GUI display - the further a participant's icon is away from an icon representing the user, the lower their volume level. Another preferred feature of the GUI is that when someone speaks, their icon becomes brighter then gradually fades again with inactivity.

Similarly, Participant B hears Participants A, D and C in a metaphorical stereo spectrum from left to right. Because he finds the sound of participant A's voice close to that of Participant C, he has chosen to separate them spatially as much as possible. This is done with the same type of GUI described with respect to Participant A above.

Participant C hears a conventional four-way conference call, with the voices of the three other Participants companded and mixed together. As a result, she has difficulty distinguishing Participants B and D. However, she has the flexibility to tailor the call to some extent with the preference for single voice dominating, adding noise filters, or other functionality via her proxy. This addition of functionality directly to PSTN customers is very significant. As explained in the background, PSTN services are driven by a supply model that only provides commodity services, and takes a long time to provide those limited services. There is a vast PSTN infrastructure which provides single monophonic lines into millions of homes and businesses, all of which are shackled with these limitations. The use of proxies in the manner of the invention provides greater flexibility and access to new services which may be implemented quickly and at very low cost. More details are provided hereinafter regarding the preferred use of proxies.

Participants who do not have the capability of interacting with the active network will have generic proxies assigned to them which are dictated by the nature of their telecommunication connections. For example, the system knows that a Participant only has PSTN access if that is the connection the call manager has identified as the best connection during call setup.

Participant D has a similar stereo arrangement, over which he has defined Participant A to reside on the left speaker telephone, Participant D on the right speaker telephone and Participant C on both channels. This arrangement also creates a metaphorical stereo spectrum. Other means are known in the art for carrying stereo over the PSTN, but such methods generally require more complicated hardware at the Participant's end. Participant D has the same GUI as Participants A and B so he is able to control his proxy and mixer on the active network directly.

As an example, exemplary signal processing software for participant A is presented as a block diagram in **Figure 3**. Voice streams from other participants arrive in different forms and need to be converted to a consistent form, companded and then mixed. They also need to be transmitted across the radio link in an efficient

form, and other signal processing such as echo cancellation/suppression may need to be done on the voice data. In this case, RealAudio has been chosen as the consistent form though MP3 or a number of other forms could be used. RealAudio is particularly convenient as it is a realtime streaming standard that is well known in the industry and for which many tools are currently available, such as codecs and mixers. This type of processing is also required for the other listeners, and it takes slightly different forms for each participant which correlate to their respective setups.

Not shown in **Figure 3** are such functions as encryption, tone controls and level control, though their implementation follows logically from the description provided herein.

Specifically, pulse code modulated (PCM) voice streams are received from Participants C and D, which are connected to RealAudio converters **64** and **66**. PCM is the standard transmission form for audio in the PSTN. Since the voice signal received from Participant B is already in RealAudio format, which comprises data packets and is easily transported over IP, it is not necessary to convert it before passing its signal to the RealAudio mixer **68**.

The RealAudio mixer **68** combines the incoming audio signals in accordance with the participant's requirements. In **Figure 3**, a bi-directional Activity and Control line is shown which interfaces the RealAudio mixer **68** with the PC **26** via an Ethernet card **72**. The audio output of the RealAudio mixer **68** goes to the Ethernet card **72** as well, and also to a PCM convertor **74**.

This PCM convertor **74** feeds the echo cancellor **76** with an audio signal that more or less matches the output from the participant's speaker **34**. This way, the echo cancellor **76** can remove the speaker output signal that is inadvertently picked up by the microphone **36**. The PCM signal leaving the echo cancellor **76** is converted to RealAudio at the voice coder **78**.

RealAudio packets are numbered sequentially to ensure that they are arranged in the proper order when they are decoded. Generally, it is not necessary to time stamp packets as the time delays are short, and the varied delays in data packets that result from their transport from different sources, or by different routes, will not generally be detectable by the participants. In fact, RealAudio may deliberately add a delay to the incoming signals by storing them in a buffer to absorb signal jitter. As the data is arriving in finite and distinct data packets, there will inevitably be some degree of jitter, so buffering is preferred. A buffer that causes 20

mSec - 50 mSec delay is sufficient time to absorb the effects of jitter most of the time, and is not long enough to annoy the users to a great extent.

Also, note that all audio signals passing between the NetPort and NetPort Manager are in RealAudio form, and not PCM. This makes the transport over the digital interconnection more convenient.

Other preferred aspects of the teleconference are outlined as follows:

1. **Call Setup**

The most important aspect of call setup is the identification of the participants, where they can be found and then of course, creating the connections. In the preferred embodiment, the teleconference will be created by one or more of the participants who are GUI-enabled. These participants will advise the network of the identities of the participants and the call setup software on the network will make the connection with the participants.

Some of the participants will have Internet addresses, while others will have telephone numbers. In each case, the call setup software will investigate the participant and establish the best possible connection that it is aware of. Those participants without Internet access will be assigned proxies which reflect the resources they have access to. For example, if the call setup software identifies a PSTN telephone number as the best connection, it will assign a PSTN proxy to that participant unless advised otherwise.

In the preferred embodiment, all participants who are GUI-enabled can add participants to the call, but for high-security teleconferences, addition of participants should be controlled by a single participant.

2. **Telecommunications Operating System**

The telecommunications operating system aspect of the invention provides unified control and access to all system resources and networking links, with the functionality in and implied by **Figure 3**. This represents a large collection of signal processing and control functions connected together in response to the commands of the callers.

This contrasts with the "pure Internet Protocol" approach which require cooperating tasks in all of the various computers to arrange to do their parts of the processing through an application-specific protocol built on socket() calls, with no single program having an overview of the whole setup. This makes it very difficult to optimize and manage the system, and each such

application has to reinvent call processing. The invention uses socket() as part of the underlying implementation in a preferred embodiment, so that the invention is built as a middleware layer on top of IP.

In "telephony classic" one would not attempt to set up something with this generality in software, but would make special "stereo conferencing server" hardware that assumes all inputs and outputs are PCM and would add special numbers to call in order to connect to it. The need for specialized hardware makes this a "closed system", in which innovation is slowed down by limitations on who can develop new telecommunications applications

3. Proxy

It is preferred that the invention be applied to a network which employs a graph model as described in the co-pending patent application under the Patent Cooperation Treaty, Serial No._____, titled "Connection Manager for Telecommunications". While a single application program is used to see and manage the entire connection, including IP and videoCam connections as well as voice streams, that application is constructed by collecting together "agents" from "proxies".

A proxy is a piece of software that acts on behalf of a specific party to a connection. In this case Participants A through D, and each of the networks and Internet providers are separate parties with separate proxies. A proxy contains data that represents the preferences and state of the party, such as whether Participant A is already on the telephone and whether the first active network's **28** voice trunk is getting full, and has components that are agents to do specific tasks, such as responding to off-hook on a telephone and managing a voice call in progress.

The terms proxy and agent are sometimes used interchangeably in the art. For the purposes of this document, they are distinct: a proxy is built out of agents, each of which handles a special situation. Therefore, the proxy does not comprise an immense block of code with all conceivable functionality, but in its simplest form, is merely a supervisor which instantiates software agents as required, discarding them when their tasks have been completed.

These agents are sent to parts of the system in which signal processing is going on and are connected to the signal processing code or hardware through a "controlling application". This architecture of proxies, agents and

controlling applications is what allows connection management applications to appreciate the whole structure of a connection while still being "owned" by several different parties.

Proxies should persist in the presence of component failures, so that, for example, a user's forwarding instructions do not get lost during a crash. It is preferred that persistence be provided via a distributed database which is continuously updated, so that all concerned parties are aware of the status of the communication. In the event of a failure, the system is able to work around the failure, allowing the communication to continue. Such transactional interaction techniques are known in the art.

In the "pure Internet Protocol" approach there is only custom software running on hardware belonging to the various parties involved and communicating through socket() mechanisms in an ad hoc protocol. The invention builds an additional structure on top of this.

In "telephony classic" there is a single very large program that looks at a database for all users and decides what they would want to do. This program is too large to modify quickly, and can only be modified by the equipment manufacturer. Again, this approach is not flexible enough for rapid evolution of new features. The architecture of the invention makes it easier to understand and modify software, without the same complexity, allowing the system to be open to software development, so that new features may be brought to market very quickly.

4. Graph

It is preferred that the invention be applied to a network which employs a graph model as described in the co-pending patent application under the Patent Cooperation Treaty, Serial No._____, titled "Method and System for Configuring Communications Systems". Briefly, the graph model constructs the signal processing and communications structure as a mathematical graph, which is later implemented by taking "filters" that implement the nodes out of libraries and modifying them, either by a dynamic linking process or by setting the IP addresses to which they make socket connections, to have the interconnection structure specified by the edges. This graph is also used for communication among the agents, as the data structure that defines a

connection. An API layer that describes characteristics of these graphs is added above the raw graph structure to assist in writing agents.

In addition to filters, it is also preferred that this graph data packet contain calls to proxy agents required to set up the call. Proxies may also send their agents to collaborate on building and managing graphs.

An application programming interface (API) converts a series of comparatively simple and high level functions into the lower level instructions necessary to execute those functions, simplifying use of an operating system. Using Windows APIs, for example, a program can open windows, files, and message boxes, as well as perform more complicated tasks, by executing single instructions.

The particulars of how an API for the invention is implemented are not critical, but it is desirable that a standard API be employed that expresses control, connection and negotiation processes, including payment. The use of a standard API simplifies the creation of new features by third parties.

A GUI is particularly well suited to the use of a graph model, as the GUI may present the assembled filters as defined by a graph data packet, to the user in a very logical and understandable form. It is also preferred that the GUI have the functionality to let the user modify the graph data packet simply by altering filters and their interconnections.

In the "pure Internet Protocol" approach the overall communications structure is not visible at all, while in the "telephony classic" approach it is possible for switch software to connect physical ports together, but not to pull functions out of libraries. The decision about what ports to connect together is explicitly made by the users by dialling telephone numbers in the "telephony classic" approach.

3. **Real Time Operating System (RTOS)**

Voice teleconferencing is a real time procedure, so RTOS should be used as known in the art. Generally, RTOS's divide code to be executed into smaller units of threads and functions, and then schedule the execution of these threads and functions to be performed prior to specific deadlines.

4. **Distributed Operating System**

A distributed operating system is one in which portions of the software can run on different nodes. In the case of a telecommunications system, distribution

of software makes it easier to maintain real time operation as there are more options available to schedule timely execution. As well, distributed operation improves scalability and speed. The use of agents and proxies lends itself to the efficient use of a distributed system, in that agents and proxies may be assigned to run on different nodes of the system. Ideally, agents will be located close to where they are required, to minimize time delays in communicating with the entities they represent. Such a suitable distributed RTOS is described in the co-pending patent application under the Patent Cooperation Treaty, Serial No._____, titled "Distributed Telco".

Figure 4 presents a block diagram of an exemplary operating system architecture in a preferred embodiment of the invention. A distributed communications substrate **80** is interposed between user processes and the underlying machines, so that processes can generally be moved from one machine to another without being aware of it, either to distribute load or to recover from failures.

Processes running in the system come from different sources and accordingly get different treatment in terms of the trade-off between security and performance. Call-processing functions acting on behalf of the end users run in a protected "sandbox" environment on a virtual machine. Those working on behalf of the network provider may run there, but may also be implemented directly as processes running on the network operating system. User processes running as "filters", with the hard real-time demands that come from being in the signal path, and also run directly on the communications substrate **80**. Processes belonging to different users are protected from each other by the usual operating system mechanisms such as memory mapping and file privileges, but the source is also reviewed by the network administrator. Filter processes on the same machine and part of the same call may share an address space and a thread of control, with data being passed with a function call mechanism and with connections to other hardware being handled by a stub that adapts a function call to a socket-type mechanism. These filters would still be dynamically linked, even with the function-call mechanism.

Signals pass through filter processes **F**, which also implement drivers and performance-sensitive functions on behalf of the network. Call processing on

behalf of users is handled by **CP** processes running in a secure virtual machine **VM** environment, which also includes checkpointing functions that can transfer control on failure to a "ghost machine" **82**. All these processes run on the common software communications layer **80**, which places them on appropriate physical systems and arranges for their connections. Server processes **S** also run on the communications substrate **80**, but do not have the hard real-time constraints of the filter processes. Secure call-processing functions are one type of server process.

5. **Mapper**

The allocation of tasks and network capacity to different communications graphs is done by an optimizer called the **mapper**. There are in general many ways that a graph representing a desired communication can be allocated to a physical network: each of the filters can run on several different nodes, for example, and sometimes there are several types of links over which data can be carried. The simplest embodiment uses hints from the proxies about where to put radio links, that is, after the voice coder, and then applies a "greedy algorithm" to put computing resources as close to the network edge as possible. A good mapper should be a distributed application in which local decisions are made with local knowledge to the greatest extent possible. It is not essential to get a global optimum, as long as resources are not seriously wasted.

In the case of the invention, the most significant resource management problem is the handling of the voice streams. In having a separate mixer for each of N participants, each mixer will receive (N-1) voice streams. The mapper must balance the benefit of distributing the mixers among various processors against the extra cost of transporting redundant audio signals. The factor that governs these decision in the implementation of the invention is quality of service (QoS). Methods of distributing such real time loads are known in the art, but in the case of the invention, the solution will vary with each set of participants and network topography.

6. **Negotiation**

It is preferred that the architecture for agents provide for use of the negotiation system described in the co-pending patent application under the Patent

Cooperation Treaty, Serial No._____, titled "Method and System for Negotiating Telecommunication Resources.

Many users are competing at once for the shared resources of the network (including its computing capacity). It is preferred to apply a market model to resolve this contention: agents for the parties involved offer and demand payment as part of connection setup, and a connection does not happen until all parties have accepted it. A caller can choose to try a connection at a reduced quality level if the cost of the high quality connection becomes too high. For example, on Christmas Day, the load may be temporarily high, so users can expect to get through with reduced voice quality rather than getting a busy signal.

In "pure Internet Protocol", temporary congestion is resolved on a "best efforts" basis and packets may be almost arbitrarily thrown out, and at a longer time-scale by overprovisioning the network so that failures are not too frequent. With differential service a small number of priority classes are defined, but the definition needs to be managed. The market model of the invention can be used to manage differential service, allocating high priority access in such a way as to permit guarantees on service.

In "telephony classic" contention is managed by call admission (first-come, first served) and again the network is overprovisioned so that failures are not too frequent.

Negotiation management may be implemented by having a negotiation agent for each of the user terminals and for each of the multiple telecommunications networks. Each negotiation agents is operable to execute somewhere on the telecommunications system, for example, on the active network, and represents the interests of its respective party in negotiating communication over the telecommunications network. This is done by identify participants in the negotiation and then passing a graph data packet which describe the proposed connection, to each participant for their consideration. Each negotiation agent may either accept, reject or revise it to make a new proposal to the other negotiation agents.

When all or part of the graph data packet is to be executed, a device simply assembles the listed filters in the manner defined in the graph data packet.

It is also preferred that the invention be implemented with a strong security mechanism that protects proxies from erroneous or malicious code in other proxies. As well, it is presently desirable that proxies and agents be written in Java™, but another language with similar advantages could also be used. Advantages of Java™ include:

a. excellent security
b. a large community of experienced developers
c. object oriented code structure
d. simple net-based distribution mechanism

A telecommunications system implemented with the functionality described above provides a foundation for the mixed media applications of the future, and for greater flexibility and power to existing services such as high bandwidth telephone, and Internet gaming.

Other options for implementation of the invention include:

1. **Companding**

Companding techniques use "compression" algorithms that try to adjust gains (smoothly) so as to keep a signal's level more constant and "expansion" algorithms that adjust gains to exaggerate signal-level variations. Some techniques used in audio are frequency-dependent, such as Dolby companding which adjusts filter cutoffs to suppress background hiss when signal levels are low.

An extreme example of expansion is "squelch" in which signals with power level below a certain threshold are turned off completely to minimize idling noise. In telephony the most common variant is "echo suppression", as opposed to "cancellation", in which the signal path from the quieter user has its gain reduced, which reduces the loop gain for echoing and feedback oscillation. Companders use around 5-50 operations per sample. Instantaneous companders work on a sample-by-sample basis, and the common A-law case is covered under "coders" below.

2. **Voice coding**

Voice coders are used to reduce the bandwidth requirements for voice signals. There are many types, but broadly they can act on the waveform, minimizing some mathematical measure like error power; they can model the source; or they can model what the ear will notice. Coding for compression is

an active research area, and a steady stream of new coders is likely to appear.

"Telephony classic" uses waveform coding in the form of 8kHz A-law (or μ-law). Sampling is done at 8kHz on a signal filtered to pass the range from 300Hz to 3300Hz. The passband was defined to get good subjective scores on speech quality and intelligibility, and the sample rate is designed with a 33% margin over the Nyquist minimum in a trade-off between network and prefilter costs. A-law and μ-law are specialized 8-bit floating-point representations, chosen as a way to get roughly constant signal-to-noise over a wide range of signal levels. By comparison, compact disc (CD) sound is stereo 16-bit fixed-point sampled at 44.1kHz, which requires roughly 24 times the bandwidth and the use of a T1 line. Because speech varies slowly from sample to sample, the same quality can be had for roughly half the bandwidth with ADPCM (adaptive differential pulse-code modulation) which, roughly speaking, digitizes the derivative instead.

Most digital cell-phones use a variant of linear prediction coding, which tries to model the incoming sound in terms of a sound source that simulates the vocal cords or airflow and which in turn drives a filter that models the larynx. This requires less bandwidth than waveform coding because the larynx moves more slowly than the waveform, but works badly for anything other than speech or even for speech in a noisy environment. These "source coders" are an active topic of research and currently produce tolerable speech at output rates anywhere from 4kb/s up. A typical modern coder uses about 50MIPs of DSP capacity. Coders typically operate on 20msec frames of data, and hence add at least that much delay to the signal path.

Source coders typically try to detect silence, and avoiding the transmission of silence typically saves about 50% of bandwidth on average. At the decoding side it is conventional to replace silence with "comfort noise" so that the listeners know the connection is still live.

Source coding is difficult to use for music, because it would be necessary to model a large number of different instruments alone and in combination, so early digital audio such as CD and DAT, just used waveform coding with enough bandwidth and dynamic range to satisfy (more or less) the human ear. Minidisc and digital compact cassettes brought in coding that reduced

CD bandwidth by a factor of about 10 by using psychoacoustics. Psychoacoustics applies, in particular, masking effects, where loud tones mask nearby ones for normal ears, and bandwidth can be saved by not transmitting the inaudible components. This type of technique can also be rate-adapted, as in RealAudio, and is a good candidate for high-quality speech applications in the system of the invention.

Conventional filters, companders and similar components will not work on a coded signal, so it is standard to decompress before filtering. In some cases this may be avoided, for example, N-way combining can take advantage of silence to do companding at no additional cost of bandwidth, and only needs to decode and recode during bi-directional conversation.

3. **MPEG (Motion Picture Experts Group)**

MPEG coders do the same type of thing for video signals that perceptual coders do for music. Components of a video stream at high spatial frequencies are digitized at low resolution, using 8*8 discrete cosine transforms to do the filtering, and using "motion estimation" so that components of an image that can be derived from adjacent frames are not retransmitted. MPEG decoding is preferably left for the end-user's PC, because it is very demanding and because specialized hardware exists for it. However, the traffic properties are an important consideration in implementing the invention. Straight digitized television requires roughly 30 frames / sec * 200 kpixels / frame * 3 colours * 8 bits / colour, for 144Mb/s. That is beyond what 3G wireless is built to handle, but MPEG2 gives similar quality at 2Mb/s; hence the 3G requirement for that rate. MPEG2 is also bursty, needing more capacity when the image changes suddenly.

At the low-quality end, videoconferencing is usually done at 128kb/s. At this rate the coding process adds hundreds of msec of delay and the picture is poor.

If there is high demand for full-motion video, then 5MHz slots will not have sufficient capacity, but 20MHz slots and generous use of antenna diversity could support 10-40 users at that rate.

The network operating system could initiate processes in the end-user's PC so that video services can be set up easily.

4. **Other applications**

Other applications such as animated video, stereo input at the participant's locations, voice activation, automatic gain control (AGC) at the user's PC, and signal shaping to compensate for the frequency response of certain devices or software in the system, are all known in the art, and easily applied to the invention.

Examples have been shown to demonstrate various aspects of the invention, but the number of variations is by no means complete. Comparable implementations could be made for any telephony device, including personal digital assistants, fax machines, pagers, point of sale computers, amateur radios, local area networks or private branch exchanges. While particular embodiments of the present invention have been shown and described, it is clear that changes and modifications may be made to such embodiments without departing from the true scope and spirit of the invention.

The invention could also be implemented to a lesser extent on existing Internet and PSTN networks. For example, Internet servers could be given much of the functionality of the invention similar to applications such as NetMeeting. On the PSTN a specialized server could be attached to a class 5 switch. These implementations would not have all the benefits of the invention, but could apply certain aspects of its teachings.

The method steps of the invention may be embodied in sets of executable machine code stored in a variety of formats such as object code or source code. Such code is described generically herein as programming code, or a computer program for simplification. Clearly, the executable machine code may be integrated with the code of other programs, implemented as subroutines, by external program calls or by other techniques as known in the art.

The embodiments of the invention may be executed by a computer processor or similar device programmed in the manner of method steps, or may be executed by an electronic system which is provided with means for executing these steps. Similarly, an electronic memory means such computer diskettes, CD-Roms, Random Access Memory (RAM), Read Only Memory (ROM) or similar computer software storage media known in the art, may be programmed to execute such method steps. As well, electronic signals representing these method steps may also be transmitted via a communication network.

It would also be clear to one skilled in the art that this invention need not be limited to the described scope of computers and computer systems. The principles of the invention could be applied to citizen's band radio, amateur radio, or packet radio. Again, such implementations would be clear to one skilled in the art, and do not take away from the invention.

WHAT IS CLAIMED IS:

1. A system for teleconferencing comprising:

three or more user terminals, each having an audio input and an audio output;

a telecommunications network interconnecting said user terminals and operable to transport data to and from said user terminals;

separate modular mixing software for each respective user terminal, executing on said telecommunications network, and operable:

to receive separate audio signals from said audio outputs of the others of said user terminals; and

to combine said separate audio signals into a signal for said audio input of said respective user terminal which correlates to the needs of said respective user terminal.

2. A system as claimed in claim 1, further comprising:

modular connection management software for establishing interconnections between said three or more user terminals and said separate modular mixing software, including a connection proxy for each of said three or more user terminals and said telecommunications network; and

each of said connection proxies executing on said system and being operable:

to represent its owner's interests in managing the teleconference by recognizing the limitations of its resources.

3. A system as claimed in claim 2, further comprising:

a mapper for locating said separate modular mixing software for each respective user terminal for execution on different routers of said telecommunications network, trading off delay time in communicating data between routers with computational power available in order to maintain quality of service.

4. A system as claimed in claim 3, wherein said telecommunications network comprises multiple telecommunications networks with varied transport media and protocols, each of said multiple telecommunications networks having its own connection proxy.

5. A system as claimed in claim 4, further comprising:

negotiation management software including a negotiation agent for each of said user terminals and said multiple telecommunications networks, each of said negotiation agents being operable:

to execute on said system; and

to representing the interests of each of said three or more user terminals in negotiating communication over said telecommunications network;

said negotiation management software being operable:

to identify negotiation agents participating in a negotiation;

to implement a negotiation discipline which allows each said participating negotiation agent to consider a communication contract and either accept or revise said communication contract; and

to respond to said negotiation being successful by executing said communication contract.

6. A system as claimed in claim 5, wherein said separate modular mixing software is operable to combine said separate signals into two or more audio channels which define a metaphorical physical space, each user terminal having a simulated position within said metaphorical physical space whereby individual users may be recognized by their particular position in said space.

7. A system as claimed in claim 6, wherein said mixer is responsive to a request from said respective user to emphasize a particular user's voice by amplifying the corresponding audio signal prior to combining.

8. A system as claimed in claim 7, wherein at least one of said user terminals comprises a personal computer having a stereo sound card and stereophonic speakers, and said respective mixer software is operable to combine said separate signals into two audio channels.

9. A system as claimed in claim 8, wherein at least one of said user terminals comprises a connection to a PSTN network via two monophonic telephone lines, and said respective mixer software is operable to combine said separate signals into two audio channels.

10. A system as claimed in claim 9, wherein each said connection proxy comprises:

multiple software agents each being operable to perform a specific task; and

a proxy object operable to instantiate particular ones of said multiple software agents in response to requirements of communications made over said telecommunications system.

11. A server for teleconferencing comprising:

means for interconnecting user terminals and transporting data to and from said user terminals;

means for executing separate modular mixing software for each respective user terminal, said separate modular mixing software including:

means for receiving separate audio signals from said audio outputs of the others of said user terminals; and

means for combining said separate audio signals into a signal for said audio input of said respective user terminal which correlates to the needs of said respective user terminal.

12. A method of teleconferencing comprising the steps of:

receiving, at a separate modular mixer representing a respective one of three or more user terminals and executing on a telecommunications network, separate audio signals from audio outputs of the others of said user terminals; and

combining said separate audio signals into a signal for an audio input of said respective user terminal which correlates to the needs of said respective user terminal.

13. A computer data signal embodied in a carrier wave, said computer data signal comprising a set of machine executable code being executable by a computer to perform the steps of claim 12.

14. A computer readable storage medium storing a set of machine executable code, said set of machine executable code being executable by a computer server to perform the steps of claim 12.

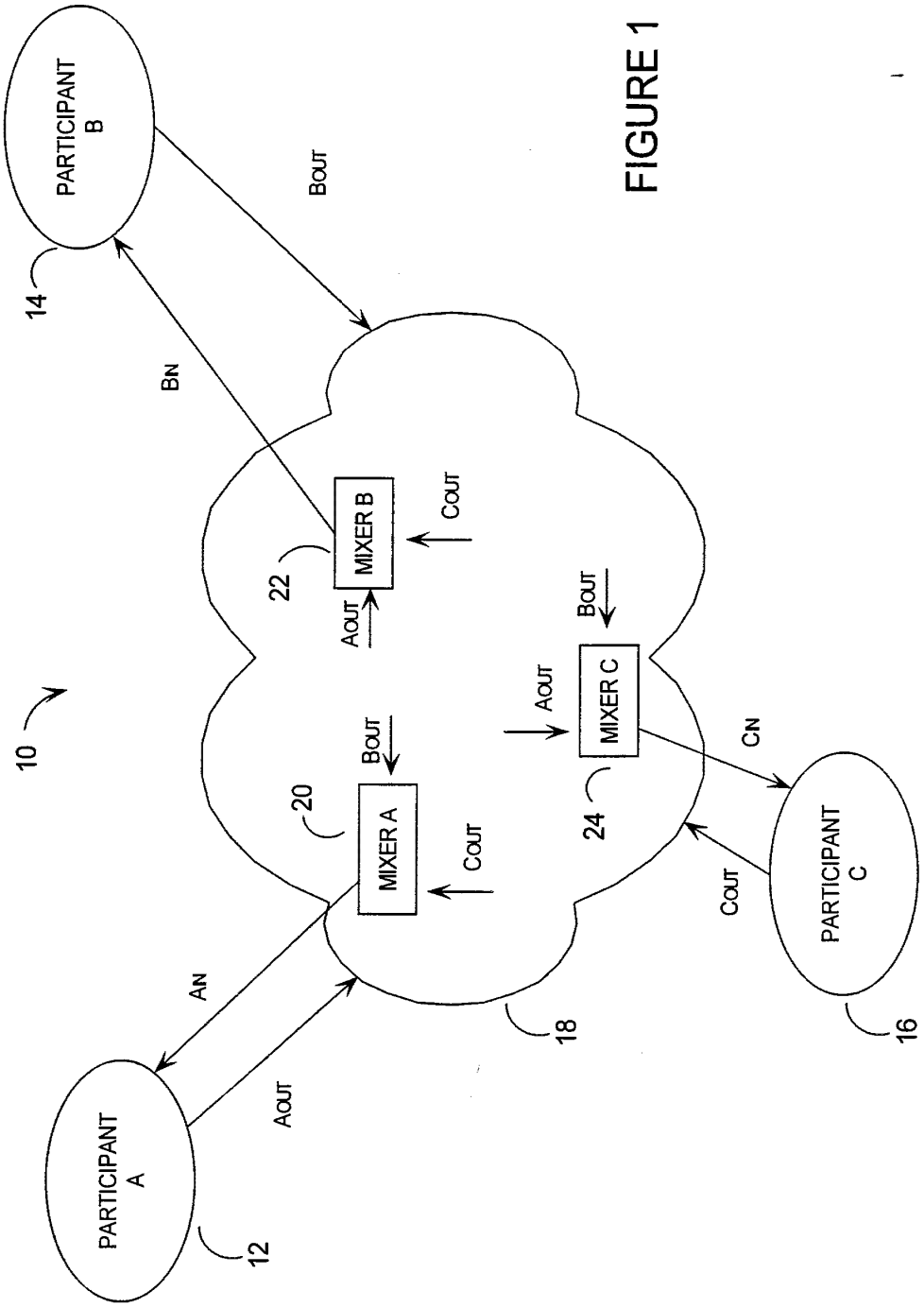

PARTICIPANT B
14
BOUT
BN
MIXER B
22
COUT
AOUT
10
BOUT
MIXER A
20
COUT
AOUT
MIXER C
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BOUT
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18
COUT
PARTICIPANT C
16

FIGURE 1

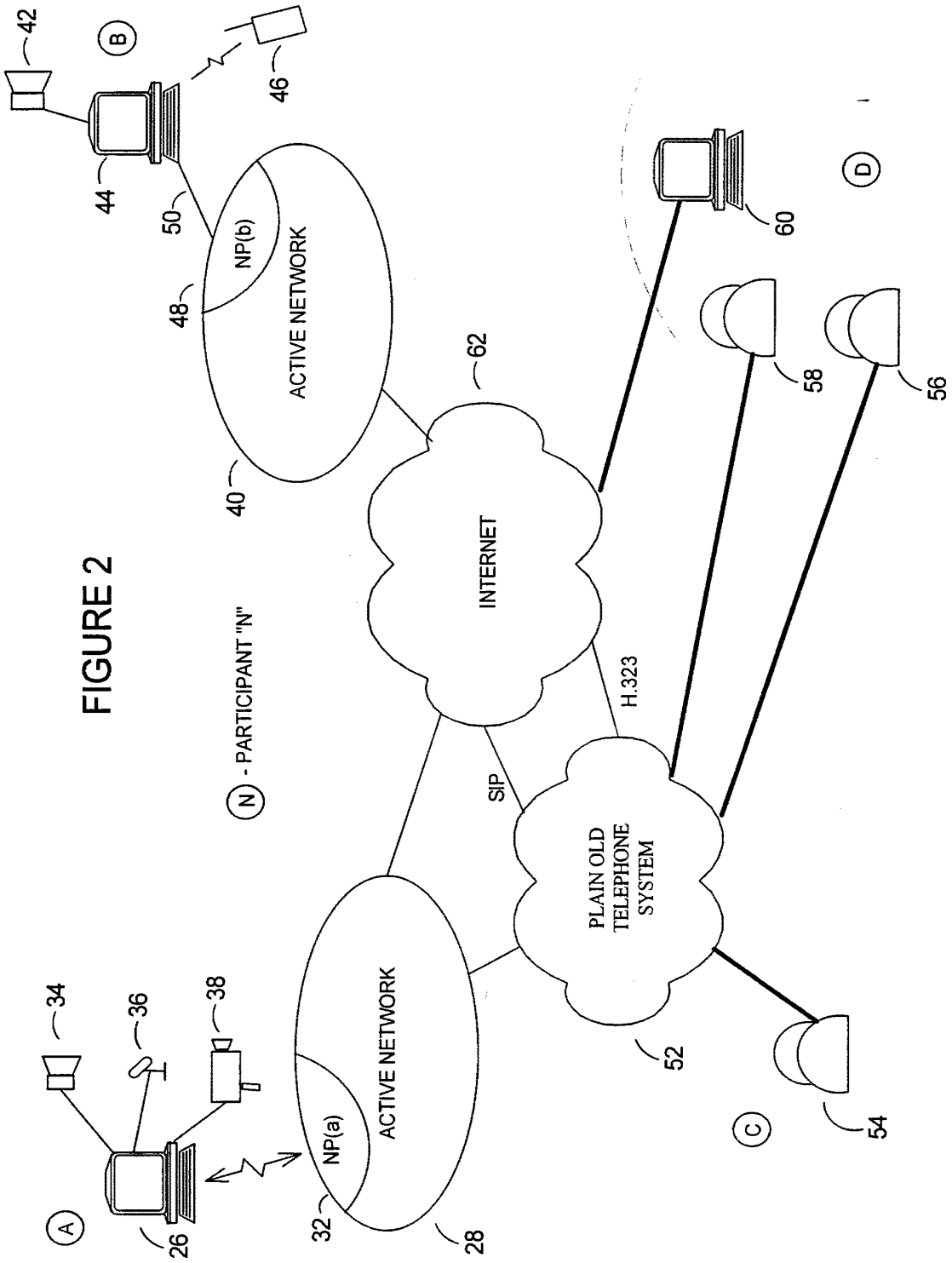
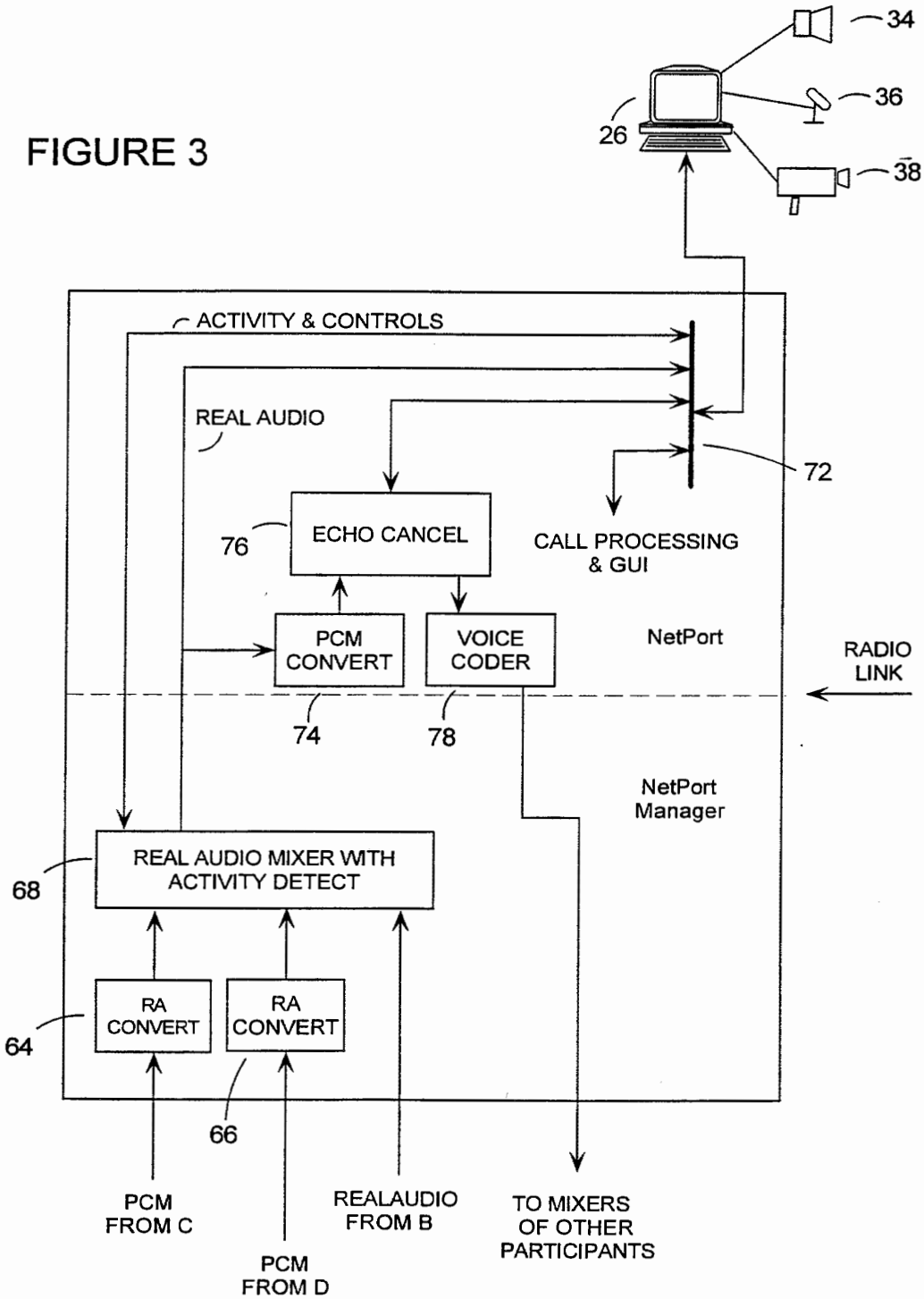

42
B
46
44
50
48
NP(b)
ACTIVE NETWORK
40
62
60
D
58
56
INTERNET
H.323
SIP
PLAIN OLD TELEPHONE SYSTEM
52
C
54
34
36
38
A
26
32
NP(a)
ACTIVE NETWORK
28
N - PARTICIPANT "N"

FIGURE 2

FIGURE 3


34
36
38
26
ACTIVITY & CONTROLS
REAL AUDIO
72
76
ECHO CANCEL
CALL PROCESSING & GUI
PCM CONVERT
VOICE CODER
NetPort
RADIO LINK
74
78
NetPort Manager
68
REAL AUDIO MIXER WITH ACTIVITY DETECT
64
RA CONVERT
RA CONVERT
66
PCM FROM C
PCM FROM D
REALAUDIO FROM B
TO MIXERS OF OTHER PARTICIPANTS

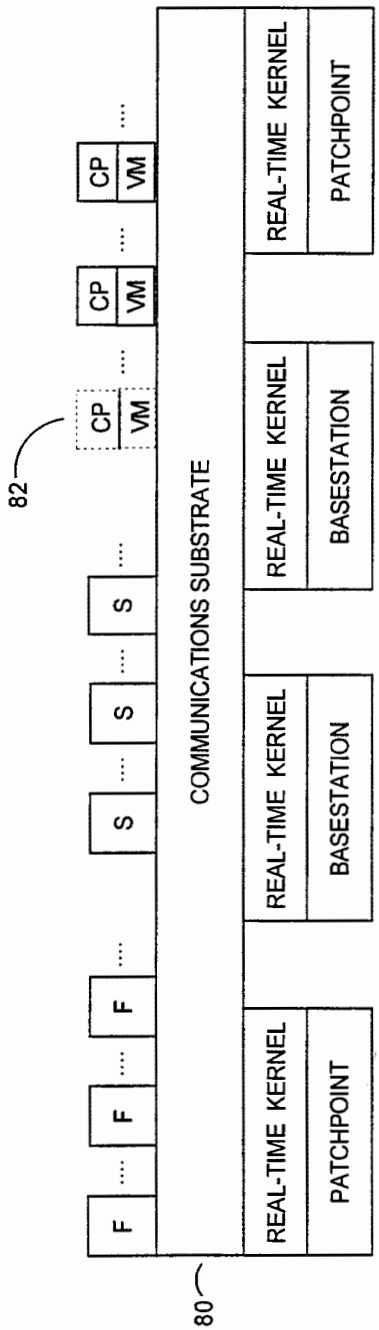

F
F
F
S
S
S
CP
VM
CP
VM
CP
VM
82
COMMUNICATIONS SUBSTRATE
REAL-TIME KERNEL
PATCHPOINT
REAL-TIME KERNEL
BASESTATION
REAL-TIME KERNEL
BASESTATION
REAL-TIME KERNEL
PATCHPOINT
80

FIGURE 4

INTERNATIONAL SEARCH REPORT

Inte. ›nal Application No
PCT/CA 99/00875

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M3/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 473 363 A (NG DENNIS ET AL) 5 December 1995 (1995-12-05) column 2, line 17 -column 3, line 10	1,11,12
A	US 5 596 635 A (RAO V R GOPALA) 21 January 1997 (1997-01-21)	
A	EP 0 680 190 A (AT & T CORP) 2 November 1995 (1995-11-02)	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 January 2000	25/01/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Vandevenne, M

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte ɔnal Application No
PCT/CA 99/00875

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5473363 A	05-12-1995	CA 2169571 A	08-02-1996
		EP 0724806 A	07-08-1996
		WO 9603831 A	08-02-1996
US 5596635 A	21-01-1997	NONE	
EP 0680190 A	02-11-1995	CA 2143591 A	30-10-1995
		JP 7303147 A	14-11-1995

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(71) Applicant *(for all designated States except US)*: COLLABORATION PROPERTIES, INC. [US/US]; Suite 7, 913 Tahoe Boulevard, Incline Village, NV 89451 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: LUDWIG, Lester [US/US]; 1230 Southdown Road, Hillsborough, CA 94010 (US). BROWN, William, Blake [US/US]; 218 Jo Drive, Los Gatos, CA 95032 (US). YUL, Inn, J. [US/US]; 22281 Bellevue, Cupertino, CA 95014 (US). VUONG, Anh, T. [AU/US]; 1180 Reed Avenue #47, Sunnyvale, CA 94086 (US). VANDERLIPPE, Richard, W. [US/US]; Apartment 7, 1247 Fulton Street, San Francisco, CA 94117 (US). BURNETT, Gerald [US/US]; 207 Atherton Avenue, Atherton, CA 94027 (US). LAUWERS, Chris [BE/US]; 350 Sharon Park Drive #H210, Menlo Park, CA 94025 (US). LUI, Richard [CN/US]; 4624 Norwalk Street, Union City, CA 94587 (US). APPLEBAUM, Daniel [US/US]; 307 Winding Way, Incline Village, NV 89450 (US).

(74) Agents: OPPERMAN, Craig, P.; Cooley Godward LLP, 3000 El Camino Real, Five Palo Alto Square, Palo Alto, CA 94306-2155 (US) et al.

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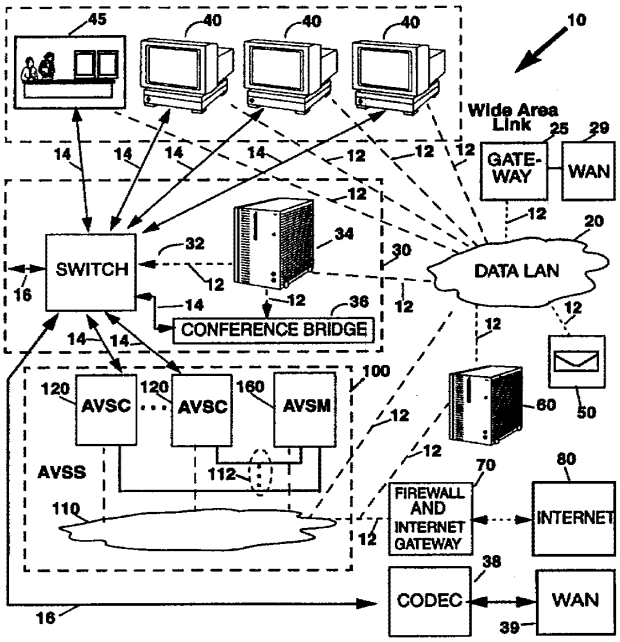
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(54) Title: SCALABLE NETWORKED MULTIMEDIA SYSTEM AND APPLICATIONS

(57) Abstract

A networked multimedia system (10) comprises a plurality of networks (40) and at least one storage server (100). A signal path interconnects the workstations (12) and the storage server (100). Each workstation (40) includes video and audio reproduction capabilities, as well as video and audio capture capabilities. Any given storage server (100) comprises a set of storage cells (120) that operate under the direction of a storage cell manager (160). A storage cell (120) may include one or more encoding (132) and transcoding converters configured to convert or transform audio and video signals originating at a workstation into a form suitable for storage. A storage cell (120) may further include one or more decoding converters (134) configured to convert stored signals into a form suitable for audio and video signal reproduction at a workstation. Each storage cell (120) additionally includes at least one storage device (150) and storage device controller (152) capable of storing, for later retrieval, signals generated by one or more converters. The storage cell controller responds to signals received from the workstations (40), and oversees the operation of the storage cells to facilitate the storage of converted audio and video signals in at least one file that can be simultaneously accessed by one or more application programs executing on one or more workstions



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SCALABLE NETWORKED MULTIMEDIA SYSTEM AND APPLICATIONS

1. BACKGROUND OF THE INVENTION

1.1 Field of the Invention

The present invention relates generally to a scalable networked multimedia system, and more particularly to a scalable audio-video server system and Application Program Interface (API) together with a range of associated software applications that together provide high-quality audio-video and multimedia processing capabilities.

1.2 Background

In recent years, considerable effort has been directed toward the development of hardware and software for network-based audio-video (A/V) and, more generally, networked multimedia systems. Such development has been driven by technology push from equipment manufacturers, as well as the commercial potential of entertainment applications such as video-on-demand and multi-player gaming; and business applications such as video messaging and multimedia conference collaboration.

A critical factor impacting the usefulness and value of a network-based multimedia system is the manner in which computational resources are organized to define a video file storage/encoding/decoding/distributionsystem, hereafter referred to an Audio-Video Storage System (AVSS). Several key requirements exist with regard to defining a Audio Video Storage System applicable to business applications. With particular emphasis on deployment in a business environment supporting multimedia conference collaboration and characterized by on-premises (i.e., local) and wide-area networks, these requirements include the following:

1) ubiquitous premises scalability;
2) ubiquitous wide-area scalability;
3) limited impact upon network loading;
4) low implementation and operational costs;
5) accommodation of multiple desktop platforms (modern, existing, and outdated);
6) accommodation of multiple compression standards;

7) support for a wide range of high-performance, high-quality video-enabled applications;

8) cost-effective ability to upgrade across successive technology and standards generations; and

9) API extensibility.

A collaborative multimedia environment employing a video storage system necessarily includes a plurality of desktop workstations, encoding and decoding resources, video file storage resources, and a premises video distribution network. Two architectural design factors greatly influence the extent to which the aforementioned key requirements can be simultaneously met, namely, 1) the organization of the encoding/decoding resources and video file storage resources relative to the desktop workstations and video distribution network; and 2) the nature of the video distribution network itself.

Encoding and decoding resources, as well as video file storage resources, can be allocated on a desktop-by-desktop basis, or a network (i.e., shared) basis. ***Figure*** 1 illustrates an exemplary Erlang resource sharing utilization relationship 2 showing computational resource utilization efficiency 1 relative to the number of users sharing the resource 6 under fixed blocking conditions. As indicated in ***Figure*** 1, network-based resource allocation 3, 4 results in much higher resource utilization efficiency than desktop-dedicated resources, which are fully allocated to one user each (5). This is turn implies that video storage systems characterized by desktop-based resource allocation leverage technology investments for less effectively than systems that employ resource sharing, particularly in situations involving a significant number of workstation users 3 and/or relatively low usage rates ($<20\%$ of workday) by users. Additionally, desktop-based resource allocation undesirably results in greater system upgrade costs.

A video distribution network can be based upon analog technology, digital technology, or their combination. Figure 2 is a graph showing the relative cost 2.1 of local-area analog and digital video signal distribution technology as a function of video quality 2.2, and hence includes an analog cost-versus-performance/quality curve 2.3 and a digital cost-versus-performance/quality curve 2.4. Across a first, lower-performance and lower-quality region 2.5 in ***Figure*** 2 that could provide performance and quality suitable,

for example, for technology experiments, digital signal distribution technology is significantly more expensive than its analog counterpart. The slope of the digital cost-versus-performance/quality curve 2.4 throughout this first region 2.5 is nearly constant, while that for analog cost-versus-performance/quality 2.3 gradually rises with increasing performance and image quality 2.2. A second region 2.6 shown in ***Figure*** 2 spans a practical region of operation 2.7 relative to business-performance and business-quality levels, which herein correspond to video delivered at 30 frames per second (fps) at a resolution ranging from approximately 320 x 240 to 640 x 480 pixels or other standard resolution. Across the second region 2.6, the analog cost-versus-performance/quality curve 2.3 begins to increase rapidly as performance and quality 2.2 improves, eventually meeting and exceeding the digital cost-versus-performance/quality curve 2.4. However, throughout most of the aforementioned practical region of operation 2.7, analog signal distribution technology remains significantly less expensive than its digital counterpart. Thus, for most business environment performance and quality requirements, analog signal distribution technology is more cost-effective than digital signal distribution technology. Readily-available digital network technology lacks sufficient bandwidth for delivering business-quality, real-time or near-real-time video to a large number of users. Finally, a third region 2.8 in ***Figure*** 2 spans high-end or special-situation performance and quality levels 2.2. Within the third region 2.8, the cost of digital signal distribution technology begins to rapidly escalate.

Figure 2 additionally indicates the manner in which the analog and digital cost-versus-performance/quality curves 2.3, 2.4 can be expected to evolve over time. For each technology type, overall cost 2.1 will decrease relative to a given performance and quality level 2.2 as the technology evolves. The general shape of the curves 2.3, 2.4 shown in ***Figure*** 2, however, can be expected to remain essentially the same. Moreover, digital signal distribution technology is likely to evolve at a much more rapid pace than analog distribution technology in the near term, which implies higher costs 2.1 over a system's lifetime due to system upgrade frequency. Thus, video storage systems that rely upon all-digital video distribution technology are significantly less cost-effective than those employing analog distribution technology.

Known premises-based networked video storage systems fail to come anywhere close to meeting the aforementioned key requirements. Much of the reason for this results from the design approaches taken relative to the aforementioned architectural considerations, particularly when the architectural cornerstones are driven by established technology marketing trends rather than designing to meet true business requirements. What is needed is a video storage system that utilizes resource sharing and the full evolvable range of networked signal distribution technology to meet key cost and application quality requirements described above.

2. SUMMARY OF THE INVENTION

The present invention is a networked multimedia system comprising a plurality of workstations and at least one storage server. At least one signal path interconnects the workstations and the storage server. Each workstation includes video and audio reproduction capabilities, as well as video and audio capture capabilities. Any given storage server comprises a set of storage cells that operate under the direction of a storage cell manager. A storage cell may include one or more encoding and/or transcoding converters configured to convert or transform audio and video signals originating at a workstation into a form suitable for digital storage. A storage cell may further include one or more decoding converters configured to convert digitally-stored signals into a form suitable for audio and video signal reproduction at a workstation. Each storage cell additionally includes at least one storage device and storage device controller capable of storing, for later retrieval, signals generated by one or more converters.

The storage cell manager is responsive to signals received from the workstations, and oversees the operation of the storage cells to facilitate the storage of converted audio and video signals in at least one file that can be simultaneously accessed by one or more application programs executing on one or more workstations. In one embodiment, the storage cell manager directs the storage of converted signals by selecting a storage cell, and determining whether a converter contained therein has available bandwidth or capacity. If so, the storage cell manager selects a storage device controller within the selected storage cell, and determines whether the controller has available bandwidth or capacity. If so, the storage cell manager determines whether a storage device associated

with the controller has available bandwidth or capacity, in which case the storage cell manager directs the converter and the selected storage device controller to convert and store the converted signals upon the selected storage device. In the event that bandwidth or capacity is unavailable for the converter, the storage device controller, or the storage device, the storage cell manager selects other such devices within the selected storage cell for consideration relative to bandwidth or capacity availability. If the selected storage cell has reached a bandwidth or capacity limit, the storage cell manager selects another storage cell for consideration. In the event that the storage cell manager or the storage server itself has reached a bandwidth or capacity limit, the storage cell manager requests another storage cell manager to direct the storage of the converted signals.

The storage cell manager further selectively directs the copying or transfer of stored converted signals between 1) any plurality of storage devices within a given storage cell; and/or 2) any set of storage cells, where one or more such storage cells may be under the control of another storage cell manager. Such copying or transfer maximizes the likelihood that any given file containing converted signals will be simultaneously accessible to one or more application programs executing upon multiple workstations. The storage cell manager may also direct the transfer of stored converted signals to workstations or other types of servers coupled to the networked multimedia system.

The storage cell manager also oversees the retrieval and decoding conversion of stored converted signals under the direction of one or more application programs executing on one or more workstations. Such retrieval and decoding conversion facilitates real-time and/or near real-time audio and video signal reproduction at such workstations.

In common usage, a multimedia file comprises one or more types of files and/or references to files, where such files may include textual, graphical, image, audio, and/or video information and/or commands or event sequences for generating or rendering such information. The multimedia file also includes temporal correlation data specifying one or more manners in which its constituent files and/or file references are associated in time. In addition to the above operations, the storage cell manager in one embodiment oversees the storage of these multimedia files or portions of them. The storage cell manager further oversees the retrieval of multimedia file contents and the distribution of such

contents to one or more workstations in conjunction with audio and video signal reproduction at such workstations, in a manner specified by the temporal correlation data.

The system is configured to create a pointer referencing a predetermined file or group of files on one or more of the storage cells; to transmit at least the pointer to a receiving application program, and to render the contents of the file or group of files at a workstation by retrieving data from the file or group of files identified by the pointer.

The system also provides a viewer application for setting up connections and sessions; preparing files for viewing, and providing the necessary viewer interface to enable a user to access and manipulate files on the workstation, as permitted.

Further, the system has at least one stored-video application program on at least one of the storage sub-system and a workstation; and share at least one process primitive across at least two of the stored-video application programs. The stored-video application programs are one or more from the group consisting of: videoconference recording; video mail; video answering system; video documents; and video publishing. The system is further configured to share at least one data primitive across at least two of the plurality of stored-video application programs.

The system can also invoke a process primitive and a data primitive as standardized attachments to a file. Such attachment is in a format that is accepted by third parties in accordance with a standard data interchange protocol.

The system can also be configured to establish real time data sharing sessions between at least two workstations using a synchronized data sharing process as a shared conference window. It can use a video conference application to establish a video conference session among the interconnected workstations, and to use a video conference recording application to record at least a portion of the established video conference session on at least one storage sub-system.

The system is further configured to provide at least one video mail application, which can do at least one of authoring a video mail message for transmission to storage subsystem and reading a video mail message previously stored on the storage subsystem. The system typically utilizes a storage cell to record at least one of an audio, a video message, and a multimedia message from an incoming caller whose call attempt is one of

not answered by the recipient, refused by the recipient, and made solely to leave a message without connecting to the recipient. Video files stored on a storage cell can be included in an on-line electronic document.

The system further can incorporate a shareboard or other window-sharing session, either static or synchronized with video or audio information to enable a multimedia implementation of at least one of video conference recording, video mail, video answering system, video documents, and video publishing.

Moreover the system can incorporate a video editing program. The video editing program may be implemented either as an integral part of at least one of the applications or by incorporating a third-party video editor.

The system can support video mail applications either using conventional third-party e-mail systems or e-mail systems enhanced to offer the ability to obtain and or file copy events from the e-mail system.

The system can support video document applications either using conventional third-party document systems or document systems enhanced to offer the ability to obtain and or file copy events from the document system.

In addition, the system can function as an internet proxy server for reducing the total number of copies of video files in the enterprise by file sharing, or reducing enterprise network load by transporting video files over a separate audio-video network, or transcoding among multiple audio-video formats, and or allowing any audio-video workstation in the enterprise to serve as a video publisher for the enterprise. Finally, the system, functioning as an internet proxy server, enables the implementation of at least one animated annotation on the internet.

3. BRIEF DESCRIPTION OF THE DRAWINGS

For fuller understanding of the principles of the present invention, reference is made to the several figures of the drawing. In the drawing:

Figure 1 is an exemplary Erlang diagram showing computational resource utilization efficiency relative to the number of users sharing the resource under fixed blocking conditions.

Figure 2 is a graph showing the relative cost of analog and digital distribution technology as a function of performance and image quality.

Figure 3 is a block diagram of a Collaborative Multimedia Computing Environment (CMCE) employing an Audio/Video Server System (AVSS) constructed in accordance with the present invention.

Figure 4 is a block diagram of an alternate embodiment of a CMCE constructed in accordance with the present invention.

Figure 5 is a block diagram of an Audio/Video Storage Cell (AVSC) constructed in accordance with the present invention is shown.

Figure 6 is a block diagram of a first embodiment of a shared coding unit of the present invention.

Figure 7 is a block diagram of a second embodiment of the shared coding unit.

Figure 8 is a block diagram of a third embodiment of the shared coding unit.

Figure 9 is a block diagram of an Audio/Video Server Manager (AVSM) constructed in accordance with the present invention.

Figure 10 is a block diagram illustrating client-server session communication in one embodiment of the present invention.

Figure 11 is a block diagram showing an exemplary recording control Graphical User Interface (GUI).

Figure 12 is a block diagram showing an exemplary playback control GUI.

Figure 13 is a block diagram showing an exemplary browsing control GUI.

Figure 14 is a block diagram of an exemplary networked AVSS organization.

Figure 15 is a representation of a communication class hierarchy in the present invention.

Figure 16 is a representation of an AVSM class relationship in the present invention.

Figure 17 is a representation of an AVSC class relationship in the present invention.

Figure 18 is an exemplary request sequence diagram corresponding to AVSC channel acquisition.

Figure 19 is an exemplary request sequence diagram for an "Open" request.

Figure 20 is an exemplary request sequence diagram for a "Close" request.

Figure 21 is an exemplary request sequence diagram for a "Delete" request.

Figure 22 is an exemplary request sequence diagram for a "Record" request.

Figure 23 is a exemplary request sequence diagram corresponding to a request for a file transfer from a non-premises AVSS.

Figure 24 is an exemplary request sequence diagram corresponding to file replication operations.

Figure 25 is an exemplary request sequence diagram corresponding to particular AVSS administrative operations.

Figure 26 is a block diagram showing client application programs communicating with the AVSM and A/V network manager.

Figure 27 is an overview of the file hierarchy.

Figure 28 is an exemplar data primitive.

Figure 29 is an exemplar data primitive implemented as an attachment.

Figure 30 is an exemplar system for implementing the software applications of the present invention.

Figure 31 is a transaction flow diagram among the application elements which facilitate local-area video mail.

Figure 32 is a transaction flow diagram among the application elements which facilitate wide-area video mail.

Figure 33 is a representation of the life cycle of an exemplar video message file.

Figure 34 is a comparative diagram of the ownership and readability of video files associated with a video mail attachment, over the message lifetime.

Figure 35 is an overview of one embodiment of the video answering system of the present invention.

Figure 36 is a data flow diagram detailing the operation of one embodiment of the present invention.

Figure 37 an overview of the video conference recording application of the present invention.

Figure 38 an overview of several of the components of the present invention required to implement video conference recording.

Figure 39 is a signal state diagram of a two-party video conference.

Figure 40 is a signal state diagram of a video conference, including a third party or implementing conference recording.

Figure 41 is a signal state diagram at the initiation of conference recording.

Figure 42 is a signal state diagram of a first video conference representation.

Figure 43 is a signal state diagram of a second video conference representation.

Figure 44 is a signal state diagram of a third video conference representation.

Figure 45 is a data flow diagram of one software implementation of the video conference application of the present invention.

Figure 46 is a signal state diagram at the initiation of video conference playback.

4. DETAILED DESCRIPTION

4.1 Architectural Framework

The present invention comprises at least one shared centralized audio-video (A/V) file storage and processing system within a collaborative or networked multimedia computing environment. Herein, this collaborative or networked multimedia computing environment comprises a plurality of user workstations plus multimedia-enabled servers that are linked together via one or more networks. The present invention further comprises workstation-based application programs plus control software executing on the servers that facilitate the exchange of A/V and/or multimedia information among workstations and servers in real-time, near-real-time, and/or non-real time. The A/V file storage and processing system provides a wide range of video storage and playback services to workstation application programs and/or other servers, including several of analog to digital encoding, digital to analog decoding, transcoding digital file storage, multimedia file recording, multimedia file playback analog streaming digital format transcoding, digital file streaming, digital file transfer, and file administration operations that facilitate the recording/ encoding, storage, distribution, decoding/playback, copying, archival, and deletion of A/V and/or multimedia files.

Figure 3 is a block diagram of a Collaborative Multimedia Computing Environment (CMCE) 10 employing an Audio/Video Server System (AVSS) 100 constructed in accordance with the present invention. The CMCE 10 comprises a data network 20; an A/V network 30; a plurality of user workstations 40 and/or a set of A/V conference rooms 45; an Audio/Video Server System (AVSS) 100; and a set of supporting server systems that include an e-mail system 50, an intranet server system 60, and a firewall/internet gateway system 70. The data network 20 couples the A/V network 30, the workstations 40, the A/V conference room(s) 45, each supporting server system 50, 60, 70, and the AVSS 100. The data network 20 also maintains a wide area link that is coupled to a Wide Area Network (WAN) gateway 25, which is coupled to a first WAN 29. The A/V network 30 couples the workstations 40, the A/V conference rooms 45, and the AVSS 100. The A/V network 30 maintains at least one trunk line coupling 16 to a remote and/or another local A/V network 30. The A/V network 30 additionally maintains a trunk line coupling 16 to a coder/decoder (codec) gateway 38, which is coupled to a second WAN 39.

4.2 Signal Distribution Networks

The present invention supports both real-time (or near real-time) and delayed A/V signal exchange or distribution on a local and/or remote basis. In the context of real-time A/V signal distribution via currently-available networking technologies, analog premises networking provides, for the foreseeable future, higher video quality and real-time performance at a lower cost than digital premises networking. In the embodiment shown in *Figure* 3, the CMCE 10 relies upon the data network 20 to facilitate the exchange of digital information between CMCE elements, and the A/V network 30 to facilitate analog signal exchange. Thus, the analog signal premises distribution network shown in *Figure* 3 provides a low-cost CMCE implementation capable of delivering high-quality A/V signals (i.e., NTSC television-quality video at 640 x 480 pixels or similar standard television resolution, plus 7-15 kHz high-fidelity audio) in real-time. This embodiment additionally ensures that real-time A/V signal distribution has essentially no impact upon local data network loading. As described in detail below, alternate CMCE embodiments could rely upon a single physical network that utilizes any of a variety of suitable analog

and/or digital multiplexing scheme; these will become increasingly important over time as suggested by the time evolution of the curves in ***Figure*** 2.

In ***Figure*** 3, the data network 20 provides for both local- and wide-area digital networking, while the A/V network 30 provides for both local- and wide-area analog networking. In terms of local analog networking, a single instance of the A/V network 30 typically directly serves one AVSS 100 plus an associated group of workstations 40 and/or A/V conference rooms 45 located within a single premises. Hence, an A/V network 30, its corresponding AVSS 100 and workstations 40 and A/V conference rooms 45 are referred to herein as a premises group. Multiple proximate premises groups may be locally linked via trunk lines among corresponding data and A/V networks 20, 30 to form a common campus. One example of this is a large office building where different areas or building floors are served by different premises groups. Another example involves situations where a corporate headquarters facility includes multiple generally-proximate buildings, one or more premises groups could be deployed within each building. Each of the premises groups within these buildings could then further be locally coupled to form a common campus, in a manner consistent with generally-accepted use of the term "campus" in corporate environments. The structure and functionality of the data and A/V networks 20, 30, and the manners in which they support premises, campus, and wide-area or remote networking, are described in detail hereafter.

4.2.1 Data Network

The data network 20 comprises a conventional network hub, plus data links 12 that implement an Ethernet, Asynchronous Transfer Mode (ATM), or other type of network, and which facilitates the exchange of data and control signals between the elements to which it is coupled either locally or via the wide area link. In the context of the present invention, the data network 20 is a Local Area Network (LAN) that spans an extent ranging from approximately a few tens of meters to perhaps one kilometer. The data links 12 can comprise unshielded twisted pair (UTP) wiring, compatible to standard telephone system wiring, or essentially any other type of network communication coupling (coax, optical, wireless radio, etc.).

The data network 20 facilitates digital communication within at least one premises group, where such communication may include control signal transfer, digital file transfer, and/or digital streaming. Via a set of data links 12 locally coupled to conventional routers, data switching hubs, or a network backbone, one or more data networks 20 can readily serve multiple premises groups (i.e., a common campus) subject to geographic, network-loading, and signal quality constraints, in a manner readily understood by those skilled in the art. The data network's wide area link facilitates digital communication between premises and non-campus or remote CMCE elements. The wide area link is coupled to the gateway and WAN 25, 29, which are implemented in a conventional manner such as that described in U.S. Patent No. 5,617,539.

4.2.2 A/V Network

The A/V network 30 distributes A/V signals under the direction of a server that is responsive to requests and messages received from other CMCE elements. The A/V network 30 comprises an A/V switch 32, an A/V network manager 34, and a conference bridge 36. The A/V switch 32 is coupled to the conference bridge 36, the workstations 40, and the AVSS 100 via analog links 14. The A/V switch 32 maintains trunk line couplings 16 to one or more campus A/V networks, and also to the codec gateway 38, which couples the A/V switch 32 to the second WAN 39. The A/V network manager 34 is coupled to the data network 20, the A/V switch 32, and the conference bridge 36 via digital links 12.

The A/V switch 32 comprises standard commercially-available circuitry for selectively establishing analog signal couplings between a source port and one or more output ports. The A/V switch 32 may be implemented using CMOS analog switching elements that are linked by buses to form a cross-bar switch. Such CMOS analog switches are controlled by one or more microprocessors that receive commands through serial or data network ports.

A trunk line 16 couples the A/V switch 32 to other campus-based A/V switches 32. In addition, a trunk line 16 couples the A/V switch 32 to the codec gateway 38. In one embodiment, the codec gateway 38 is conventional. Other embodiments may involve physically separate switching multiplexers and/or access multiplexers. The codec gateway 38 could be implemented, for example, using a Zydacron codec (Zydacron, Inc.,

Manchester, NH) or a Tandberg codec (Tandberg, Lysaker, Norway and Herndon, VA). The codec gateway 38 is coupled to the second WAN 39, thereby facilitating wide-area A/V networking. In general, the second WAN 39 comprises a conventional network capable of providing a guaranteed quality-of-service level and low latency data transfer, such as a T1, DS3, ISDN, public-switched, or other network. Those skilled in the art will understand that the WAN 39 utilized for wide-area A/V networking may be the same as that used for wide-area data networking (i.e., a single conventional ISDN, T-carrier, ATM, or frame relay telecommunications WAN), where the A/V and data signals are multiplexed in accordance with priority and quality-of-service considerations in a standard manner. That is, the present invention could be served by a single WAN rather than separate WANs 29, 39.

The conference bridge 36 comprises conventional audio mixing and video mosaicing circuitry. The conference bridge 36 selectively provides A/V and/or multimedia conference participants with one or more conference video images, as well as conference audio streams. In one embodiment, the conference video images comprise mosaiced subsets of video images generated by conference participants, as well as a video mosaic of each video image associated with all conference participants. Similarly, the conference audio streams comprise subsets of audio signals generated by conference participants, plus an audio stream corresponding to all conference participants.

The A/V network manager 34 comprises a server plus attendant software that coordinates or manages the operation of the A/V switch 32 and conference bridge 36 in response to requests received over the data network 20. The A/V network manager 34 provides an Application Program Interface (API) through which client application programs may request A/V and/or multimedia switching and/or conferencing services. Thus, the A/V network manager 34 directs the A/V switch 32 in establishing A/V and/or multimedia sessions and/or conferencing sessions between workstations 40, A/V conference rooms 45, the AVSS 100, and/or the trunk line 16.

In one embodiment, the A/V network manager comprises a collaborative A/V and/or multimedia conferencing system that is implemented in the manner described in U.S. Patent No. 5,617,539, entitled "Multimedia Collaboration System with Separate Data

Network and A/V Network Controlled by Information Transmitting on the Data Network."

4.2.3 Multimedia Network

Taken together, the data network 20 and the A/V network 30 comprise a Multimedia Local Area Network (MLAN). Wide-area networking is facilitated by the data network's wide-area link gateway and WAN, 25, 29, plus the A/V network's trunk line coupling 16 to the codec gateway and WAN, 38, 39. The MLAN WANs 29, 39 of the present invention may be implemented in the manner described in U.S. Patent No. 5,617,539. A collection of MLANs coupled by WAN, 29, 39 facilitate the exchange of A/V and/or multimedia information between premises, campus, and/or remote CMCE elements.

4.2.4 Alternate Signal Distribution Architecture

As previously indicated, the present invention could rely upon a single network for distributing both data and A/V signals. ***Figure*** 4 is a block diagram of an alternate embodiment of a CMCE 11 constructed in accordance with the present invention. With regard to ***Figure*** 3, like reference numbers have been used to denote like elements in ***Figure*** 4. In the alternate embodiment, the CMCE 11 comprises a data network 20; an A/V conference manager 34 coupled to a conference bridge 36; a set of workstations 40 and possibly one or more AV conference rooms 45; a set of supporting server systems 50, 60, 70; and an AVSS 100. The data network 20 couples the A/V conference manager 34, the conference bridge 36, the workstations 40 and A/V conference room(s) 45, each supporting server system 50, 60, 70, and the AVSS 100.

In the single-network CMCE 11, the data network 20 is typically implemented as an IP or ATM network. A/V file exchange between CMCE elements such as the AVSS 100 and workstations 40 or A/V conference rooms 45 would occur via streaming or file transfer, and each workstation 40 may include compression/decompression resources.

4.3 Workstations And A/V Conference Rooms

Users interact with CMCE elements, including the AVSS 100, via application programs executing on workstations 40. Each workstation 40 comprises a conventional desktop-based computer system having a processing unit, memory, disk drive, display

device, keyboard, mouse, and speaker(s). Any particular workstation 40 can be implemented in accordance with essentially any hardware/software platform, such as a Windows-based (Microsoft Corporation, Redmond, WA) personal computer, an Apple-based (Apple Computer Corporation, Cupertino, CA) computer, a Unix-based computer, or other type of system. Each workstation 40 is also equipped with a video camera and a microphone, such as in the manner described in U.S. Patent No. 5,617,539. The video camera and microphone generate a high-quality A/V signal that is directed to the A/V network 30 via an analog line 14. In like manner, the display device receives a high-quality A/V signal from the A/V network 30 via the analog line 14.

In embodiments in which each workstation 40 is coupled to both the data network 20 and the A/V network 30, a variety of possibilities exist for the transfer of A/V and/or multimedia files to any given workstation 40. In particular, the present invention supports "real-time" analog A/V file transfer (i.e., analog streaming) to any workstation via the A/V network 30, as well as both digital streaming and the transfer of entire digital files to any workstation 40 via the data network 20. The present invention additionally supports real-time analog A/V file transfer simultaneously with either digital streaming or digital file transfer to any combination of workstations 40. The particular types of file transfer employed at any given moment are determined by application programs executing on the workstations 40 as well as premises and/or non-premises application servers coupled to the CMCE 10.

In addition to exchanging A/V signals with the workstations 40, the A/V network 30 can exchange A/V signals with presentation, conferencing, and/or computing resources located in one or more A/V conference rooms 45, where such resources may include cameras, monitors, televisions, microphones, and speakers. This in turn means that a group meeting held in an A/V conference room 45 can exchange A/V and/or multimedia information with individual workstations 40 or other A/V conference rooms 45, on a premises, campus, or remote basis.

4.4 Supporting Servers

The AVSS 100 provides novel A/V and/or multimedia functionality to various application programs, as described in detail below. In so doing, the AVSS 100 selectively

leverages the capabilities of the supporting server systems 50, 60, 70. The e-mail system 50 preferably comprises conventional e-mail server hardware and software capable of creating, storing, and distributing e-mail messages with attached files between users or target destinations. The manners in which the AVSS 100 interacts with the e-mail system 50 to provide video attachments and other multimedia e-mail capabilities are described in detail below.

Many corporations or enterprises employ an intranet system, which comprises a private network upon which enterprise-related information is distributed and/or exchanged in accordance with conventional internet protocols. An intranet system leverages readily-available, low cost internet software tools to efficiently provide employees or enterprise members with access to enterprise-wide information. Such enterprise-wide information may include corporate communications documents or bulletins; training materials; product and/or project information; personnel directories; and member- or employee-specific data maintained within an enterprise database, where access to such data is granted only for authorized members. The intranet server system 60 comprises conventional hardware and software that provide information sharing or distribution services to employees or authorized members within a corporation or organization, where such information sharing occurs in accordance with a conventional internet protocol suite (i.e., TCP/IP). Details concerning the manners in which the AVSS 100 interacts with the intranet server system 60 to facilitate A/V and/or multimedia information sharing are provided below.

The internet gateway/firewall system 70 comprises hardware and software that implement a conventional internet firewall security and File Transfer Protocol (FTP) gateway system, for exchanging messages and A/V or multimedia files between the AVSS 100 and the public internet 80. Specific AVSS functionality in this regard is described in detail below.

4.5 AVSS Architecture

The AVSS 100 comprises a repository for A/V file storage and processing resources, to which application programs executing on premises, campus, and/or remote CMCE elements have shared access. In the present invention, application programs initiate or generate service requests directed to the AVSS 100 in response to user actions.

Such application programs may be executing on premises, campus, or remote workstations 40, as well as computers coupled to an enterprise intranet or the public internet. Service requests comprise an appeal for either a) A/V resource or service allocation; or b) A/V resource or service state information. The AVSS 100 receives the service requests via the data network 20, and establishes message-based service sessions with the A/V network 30, workstations 40, supporting servers 50, 60, 70, and/or one or more campus-based or remote CMCE elements to provide A/V and/or multimedia services in accordance with such requests. Messages generated during a service session may comprise state information, control commands, and confirmations. The structure and functionality of the AVSS 100, and the manners in which the AVSS 100 processes service requests and generates messages, are described in detail hereafter.

As shown in ***Figure*** 3, the AVSS 100 comprises an internal network 110, at least one Audio/Video Storage Cell (AVSC) 120, and an Audio/Video Server Manager (AVSM) 160. The internal network 110 couples each AVSC 120, the AVSM 160, the data network 20, the intranet server 60, and the internet gateway/firewall system 70. In addition, the AVSM 160 supports coupling to each AVSC 110 via a dedicated subnet 112, as further described below. Moreover, an analog line 14 couples each AVSC 110 to the A/V network 30.

Each AVSC 120 serves as an A/V file repository, as well as a repository for shared A/V processing resources, including encoders, decoders, and possibly transcoders. The AVSM 160 coordinates the activities of the AVSCs 120, and manages processes both internal and external to the AVSS 100 to carry out requests generated by either premises, campus, or remote CMCE elements. The structure and functionality of each AVSC 120 and the AVSM 160 are described in detail below.

The internal network 110 comprises a conventional high-bandwidth network that facilitates high-speed transfer of A/V files between a) individual AVSCs 120; b) AVSCs 120 and the data network 20; and c) AVSCs 120 and the intranet server system 60 or the internet gateway/firewall system 70. The internal network 110 additionally serves as the medium by which service requests and messages are exchanged between the AVSM 160 and the data network 20. The bandwidth of the internal network 110 is sufficient to carry

service requests, control messages, file transfers, and the file streaming capacity of the composite AVSS 100. In one embodiment, the internal network 110 may be implemented as a portion of the data network 20.

The dedicated subnet 112 provides for the exchange of messages and control signals between the AVSM 160 and individual AVSCs 120. In the event that the AVSS 100 utilizes few AVSCs 120, such messages and control signals can be carried by the internal network 110, eliminating the need for the subnet 112. As the AVSS 100 is scaled, however, use of the subnet 112 is desirable to minimize internal network loading.

4.5.1 AVSC Architecture

As previously indicated, each AVSC 120 provides A/V file storage and A/V processing resources that are shared by other CMCE elements. ***Figure*** 5 is a block diagram of an AVSC 120 constructed in accordance with the present invention. The AVSC 120 comprises a processing unit 122, a shared data storage unit 124, at least one network interface 126, an AVSM interface 128, at least one shared coding unit 130, at least one A/V interface unit 140, and a memory 150 that includes an AVSC object memory 152, an AVSC state memory 154, and an operating system 156. With the exception of the A/V interface unit 140, each AVSC element is coupled to a common AVSC bus 159. The A/V interface unit 140 serves as an interface between each shared coding unit 130 and the A/V switch 32. Finally, the network interface 126 and the AVSM interface 128 couple the AVSC 120 to the AVSS internal network 110 and subnet 112, respectively.

The processing unit 122 comprises a conventional high-performance processor for executing program instructions stored within the memory 150. The network interface 126 comprises conventional network interface circuitry for managing data exchanges between the AVSC 120 and the internal network 110. In like manner, the AVSM interface 128 comprises conventional network interface circuitry for managing the exchange of messages and control signals between the AVSC 120 and the AVSM 160. The operating system 156 preferably comprises conventional, real-time multitasking operating system software such as Windows NT (Microsoft Corporation, Redmond, WA) or real-time Unix.

The AVSC object memory 152 stores a plurality of AVSC software objects that direct AVSC hardware allocation and resource locking; A/V file encoding, decoding, and transcoding operations; and file management operations such as file replication, transfer, and deletion, as described in detail below. The AVSC objects also maintain the contents of the AVSC state memory 154, which includes the following information:

1) encoder/decoder/transcoder resource capability and current status/utilization;
2) current storage device capacity and utilization;
3) a time-stamped and indexed request queue, for both incoming and outgoing requests;
4) a time-stamped and indexed message queue, for both incoming and outgoing messages;
5) a time-stamped and indexed file transfer event queue; and
6) an AVSC event log, specifying standard time-stamped events, as well as occurrences of encoder, decoder, transcoder, storage device, and/or network faults.

To minimize the amount of hardware required to meet any particular A/V file storage and/or multi-user A/V file access performance requirements, premises A/V file storage hardware should be shared or centralized rather than localized at each workstation 40. Centralization of data storage hardware also maximizes system-wide utilization and administration efficiency due to statistical averaging, and can also improve fault-tolerance. The shared data storage unit 124 comprises at least one high-capacity disk drive for storing A/V files and data, as well as a corresponding disk drive controller. Within a CMCE 10 having a premises analog signal distribution network, A/V file storage resources are fully AVSC-based rather than workstation-based. In AVSS implementations having more than one AVSC 120, multiple copies of any given A/V file may be stored across different AVSCs 120, as described in detail below, to improve the system's response in accessing commonly accessed files. Further, when an AVSS 100 employs a single AVSC 120, multiple copies of any given A/V file could be stored across multiple 1) shared data storage units 124 within the AVSC 120; and/or 2) storage devices coupled

to the AVSC 120. From an external perspective, the AVSS 100 operating in this manner provides centralized A/V file storage, while A/V files are distributed internally amongst the shared data storage units 124 across the set of AVSCs 120.

Each shared coding unit 130 comprises at least one instance of encoding, decoding, and/or transcoding resources. For shared coding units with more than one encoder and/or decoder, a multichannel version of the A/V interface 140 will be required (or, alternatively multiple A/V interfaces 140 can be provided for a single coding unit 130. In some embodiments, transcoding may be done in software by the Processing unit. In other embodiments, a dedicated hardware transcoder may be used - such an instance of 130 would not require an AV interface 140. The present invention can support essentially any encoding format, including MPEG-based, RealMedia, and NetShow formats. In one embodiment, the AVSC 120 uses a given encoding format as a default format, for example, MPEG1 encoding that is tunable within a compression performance range of approximately 1.1 to 3 Mbps. The particular encoding format employed at any given time is an application-dependent and/or user-dependent parameter, as further described below.

The creation and recording of an A/V file typically requires a single encoding session, which may be stopped or paused and restarted as necessary. Since an A/V file is likely to be played back multiple times, either in repeated or concurrent sessions, decoding is likely to be a much more frequently requested operation than encoding. Across the set of AVSCs 120 within the AVSS 100, one or more shared coding units 130 may support different encoding, decoding, and/or transcoding session options. For example, the hardware within the shared coding unit 130 in any particular AVSC 120 could support, for example, any one of the following:

1) one encoding session or one decoding session, mutually exclusive;
2) one encoding session concurrent with one decoding session;
3) multiple concurrent encoding and decoding sessions;
4) multiple concurrent decoding sessions; or
5) one or multiple transcoding sessions, in conjunction with any of the above.

In addition, any AVSC 120 could support one of the above either mutually exclusive of or concurrent with file transfer to or from the shared data storage unit 124.

In general, at least one AVSC 120 is capable of concurrently supporting both A/V file encoding and decoding sessions, as well as multiple sessions simultaneously. Additionally, each AVSC 120 is highly scalable relative to the number of encoding, decoding, and transcoding resources required to meet evolving AVSS implementation needs. Furthermore, each AVSC 120 can support essentially any type of encoding, decoding, and/or transcoding resource without architectural modification, thereby readily accommodating A/V processing resource evolution over time. Thus, a wide variety of shared coding unit embodiments exist, examples of which are described hereafter.

Referring now to ***Figure*** 6, a block diagram of a first embodiment of the shared coding unit 130 is shown. In the first embodiment, the shared coding unit 130 comprises at least one encoder 132, plus a set of decoders 134 capable of supporting multiple simultaneous decoding sessions. This requirement can be met through the use of a plurality of mutually-exclusive decoders 134, or one or more concurrent-capable decoders 134.

Referring also now to ***Figure*** 7, a block diagram of a second embodiment of the shared coding unit 130 is shown. In the second embodiment, the shared coding unit 130 comprises a set of decoders 134 capable of supporting multiple concurrent decoding sessions. As in the example embodiment, the set of decoders 134 can be implemented via multiple mutually-exclusive decoders 134, or at least one concurrent-capable decoder 134. In the second embodiment, the AVSC 120 in which the set of decoders 134 reside(s) is dedicated exclusively to fulfilling decoding requests, which in turn implies that at least one encoder 132 would be present within another AVSC 120.

Those skilled in the art will understand that A/V files may be encoded in accordance with a variety of formats. Thus, at times, transcoding may be required to convert an A/V file into a different format than that which was utilized to record the A/V file. Referring now to ***Figure*** 8, a block diagram of a third embodiment of the shared coding unit 130 is shown, which comprises at least one encoder 132, at least one decoder 134, and a transcoder 136. When an AVSC 120 includes one or more transcoders 136,

the present invention preferably provides for real-time transcoding, such that playback of A/V files requiring format conversion can occur without sequential full-file conversion delays.

In a manner analogous to that for the shared data storage unit 124, encoding, decoding, and transcoding resources are AVSC-based rather than workstation-based in the present invention. From an external perspective, the AVSS 100 provides centralized encoding, decoding, and transcoding resources, while internally the aforementioned resources are distributed amongst one or more AVSCs 120. This pooled resource organization maximizes encoding, decoding, and transcoding resource utilization efficiency, while minimizing the number of such resources required to meet any given performance requirements.

In an exemplary embodiment, an AVSC 120 is implemented as a personal computer server having a Pentium II (Intel Corporation, Santa Clara, CA) or generally-equivalent microprocessor, 128 Megabytes of Random Access Memory (RAM), an Optibase MovieMaker encoder and an Optibase VideoPlex decoder (Optibase Inc., San Jose, CA), a network interface card, and an UltraWide and Fast SCSI 18 Gigabyte or larger disk drive for storing A/V and related files.

4.5.2 AVSM Architecture

The AVSM 160 comprises hardware and software that manages or coordinates the processing of requests received from premises-based, campus-based, or remote CMCE elements. The processing of such requests may result in the creation, recording/encoding, storage, distribution, decoding/playback, archival, or deletion of A/V or multimedia files in the context of conference recording, telephone answering, e-mail, document generation, document publishing, or other applications as described in detail below. Those skilled in the art will understand that many architecturally varying embodiments are possible. The embodiment described below provides an enabling architectural example.

The AVSM 160 comprises a network-based multitasking computer. ***Figure*** 9 is a block diagram of an AVSM 160 constructed in accordance with the present invention. The AVSM 160 comprises a processing unit 162, a network interface 164, an AVSC interface unit 166, a data storage unit 168, and a memory 170 wherein an AVSM object

memory 172, an AVSS state memory 174, an AVSS database memory 176, and an operating system 178 reside. Each element within the AVSM 160 is coupled to a common AVSM bus 199.

The processing unit 162 comprises a conventional high-performance processor for executing stored program instructions, and the data storage unit 168 comprises at least one disk drive. The network interface 164 and the AVSC interface unit 166 comprise conventional network interface circuitry for managing communication with the internal network 110 and AVSCs 120, respectively. The operating system 178 comprises a conventional multitasking operating system such as Windows NT.

The AVSM object memory 172 stores a plurality of AVSM software objects that perform or manage the AVSS services and resource management operations described in detail below, which include a) the establishment of user request processing sessions; b) allocation of AVSC resources and associated resource locking; c) establishment of A/V network communication couplings; d) user application interfacing and message routing; e) inter- and intra-AVSS file transfer initiation; and f) administrative operations as described in detail below. AVSM objects also maintain the contents of the AVSS database, which is stored in the AVSS database memory 176 and/or upon the data storage unit 168.

The AVSS database stores a variety of information that defines a) the AVSS communications environment; b) the nature and capabilities of the shared AVSC resources; c) administrative parameters and usage data; and d) characteristics of the A/V files stored on the AVSCs 120. Relative to the AVSS communications environment, the information the AVSS database stores includes the following:

1) the number and types of file transfer channels, including digital file transfer channels arising from AVSC couplings to the internal network 110 and the data network 20, plus analog file transfer channels corresponding to AVSC couplings to the A/V network 30;
2) a premises AVSS host name and port identifier;
3) one or more non-premises AVSS host names and port identifiers, plus connection setup information associated with each non-premises AVSS 100;

4) A/V network configuration parameters;
5) supporting server system configuration parameters;
6) a user identification (ID) or name for each user within the premises group to which the AVSS 100 belongs, plus password information corresponding to each user ID; and
7) communication preferences corresponding to each user ID, such as preferred encoding format and/or A/V file delivery format.

Relative to shared AVSC resources, the AVSS database includes the following information:

1) the number, types, and capacities of the storage resources within each AVSC 120; and
2) the number, types, and capabilities of the encoding, decoding, and transcoding resources within each AVSC 120.

The administrative parameters that reside within the AVSS database include a maximum allowable A/V file size, and a maximum allowable A/V file age. The maximum allowable A/V file age may be defined in relation to an A/V file's creation time and date, or relative to a most-recent access. The usage data includes an event statistics file that details event occurrence frequencies, such as a number of users that have accessed the AVSS 100 in a given time interval; a number of times an A/V file has been accessed; a most-recent access date and time for an A/V file; and an amount of time spent performing A/V file playback operations during a particular time interval.

For each unique A/V file stored on the AVSCs 120, the AVSS database stores a file parameter table that includes the following information:

1) a filename;
2) a file password;
3) a user ID indicating file authorship;
4) a file ownership or access privilege list, by user ID, which includes an access expiration date and time as well as recent access history (date and time) associated with the user ID;
5) A/V encoding format;

6) time and date of most-recent modification;
7) file size;
8) file playback duration;
9) file age;
10) location of each copy of the file across the AVSCs 120;
11) a list identifying and locating any AVSS-resident multimedia synchronization files associated with the A/V file; and
12) a list specifying any non-AVSS target servers to which the file has been published, as described in detail below.

For each premises group user ID, the AVSM objects could also maintain a user-specific file list in the AVSS database. In such an embodiment, the user-specific file list includes the name of each A/V file for which the user ID is specified in the file's access privilege list, and indicates whether the user ID is specified in the file's authorship data.

AVSM objects additionally maintain the contents of the AVSS state memory 174 to reflect current resource, request, and message status across all currently-active request processing sessions. The contents of the AVSS state memory 174 include the following:

1) a current user list that specifies user IDs corresponding to currently logged-in users;
2) a list of currently-active request processing sessions;
3) a time-stamped and indexed request queue identifying currently-pending requests, for both incoming and outgoing requests;
4) currently-available capacity and utilization for each AVSS storage resource;
5) current encoding/decoding/transcoding resource utilization; and
6) an AVSM event log specifying session time-out occurrences; application errors; AVSC faults; network faults; changes in the current user list and currently-active session list; changes in storage resource utilization and available storage space; and changes in encoding, decoding, and/or transcoding resource utilization. The contents of the AVSM event log are used to update the event statistics file.

In an exemplary embodiment, the AVSM 160 is implemented as a personal computer server having a Pentium II or generally-equivalent processor, a network interface card, 128 Megabytes of RAM, and a 10 Gigabyte or larger hard disk drive. Those skilled in the art will understand that the AVSM 160 could be implemented using a hardware/software platform that is essentially identical to that used for implementing an AVSC 120.

4.5.3 Scaling Hierarchy

The present invention can be scaled to provide enhanced performance and/or additional capabilities. Two types of scaling are possible, namely, numerical and evolutionary scaling. Numerical scaling implies the incorporation of additional hardware elements, while evolutionary scaling implies replacement of existing hardware elements with higher-performance or more "technologically evolved" hardware. The architectures described herein flexibly accommodate numerical and/or evolutionary scaling across several interrelated hierarchical performance boundaries or levels, which include the following:

4.5.3.1 Bus and processor throughput - the capabilities of the bus and processor within an AVSC 120 or AVSM 160 respectively define one type of AVSC or AVSM performance boundary. For example, bus throughput considerations limit the amount of bandwidth available for transferring information between elements within any given AVSC 120 or AVSM 160. Through a hardware platform upgrade, which is an evolutionary scaling, this performance boundary can be surpassed or extended.

4.5.3.2 Shared data storage unit throughput and capacity - the data transfer rate and storage capacity of the shared data storage unit 124 within any particular AVSC 120 define another performance boundary. This boundary can be surpassed by the inclusion of additional data storage devices within the shared data storage unit 124, and/or the use of higher-performance data storage devices. The performance gain achieved through numerical or evolutionary scaling in this case is dependent upon the bus throughput boundary described above.

4.5.3.3 Shared coding unit throughput and capabilities - the A/V file processing capabilities of the shared coding unit 130 within any given AVSC 120 also define a performance boundary. The incorporation of additional encoding, decoding, and/or transcoding resources within a shared coding unit, and/or the use of higher-performance A/V processing resources, results in the extension of this boundary. Those skilled in the art will understand that higher-performance resources in this case would likely perform essentially-simultaneous encoding, decoding, and/or transcoding operations on multiple execution threads. Those skilled in the art will additionally recognize that the performance gain achieved through numerical or evolutionary scaling here is dependent upon the aforementioned bus throughput boundary.

4.5.3.4 Collective AVSC capabilities and throughput - the overall A/V file processing performance and capabilities of the set of AVSCs 120 within the AVSS introduce another performance boundary, which can be surpassed through the incorporation of additional AVSCs 120 into the AVSS, and/or the use of higher-performance AVSCs 120. Those skilled in the art will understand that increasing the performance of any given AVSC 120 involves surpassing one or more of the previously-described performance boundaries.

4.5.3.5 Internal network bandwidth - the data transfer capabilities or loading limitations of the AVSS internal network 110 introduce another performance boundary, which can be surpassed through evolutionary scaling.

4.5.3.6 Collective networked AVSS performance and capabilities - the performance and capabilities of an entire AVSS group coupled via a campus and/or wide-area network also introduces a performance boundary that can be readily surpassed through numerical and/or evolutional scaling in accordance with performance requirements relative to cost constraints.

Those skilled in the art will recognize that just as a system can be scaled upward relative to performance, it can also be scaled downward, which might occur, for example, when cost constraints are of paramount importance. The architecture of the present

invention, however, can provide high A/V and/or multimedia processing performance while leveraging the capabilities of readily-available, low-cost technology.

4.6 Functional Partitioning Between AVSM And AVSCs

The types of functions performed by the AVSM 160 are partitioned relative to those performed by the AVSCs 120 to ensure consistent operability across essentially any internal AVSS implementation, particularly in view of numerical and evolutionary scalability. As a result, the AVSM 160 can support a continually-evolving range of AVSC implementations without modification.

The AVSM 160 provides centralized management of AVSS functionality. The AVSM 160 receives AVSS service requests and control messages from user applications. In response to service requests, the AVSM 160 establishes request processing sessions, as described in detail below. The AVSM generates a session handle to uniquely identify each such session. Exemplary AVSS service requests include the following:

1) login {user ID, password};
2) create and encode A/V file {session handle file name, file password, plus other parameters described below};
3) fetch and decode A/V file {session handle, file name, file password};
4) delete A/V file {session handle file name, file password};
5) copy A/V file {source address, source session handle, target address, target session handle plus other parameters described below}; and
6) move A/V file {source address, source session handle, target address, target session handle plus other parameters described below}.

Other types of AVSS service requests include requests for sending or receiving streams; retrieving or distributing files; and performing administrative and diagnostic operations. Control messages received from user applications include acknowledgments; error codes; and interactive control requests such as start, stop, pause, reverse, and/or fast forward commands issued during the recording, playback, and/or editing of A/V files.

In response to AVSS service requests, the AVSM 160 may directly perform one or more functions, and/or issue a set of high-level requests to its associated AVSCs 120 in accordance with AVSC capabilities and availability. In terms of directly-performed

functions, the AVSM 160 establishes and manages request processing sessions with user applications; allocates A/V file names and tracks A/V file location and usage information; allocates AVSC resources to request processing sessions based upon AVSC capabilities and availability; allocates AVSC resources to file copy and move transactions; forwards file copy and move requests to campus or remote systems in the event that an A/V file does not reside upon one of the premises AVSCs 120; and issues requests to the A/V network 30 to establish A/V communication and perform A/V network services (such as conferencing) for user applications.

Any given AVSC 120 that receives a high-level request from the AVSM 160 carries out the request by performing a set of operations in accordance with its own methods and constraints. In this manner, the AVSM 160 may be designed to avoid "micro-managing" the details of AVSC 120 operation. Depending upon the nature of a high-level request, an AVSC 120 may allocate and lock an encoding, decoding, or transcoding resource; allocate file storage space; execute an encoding, decoding, or transcoding procedure; perform a file transfer or copy operation to or from a local or remote target destination or source; delete a file; or report request processing, message, storage device, and/or encoding, decoding, or transcoding resource status to the AVSM 160.

4.7 AVSS Services

The AVSM 160 manages or provides a variety of AVSS services, including session management, file management, device management, and administrative services. Details of such services and the manners in which they are implemented are described hereafter.

4.7.1 Session Management Services

From the perspective of application programs executing on user workstations 40 or other computers coupled to the CMCE 10, the premises AVSM 160 provides access to services associated with premises, campus, and/or wide-area AVSS resources. Any given application program typically generates one or more graphical windows plus menus and control, list, dialog, and/or other graphical boxes that form a portion of a Graphical User Interface (GUI), as described in detail below. The application program is responsive to

selections that a user graphically indicates, in a manner well understood by those skilled in the art.

Particular user selections indicate that the user requires AVSS-related services. In response to such selections, the application program issues service requests to the associated premises AVSM 160. Upon receiving a service request, the AVSM 160 establishes a request processing session to provide or oversee the provision of the required service. During the session, the AVSM 160 may directly perform one or more operations, and/or the AVSM 160 may generate one or more requests directed to premises AVSCs 120, the premises A/V network manager 34, and/or campus or remote AVSMs 160. Additionally, premises, campus, or remote CMCE elements involved in the session may generate requests directed to each other and/or the application program.

Figure 10 is a block diagram illustrating session communication protocols utilized in one embodiment of the present invention. Essentially any number of instances of a wide variety of application programs communicate with their corresponding premises AVSM 160 via an AVSM client protocol. A given premises AVSM 160 communicates with its associated AVSCs 120 via an AVSC client protocol, and the premises A/V network manager 34 via an A/V network client protocol. Cross-premises AVSM-to-AVSM communication is based upon an AVSM peer protocol, while analogous A/V network manager communication is based upon an A/V network peer protocol.

Prior to gaining access to A/V processing resources or services, a workstation user must execute an AVSS access program, which issues a login request to the AVSM 160. As described in detail below, the login request includes a user ID, which establishes the user's identity to the AVSM 160 for purposes of file ownership and access permission checking. The user ID also provides the AVSM 160 with the A/V network port information necessary for establishing any A/V network connections required. In one embodiment, the login request additionally includes password information, which may be encrypted. When a user no longer requires access to A/V processing resources or services, the user may utilize the AVSS access program to issue a logout request to the AVSM 160, which results in removal of the corresponding user ID from the current user list within the AVSS state memory 174.

Following a successful login, an application program executing on the user's workstation 40 may issue a request to the AVSM 160 for A/V processing resources and/or A/V file management services. Upon receipt of a request, the AVSM 160 establishes a session by performing any necessary file access authorization operations as described below; generating a session handle that uniquely identifies the session; adding the session handle to the currently-active session list in the AVSS state memory 174; identifying and allocating appropriate AVSC resources; identifying and allocating appropriate A/V network resources; and issuing a session identification message to the requesting client, where the session identification message includes the session handle. After session establishment, the AVSM 160 manages the session by directly performing operations, and/or issuing or routing requests, control messages, and/or status messages to AVSCs 120, the A/V network manager 34, other AVSMs 160, and/or the application program. The AVSM 160 terminates the session by deallocating resources, issuing a termination message or reply to the application program, and deleting the session handle from the currently-active session list. The AVSM 160 supports at least three types of sessions, namely, 1) viewer tool sessions; 2) maintenance tool sessions; and 3) administrative tool sessions. The characteristics of each of these session types, as well as the operations undertaken by the AVSM 160 in support thereof, are described in detail hereafter.

4.7.1.1 Viewer Tool Sessions

Herein, a viewer tool comprises an application program that controls A/V file recording as well as real-time analog or digital streaming A/V file delivery or viewing via one or more graphical windows, menus, and control, dialog, or other boxes that facilitate user input. The AVSM 160 establishes a viewer tool session when a viewer tool application executing on a workstation 40 or other computer issues a request specifying that either real-time (or near-real-time) analog or digital streaming delivery of an A/V or multimedia file is required (i.e., when a user needs to view an A/V file). Real-time analog or digital streaming delivery is required, for example, during A/V file recording, editing, and/or playback, and involves A/V signal delivery to a display device (such as a

workstation monitor or television) under the direction of the viewer tool application program.

To initiate a viewer tool session, the AVSM 160 determines whether the request received from the viewer tool application specifies an existing A/V or multimedia file. If so, the AVSM 160 performs file access authorization operations, as described in detail below, to verify whether the viewer tool user should be granted access to the file. If the file access authorization operations are unsuccessful, the AVSM 160 issues a reply to the requesting viewer tool application indicating proper access authorization does not exist, and the viewer tool session ends.

Upon successful completion of the file access authorization operations, the AVSM 160 generates a session handle, and adds it to the currently-active session list. The AVSM 160 next identifies an AVSC 120 that includes A/V processing resources capable of performing the operations required by the viewer tool application. In one embodiment, the AVSC selection is performed in accordance with the resource allocation operations described in detail below. For the creation (i.e., recording) of a new A/V or multimedia file, the AVSM 160 selects an AVSC 120 upon which sufficient storage space and an appropriate type of encoder exist. For the playback or editing of an existing A/V or multimedia file, the AVSM 160 selects an AVSC 120 upon which a copy of the file resides and appropriate decoding or transcoding resources are present.

After identifying an appropriate AVSC 120, the AVSM 160 sends a request to the AVSC 120 to allocate the resources required for performing the operation(s) required by the viewer tool application program. In one embodiment, the AVSM 160 subsequently issues a request to the AV network manager 34 to establish any required A/V network connections. In an alternate embodiment, the viewer tool application program issues a request to the A/V network manager 34 to establish such connections. After AVSC selection/resource allocation and A/V network connection establishment, the AVSM 160 issues a session identification message containing the session handle to the viewer tool application, which indicates that the viewer tool session can proceed.

During the viewer tool session, the AVSM 160 routes control messages received from the viewer tool application to the selected AVSC 120, thereby facilitating AVSC

performance of open-file, play, adjust-playback-rate, stop, seek, pause, rewind, fast-forward, record, save-file, or other operations as supported by the viewer tool application program. The AVSM 160 may additionally issue status messages to the viewer tool application, which can include video frame numbers and/or running or elapsed time. In one embodiment, the AVSM 160 polls the AVSC 120 for status information, and forwards it to the viewer tool application program.

A multimedia file comprises one or more types of files and/or references to files, where such files may include textual, graphical, image, audio, and/or video information as well as commands or event sequences for generating or rendering such information. The multimedia file may further include temporal correlation data specifying one or more manners in which its constituent files and/or file references are associated in time. In the context of the present invention, a multimedia file comprises one or more omnifiles, where an omnifile is defined as a metafile plus a corresponding pointer file. The metafile includes one or more of the following types of files:

1) A/V files;
2) audio-only files;
3) video-only files;
4) bitmap files;
5) postscript files;
6) graphics files;
7) text files;
8) application files; and
9) synchronization files.

The synchronization files associate events or commands occurring within the context of one or more application programs with particular time references, which may be A/V file frame numbers. Synchronization files can include application startup event files, text event files, window event files, graphics rendering event files, and shareboard event files, as further described below. In one embodiment, a synchronization file can include a priority level for each command or event specified therein. The various files that comprise the metafile may be stored across one or more workstations 40, AVSCs 120,

servers, or other computers coupled to the CMCE 10. The pointer file associated with a metafile contains pointers or references to each element within the metafile.

In one embodiment, the synchronization files are stored on AVSCs 120. In the event that the viewer tool session involves multimedia file recording, the AVSM 160 transfers application program synchronization information or commands received from the viewer tool application to the AVSC 120 such that the synchronization information can be saved in a synchronization file. For multimedia file playback and/or editing, the AVSM 160 requests the synchronization file from the appropriate AVSC 120. To ensure temporal consistency during playback operations, the AVSM 160 polls the AVSC 120 allocated to serving the current viewer tool session for frame number or time-based A/V file data, and issues synchronization messages to the viewer tool application at appropriate times or intervals, in accordance with a currently-specified playback frame rate or speed. The synchronization messages contain event information, commands, and command priority levels specified within the synchronization file. Upon receipt of a synchronization message, the viewer tool application executes commands specified therein, or facilitates the execution of such commands via their transfer to other application programs, thereby regenerating application events and/or the presentation of textual, graphics, image, or other multimedia content information at appropriate times while A/V file playback occurs.

The AVSM 160 could alternatively transfer the synchronization file to the viewer tool application, poll the AVSC 120 for frame-number or time-based A/V file data, and issue frame or time status messages to the viewer tool. The viewer tool application could then execute or issue the appropriate commands to facilitate multimedia synchronization upon receipt of frame or time status messages that correspond to frame numbers or times specified within the synchronization file. In other embodiments, the synchronization files themselves could be stored on the AVSM 160 rather than on AVSCs 120, or the synchronization files could normally reside upon the user workstation 40.

In one embodiment, in the event that the viewer tool session involved A/V file or multimedia file editing and file edits or changes were saved while maintaining the filename, the AVSM 160 performs modification propagation operations as described in

detail below to ensure that the file changes propagate to each copy of the A/V file stored on the AVSCs 120.

The operations described above pertain to within-premises viewer tool sessions. Non-premises viewer tool sessions occur in an analogous manner. In one embodiment, in the event that a viewer tool application requires real-time/near real-time analog or digital streaming A/V file delivery from a non-premises AVSS 100, the viewer tool application issues a request to the appropriate non-premises AVSM 160. In response, the non-premises AVSM 160 establishes a viewer tool session in the manner described above, such that analog A/V signals are exchanged via the premises workstation 40, the premises codec gateway 38, the second WAN 39, and the non-premises codec gateway 38 that serves the non-premises AVSS 100.

A viewer tool provides a workstation user with a Graphical User Interface (GUI) for controlling A/V file recording and playback operations. ***Figure*** 11 is a block diagram showing an exemplary recording control GUI 500. The recording control GUI 500 comprises a graphical window that includes a menu bar 502, a title box 504, a recording control panel 506, and a time panel 520. The menu bar 502 provides a workstation user with access to conventional types of submenus, including file, options, and help submenus. User-selectable operations from within the options submenu include login and change-password operations. User-selectable operations from within the file submenu include the following:

1) New – opens a new A/V file for recording, in the manner described below;

2) Open – invokes a browser tool that facilitates opening and subsequent playback of an existing A/V file, as described below;

2) Save – saves an A/V file with a given filename;

3) Properties – facilitates entry and editing of properties associated with the A/V file being recorded, such as encoding type and a natural language title; and

4) Exit – terminates the viewer tool session.

The title box 504 identifies the current title of an A/V file under consideration. The recording control panel 506 provides a set of user-selectable buttons for controlling recording operations. These buttons include a start recording button 510; a pause

recording button 512; a stop or end recording button 514, and an erase or discard recorded information button 516. The time panel 520 graphically indicates a current recording length or time via the provision of a slider bar 522 and a time box 524.

Figure 12 is a block diagram showing an exemplary playback control GUI 600. For ease of understanding, common elements shown in ***Figures*** 11 and 12 are denoted with common reference numbers. The playback control GUI 600 comprises a graphical window that includes a menu bar 502, a title box 504, a playback control panel 606, and a time panel 520. The menu bar 502 enables user to select from among the operations described above with reference to ***Figure*** 11. Similarly, the title box 504 indicates the current title of the A/V file under consideration. The playback control panel 606 includes a plurality of user-selectable buttons that facilitate playback control operations, including a rewind to beginning button 610; a skip back button 612 that facilitates moving or jumping backward to an earlier position within an A/V file, where the earlier position corresponds to a predetermined or user-definable time increment, for example, 3 seconds; a playback start button 614; a playback pause button 616; a skip forward button 618 that facilitates moving or jumping backward to a later position within an A/V file, where the later position corresponds to a predetermined or user-definable time increment, for example, 3 seconds; and an erase file button 619. In a manner analogous to that for the recording control GUI 500, the time panel 520 graphically indicates a current playback length or time via the provision of a slider bar 522 and a time box 524. Those skilled in the art will understand that the recording and playback control GUIs 500, 600 provide workstation users with a graphical interface that is visually consistent with controls found on common devices such as Video Cassette Recorders (VCRs).

In response to certain submenu selections, such as Open within the file submenu, the viewer tool transfers control to or invokes functionality within or associated with a browsing or administrative tool to provide a workstation user with a GUI for browsing and selecting A/V files and/or performing A/V file administration operations as described in detail below. ***Figure*** 13 is a block diagram showing an exemplary browsing control GUI 700. The browsing control GUI 700 comprises a dialog box that includes a file source listbox 702 and file source control buttons 704; display format control buttons 706;

a file information listbox 710; a file name box 722; a file type listbox 724; and operation control buttons 730, 732, 734. The file source listbox 702 and associated file source control buttons 704 facilitate user-identification of a file source from which A/V files can be selected for consideration. The display format control buttons 706 facilitate user-selection of file information display formats, where available display formats include display-by-icon and display-by-attributes. For each A/V file for which the workstation user is identified as an owner, the file information listbox 710 displays file information in accordance with the selected file parameter display format. Such information can include a filename; a file location; a natural language title; a description; file authorship; and playback duration. The file name box 722 facilitates user-entry of a specific filename, and the file type listbox 724 facilitates browsing operations directed to files of a specific type. Finally, the operation control buttons include an open button 730, the selection of which results in the opening of a specified or selected A/V file for playback operations; a cancel button 732; and a help button 734.

4.7.2 Maintenance Tool Sessions

The AVSM 160 establishes a maintenance tool session in response to a request that specifies that one or more user-based file maintenance operations are required. In the context of the present invention, a maintenance tool comprises an application program executing on a user workstation 40 or other computer, and which generates one or more graphical windows, menus, and/or boxes that facilitate particular A/V file maintenance operations in response to user input. In one embodiment, the user input may be in the form of text, graphical selections, or graphical drag-and-drop sequences.

As described in detail below, the AVSM 160 supports many file management operations, a subset of that comprises file maintenance operations that are directly available to workstation users. In one embodiment, the file maintenance operations include file access list maintenance; file expiration date maintenance; file renaming; file transfer in the form of either copying or moving; file deletion; user-specific file listing; user-specific archival operations; and file attribute queries. Each of these operations is described in detail below in the context of AVSM file management operations. Those

skilled in the art will recognize that the file maintenance operations could include additional or fewer types of operations in another embodiment.

The AVSM 160 initiates a maintenance tool session by performing A/V file access authorization operations as described in detail below. If access authorization is unsuccessful, the AVSM 160 terminates the session. Otherwise, the AVSM 160 generates a session handle, adds it to the currently-active session list, and issues a session identification message to the maintenance tool application. The AVSM 160 determines whether access to one or more campus and/or remote AVSMs 160 is required to process the file maintenance request, and, if so, issues requests to allocate the required campus and/or remote resources. Once such resources are allocated, the campus and/or remote AVSMs 160 issue a reply to the premises AVSM 160 specifying AVSC network address information if required. The AVSM 160 subsequently determines what premises AVSCs 120 are required to process the file maintenance request, and issues requests to the premises AVSCs 120 to allocate the appropriate resources and begin performing the required operation.

During the performance of file maintenance operations, the AVSM 160 issues status requests to premises and/or non-premises AVSCs 120, which reply with status information. The AVSM 160 then sends status messages to the file maintenance tool application accordingly. Such status messages may indicate, for example, a percentage of the operation that has been completed or an estimated amount of time remaining until completion. Once the file maintenance operation is complete, the AVSM 160 issues a session termination reply to the maintenance tool.

Some file maintenance operations, such as A/V file renaming or copying, may be requested within the context of a viewer tool session. That is, one or more aspects of maintenance tool functionality may be incorporated into a viewing tool. In such situations, the AVSM 160 performs or oversees the performance of the file maintenance operation within the context of the viewer tool session, in a manner essentially identical or analogous to that described for the file maintenance tool session. Moreover, in one embodiment, a maintenance tool may provide for the invocation of a particular viewer

tool in response to user input, in which case the AVSM 160 establishes a viewer tool session as a result.

4.7.3 Administrative Tool Sessions

Herein, an administrative tool comprises an application program that generates, presents, and/or manages administrative information on a workstation-based or other display device in response to user input. The AVSM 160 establishes an administrative tool session in response to a request for user-accessible information stored in the AVSS database. Such information may include, for example, user account and password information, or particular data within the event statistics file.

Upon receiving an administrative information request, the AVSM 160 generates a session handle, and adds it to the currently-active session list. The AVSM 160 then transfers data corresponding to the request to the administrative tool. Upon receiving the data, the administrative tool generates and/or presents administrative information to the user. If administrative data is user-modifiable, as could be the case for user passwords, the AVSM 160 changes the data within the AVSS database in response to a request received from the administrative tool. Some administrative data may be non-user-modifiable, such as current AVSS utilization; AVSS usage history for the user, which may include average session length, by session type; and/or current charges billed to the user.

4.7.4 File Management Services

As indicated above, the AVSM 160 provides or oversees the provision of a variety of file management services. A subset of the file management services comprise the user-accessible file maintenance operations, while other file management services are performed by the AVSM 160 on an internal-only basis. In one embodiment, the file management services include the following:

4.7.4.1 Access Authorization Services

AVSM software objects maintain the access privilege list within each A/V file's parameter table in the AVSS database. The access privilege list comprises a list of user IDs that specifies which users "own" the A/V file, where ownership implies basic access rights to the A/V file. The extent of A/V file access rights may depend upon whether a

user falls into a particular category, such as the A/V file's author or other category as detailed below. In one embodiment, an A/V file access request generated by a client application program includes a user ID, a filename, and a password. Upon receiving such a request, the AVSM 160 determines whether the user ID associated with the request is specified within the A/V file's access privilege list. If so, the AVSM 160 proceeds with processing the file access request. If the user ID is not specified within the access privilege list, the AVSM 160 compares the password specified within the A/V file access request with that in the file parameter table. If the passwords match, the AVSM 160 adds the user ID to the access privilege list, and proceeds with request processing operations. Otherwise, the AVSM 160 issues a reply containing an error code to the client application program to indicate that A/V file access has been denied.

In one embodiment, the presence of a reserved user ID in an A/V file's access privilege indicates that the file may be accessed by any user, that is, the file is generally or publicly accessible. One embodiment of the present invention also provides for an administrative "super-user" defined to have essentially unlimited access privileges for any A/V file. In response to a request for A/V file access received from an application program associated with the super-user, the AVSM 160 proceeds with request processing operations.

4.7.4.2 Access List Maintenance

In response to an access list maintenance request received from a client application program, the AVSM 160 selectively adds user IDs to or deletes user IDs from an A/V file's access permission list. The AVSM 160 performs access list maintenance operations only for users having a user ID specified in the access permission list, subject to the whether a user is the A/V file author, an owner, or a super-user. The AVSM 160 allows an A/V file author or a super-user to modify the access permission list as required. The AVSM 160 permits any given A/V file owner that is not the file's author to remove their user ID from the access permission list.

In one embodiment, the AVSM 160 adds the user ID of a user who authors an A/V file to the A/V file's access permission list by default. The AVSM 160 may add other user IDs to the access permission list in response to client application program

requests. For example, an A/V- or multimedia-enabled e-mail application program as described in detail below allows message authors to include an A/V or multimedia file as a MIME-based message attachment. The AVSM 160 adds the user ID corresponding to each message recipient to the A/V file's access permission list, as directed by the e-mail application program. The AVSM 160 may also or alternatively add a message recipient's user ID to the access permission list in response to an A/V file access request specifying a user ID, a filename, and a valid password.

4.7.4.3 User-Specific File Listing

An application program associated with or executing on behalf of a user may issue a file listing request to the AVSM 160. In turn, the AVSM 160 performs a directory sort operation, and replies to the application program with a list identifying each A/V file for which the user is specified as an owner in the file's access permission list. In an alternate embodiment in which the AVSM 160 maintains a user-specific file list in the AVSS database as described above, the AVSM 160 could reply to the application program with data from the user-specific file list.

The application program may subsequently display a set of filenames for which the user is specified as an owner. In one embodiment, the file listing request may indicate that data for publicly-available files is also required. If so, the AVSM 160 provides such data to the requesting application program.

4.7.4.4 User-Specific File Archival

An application program may additionally issue a file archival request to the AVSM 160, where the file archival request identifies one or more A/V files owned by the user associated with the requesting application program for which archival operations are required. The AVSM 160 subsequently manages archival operations in which the identified A/V files or copies thereof are stored in a premises or non-premises user ID-based archive. The archival operations include one or more file transfer services as detailed below.

4.7.4.5 Attribute Query

In response to an attribute request received from an owner of an A/V file, the AVSM 160 provides attribute information for the A/V file, such as file author, size,

encoding type, playback duration, current file age, time and date the owner last accessed the file, file expiration date (i.e., access expiration date) for the owner, and/or date of most-recent modification.

4.7.4.6 File Transfer Services

File transfer services supported by the AVSM 160 include a) A/V file copy and/or move (i.e., relocate) operations to and/or from a target destination or source; b) file import or export operations between a workstation 40 or other computer and an AVSC 120; and c) digital file publishing operations between an AVSC 120 and a server external to the AVSS 100 in which the AVSC 120 resides. With regard to A/V file copy or move operations, the target destination or source may be premises-, campus-, or wide-area-based. Since any given AVSS 100 may be linked to another AVSS 100 via a LAN or a WAN, both intra- and inter-AVSS file transfers are possible in the context of the present invention. ***Figure*** 14 is a block diagram of an exemplary networked AVSS organization. In the exemplary networked AVSS organization, a first AVSS 100.1 through kth AVSS 100.2 serve a common campus, and hence are coupled to a common data network 20. A remote AVSS 100.3 is coupled to the common data network 20 via a WAN 29. Those skilled in the art will recognize that the exemplary networked AVSS organization shown in ***Figure*** 14 can be generalized to accommodate essentially any required network organization or geographic scaling.

Each AVSS 100 in ***Figure*** 14 includes a set of AVSCs 120, where each AVSC 120 includes a number of disk drives or other devices for storing A/V files. The number of AVSCs 120 can vary from one AVSS 100 to another, as can the number and type of storage devices from one AVSC 120 to another. Relative to intra-AVSS file transfers, A/V files can be transferred from one storage device to another either a) within the same AVSC 120, that is, "within cell" (WC); or b) across different AVSCs 120 in the same AVSS 100, or "cell to cell" (CC). In terms of A/V file transfers directed from an AVSC storage device within one AVSS 100 to an AVSC storage device within another AVSS 100, such transfers can occur either a) within the common campus, or local area (LA); or b) on a wide area (WA) basis, between a common campus AVSS 100 and the remote AVSS 100.

In response to a request that requires a cell-to-cell or within-cell A/V file transfer, the AVSM 160 selects and allocates a source and a destination premises AVSC 120, and issues a request to the one of the selected AVSCs 120 to perform the required transfer. In one embodiment, the request may specify a copy-from, move-from, copy-to, or move-to operation. After the file transfer is complete, the AVSC 120 that fulfilled the request issues a reply to the AVSM 160.

If a file transfer request requires A/V file transfer between a premises and a non-premises AVSS 100, the premises AVSM 160 issues a request to the non-premises AVSM 160 to obtain network address information for an associated non-premises AVSC 120 that can participate in fulfilling the request. Upon receiving such information from the non-premises AVSM 160, the premises AVSM 160 selects and allocates an appropriate premises AVSC 120, and issues a request to the premises AVSC 120 to perform the required file transfer operation. If the file transfer request specifies a copy-to or move-to operation, the A/V file will be transferred from the premises AVSC 120 to the non-premises AVSC 120 accordingly. If the file transfer request specifies a copy-from or move-from operation, the A/V file will be copied or moved from the non-premises AVSC 120 to the premises AVSC 120, respectively. After the file transfer is complete, the premises AVSC 120 issues a reply to the premises AVSM 160. The premises AVSM 160 then issues a notification to the non-premises AVSM 160 to indicate that the file transfer session is complete.

Figure 14 also shows a workstation 40 coupled to the common data network 20. File import operations involve the transfer of a digital file from a workstation 40 or other computer to an AVSC 120, while file export operations involve the transfer of a digital file from an AVSC 120 to a workstation 40 or other computer. In response to a file import request received from a client application program, the AVSM 160 selects and allocates an available AVSC 120 having sufficient storage space, and issues a request to the AVSC 120 to retrieve the file from the workstation 40 or other computer from which the import request originated. Similarly, in response to a file export request specifying an A/V file, the AVSM 160 selects and allocates an AVSC 120 upon which a copy of the file resides, and issues a request to the AVSC 120 to transfer the file to the workstation 40 or

other computer from which the export request originated. Upon completion of file transfer operations corresponding to an import or/and export request, the AVSC 120 issues a reply to the AVSM 160.

File publishing operations involve the transfer of a digital file from an AVSC 120 to a server. The server may be essentially any computer system external to the AVSS 100 in which the AVSC 120 resides, for example, an intranet server system 60 or a server coupled to the internet 80. ***Figure*** 14 also shows an intranet server system 60 coupled to the common data network 20. In response to a publish file request that specifies a filename, a target file format, and a network or IP address of a server, the AVSM 160 selects and allocates an AVSC 120 upon which a copy of the file resides. The AVSM 160 then issues a publish request to the AVSC 120, which performs any necessary file format conversion, and transfers the file to the specified server. Upon completing the transfer, the AVSC 120 issues a reply to the AVSM 160.

In general, an AVSC 120 can directly perform both A/V file encoding, decoding, and/or transcoding operations, as well as file transfer operations. Any particular AVSC 120 will have a maximum number of simultaneously-active file transfers it can perform while still delivering high-quality encoding, decoding, or transcoding performance. Thus, file transfer needs must be balanced against encoding, decoding, and/or transcoding needs. Typically, encoding, decoding, and/or transcoding operations are given higher priority than file transfer operations. In one embodiment, an administrative application program facilitates defining a first-priority and a second-priority AVSC bus and disk bandwidth partition. The first-priority bandwidth partition is reserved for performing encoding/decoding/transcoding operations, while the second-priority partition is reserved for file transfer operations. As file transfer requests are allocated to an AVSC 120, it services them immediately using bandwidth within the second-priority partition. If the AVSC 120 receives a file transfer request that it cannot immediately service, the AVSC 120 places the request into the request queue within its state memory 154. Requests in this queue are served as more bandwidth becomes available within the second-priority partition. In one embodiment, the request queue is implemented as a First-In, First-Out (FIFO) queue in a conventional manner. The request queue could alternatively be

implemented as a prioritized queue, and/or as a queue from which requests are serviced in accordance with current resource availability. Alternatively, requests that cannot be immediately serviced could be terminated and a reply sent back indicating resources are not currently available thereby allowing the AVSM 160 and/or client application to look for some other means to service the request.

4.7.4.7 File Replication

An A/V file should be present upon multiple AVSCs 120 to ensure that the file can be independently accessed by a reasonably large number of users at any given time. Thus, after A/V file creation (i.e., after a new A/V file has been created and saved), or after the transfer of a new A/V file onto one of the premises AVSCs 120, the AVSM 160 initiates file replication operations. During the file replication operations, copies of the A/V file are stored on a plurality of premises AVSCs 120. In one embodiment, copies of associated multimedia synchronization files are also replicated.

The particular file replication strategy employed at any given time depends upon several factors, including the number of premises AVSCs 120 present; the performance capabilities of each AVSC 120; AVSS internal network bandwidth; and/or current user demand for AVSC resources. In an AVSS 100 employing a single AVSC 120, file replication may not be performed, or limited file replication may occur between separate storage devices on the AVSC 120. For an AVSS having a small number of AVSCs 120 -- for example, three AVSCs 120 serving approximately 100 users -- full replication may be performed. In this case, the AVSM 160 automatically oversees the copying of a new A/V file to each AVSC 120 within the AVSS 100. The copying operations are performed in the manner described above for cell-to-cell file transfer operations. In general, the A/V file is not replicated to a non-premises AVSC 120 in the absence of an application-level request to do so.

Depending upon the performance capabilities of each AVSC 120, as well as the number of premises AVSCs present, full replication may significantly limit AVSC availability for performing other operations. Thus, for an AVSS 100 employing a medium to somewhat large number of premises AVSCs 120 -- for example, five AVSCs 120 serving a few hundred to several hundred users -- the AVSM 160 manages partial file

replication operations. During the partial file replication operations, the AVSM 160 oversees A/V file copying to a subset of the premises AVSCs 120, where the copying operations are performed in the manner described above for cell-to-cell file transfer. The A/V file is not generally replicated to a non-premises AVSC unless an application program issues a request requiring such replication. The selection of a particular AVSC 120 as a member of the aforementioned subset may be based upon the number of A/V files, available file storage space, or the number of decoders and transcoders residing upon the AVSC 120.

At some point, partial replication becomes untenable as the number of premises AVSCs 120 within the AVSS 100 becomes very large. In such situations, a subset of the AVSCs 120 are utilized as streaming A/V file servers, and the other AVSCs function as staging points for encoding, decoding, and/or transcoding operations. In one embodiment, the AVSM 160 manages file replication operations for the streaming A/V file servers in a manner analogous to that described above.

4.7.4.8 File Renaming

In response to a name change request, the AVSM 160 changes an A/V file's name as specified in the corresponding file parameter table, and subsequently oversees modification propagation operations as detailed below to change the name of each copy of the A/V file stored across the premises AVSCs 120. In one embodiment, the AVSM 160 permits a name change only if requested by an application program corresponding to a super-user. The AVSM 160 may further permit a name change request for the A/V file's author in the event that the author is currently the sole A/V file owner.

4.7.4.9 File Deletion

In response to a file deletion request, the AVSM 160 directs the deletion of each copy of the A/V file from the premises AVSCs 120 by issuing a delete request to each AVSC 120 upon which a copy of the A/V file resides. In one embodiment, the AVSM 160 permits file deletion only if requested by an application program associated with a super-user. The AVSM 160 may further permit A/V file deletion by the A/V file's author in the event that the author is currently the sole A/V file owner. In one embodiment, the AVSM 160 additionally deletes or oversees the deletion of any multimedia synchronization

files associated with the deleted A/V file. Additionally, the AVSM 160 may issue deletion requests to non-premises AVSM 160 and servers 60 and 80 to which it has transferred the A/V file.

4.7.4.10 Modification Propagation

As previously indicated, multiple copies of any given A/V file may reside upon the premises AVSCs 120. The AVSM 160 may permit a given user, such as a super-user or an A/V file's author, to edit or change the file's name or contents after its creation. Each premises copy of the A/V file must be updated to reflect such modification. Thus, in one embodiment, after an A/V filename or contents change, the AVSM 160 issues a sequence of copy-to requests to the AVSC 120 upon which the modified file resides to ensure name and contents consistency between the A/V file copies stored on the AVSCs 120. In an alternate embodiment, the AVSM 160 could issue copy-from requests. Additionally, the AVSM 160 may issue file modification requests to non-premises AVSM 160 and servers 60 and 80 to which it has transferred the A/V file.

4.7.4.11 Expiration Operations

An A/V file's access privilege list includes for each user ID an expiration date and/or time past which the user ID expires and is no longer valid for obtaining file access. For each A/V file parameter table in the AVSS database, the AVSM 160 determines whether any user IDs specified in the access privilege list have expired. If so, the AVSM 160 removes the expired user IDs from the access privilege list. Once no unexpired user IDs remain in the access privilege list, the AVSM 160 issues a file deletion request to each AVSC 120 upon which a copy of the A/V file resides. After each such AVSC 120 has deleted the A/V file, the AVSM 160 deletes the A/V file parameter table from the AVSS database. Alternatively, the AVSM 160 may log expired files and require deletion by an application program associated with a super-user.

4.7.4.12 Database Consistency Operations

The AVSM 160 periodically performs consistency checks to ensure that the file parameter tables within the AVSS database 136 accurately reflect the current premises AVSC file environment. In one embodiment, the AVSM 160 periodically queries each premises AVSC 120 to obtain data for each A/V file stored thereupon, where such data

may include an A/V file's name, size, age, encoding format, storage location or address, or other information. In the event that an AVSC 120 returns a filename that is not specified in the AVSS database, the AVSM 160 generates a file parameter table corresponding to the filename, and adds it to the AVSS database. If no AVSC 120 returns a particular filename specified in the AVSS database, the AVSM 160 deletes the corresponding file parameter table from the AVSS database. If the file data returned by an AVSC 120 indicate a discrepancy in file size, age, encoding format, or other information, the AVSM 160 may update the AVSS database accordingly. The AVSM 160 may additionally log any discrepancies, as well as the type of action(s) undertaken in response to each discrepancy. Finally, if a particular AVSC 120 returns a filename specified in the AVSS database, but for which the file parameter table indicates that the file is not stored on this AVSC 120, the AVSM 160 updates the file parameter table with the storage location of the A/V file upon the AVSC 120 in question.

4.7.5 Device Management Services

The AVSM 160 additionally performs device management services, which include AVSC scheduling and allocation services. AVSS resource scheduling and allocation is subject to several:

interacting resource constraints, which include the following:

1. AVSM multiple-thread resources (i.e., simultaneous use by multiple sessions):
    a. CPU capacity:
        i. encode session management
        ii. decode session management
        iii. file transfer session management
    b. Bus capacity
    c. Networking port capacity
2. AVSC multiple-thread resources (i.e., simultaneous use by multiple sessions):
    a. CPU capacity:
        i. encode session management
        ii. decode session management
        iii. file transfer session management

iv. stream session management
v. audio-video stream multiplexing processes
vi. audio-video stream demultiplexing processes
vii. encode session processes
viii. decode session processes
ix. file transfer processes
x. send stream processes
xi. receive stream processes

b. Bus capacity
c. Disk controller/disk bus (e.g. SCSI) capacity
d. Disk read/write/seek capacity
e. Networking port capacity

3. AVSC single-threaded resources (i.e., can be used by only one session at a time):
a. encoder hardware and corresponding encode session(s)
b. decoder hardware and corresponding decode session(s)

Any type of session has a specific number of specific resources required to execute the session. Some embodiments may grant service requests without regard to details of the current utilization of the resources; however, this may result in underutilization of the resources or in unacceptable performance shortcomings or failure modes if the resource capacities are exceeded. One embodiment would base request acceptance on the needs of the request in view of the available unused capacity of the system. An example of how this can be accomplished is described hereafter.

In some cases, resource requirements may be exact. In other cases, resource requirements may be in the form of upper bounds, estimated averages, or averages biased upwards to provide safety margins. These session-type resource usage estimates may or may not include additional "padding" to allow for processing overhead (task switching, paging, etc.). In the absence of padding in the session-type resource usage estimates, overhead can be provide for by either

· reducing the maximum value of available resource to a value that safely accounts for worse-case incurred overhead at full operating capacity, or

· introducing a specific linear or nonlinear overhead function dependent on the number of various sessions active or projected within the AVSS 100.

Some of the resource usage estimates could be firm fixed values; for example:

· each "encode" session could be designed to require a fully dedicated encoder hardware subsystem;

· each "encode" session could be designed to allocate a fixed block of disk memory (said size dependent on the application) and attempts to record beyond this would be prevented; or

· every "decode" session will have knowledge of the exact the file size

It may be more likely, however, that resource usage estimates would not be firm; for example:

· all active encode sessions could share a slightly smaller pool of encoders; and

· all encode session requirements could be handled with averages and attempts to record beyond this would be allowed.

To further illustrate an example of resource allocation process, the following table provides an example framework for resource requirements for several different types of sessions. Other embodiments of course may have different session types and resource requirements.

Type of Resource		Type of Session					
		Encode	Decode	Put File	Get File	Send Stream	Receive Stream
AVSM CPU capacity	Encode session management	M^{E}_{SM}					
	Decode session management		M^{D}_{SM}				
	file xfr session management			M^{PF}_{SM}	M^{GF}_{SM}		
	stream session management					M^{SS}_{SM}	M^{RS}_{SM}
AVSM Bus capacity		M^{E}_{B}	M^{D}_{B}	M^{PF}_{B}	M^{GF}_{B}	M^{SS}_{B}	M^{RS}_{B}
AVSM Networking port capacity		M^{E}_{N}	M^{D}_{N}	M^{PF}_{N}	M^{GF}_{N}	M^{SS}_{N}	M^{RS}_{N}
AVSC CPU capacity	encode session management	C^{E}_{SM}					

Type of Resource	Type of Session					
	Encode	Decode	Put File	Get File	Send Stream	Receive Stream
decode session management		C^{D}_{SM}				
file xfr session management			C^{PF}_{SM}	C^{GF}_{SM}		
stream session management					C^{SS}_{SM}	C^{RS}_{SM}
multiplexing processes	C^{E}_{MP}					
demultiplexing processes		C^{D}_{MP}				
encode session processes	C^{E}_{CP}					
decode session processes		C^{D}_{CP}				
file transfer processes			C^{PF}_{TP}	C^{GF}_{TP}		
send stream processes					C^{SS}_{SP}	
receive stream processes						C^{RS}_{SP}
AVSC Bus capacity	C^{E}_{B}	C^{D}_{B}	C^{PF}_{B}	C^{GF}_{B}	C^{SS}_{B}	C^{RS}_{B}
AVSC Disk controller/disk bus capacity	C^{E}_{DC}	C^{D}_{DC}	C^{PF}_{DC}	C^{GF}_{DC}	C^{SS}_{DC}	C^{RS}_{DC}
AVSC Disk read/write/seek capacity	C^{E}_{RW}	C^{D}_{RW}	C^{PF}_{RW}	C^{GF}_{RW}	C^{SS}_{RW}	C^{RS}_{RW}
AVSC Networking port capacity	C^{E}_{N}	C^{D}_{N}	C^{PF}_{N}	C^{GF}_{N}	C^{SS}_{N}	C^{RS}_{N}
AVSC hardware encoder hardware	C^{E}_{EH}					
decoder hardware		C^{D}_{DH}				

Each type of resource, or group of resources, has a finite maximum performance value that can be provided by the AVSM 160 or AVSC 120 environments within the AVSS 100. This finite maximum value will be termed a "capacity bound."

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M^{MAX}_{SM} = AVSM CPU session management maximum capacity

M^{MAX}_{B} = AVSM Bus maximum capacity

M^{MAX}_{N} = AVSM Networking port maximum capacity

C^{MAX}_{SM} = AVSC CPU session management maximum capacity

C^{MAX}_{P} = AVSC CPU process maximum capacity

C^{MAX}_{B} = AVSC Bus maximum capacity

C^{MAX}_{DC} = AVSC Disk Controller/disk bus maximum capacity

C^{MAX}_{RW} = AVSC Disk read/write/seek maximum capacity

C^{MAX}_{N} = AVSC Networking port maximum capacity

C^{MAX}_{EH} = AVSC Encoder hardware maximum capacity

C^{MAX}_{DH} = AVSC Decoder hardware maximum capacity

The amount of resource required by a potential combination of granted sessions would be determined, in many cases, by the sum of the total allocated resource estimates. Overhead can be included, for example, via the incorporation of a plurality of overhead constants that include the folloiwng:

M^{OH}_{SM} = AVSM CPU session management overhead

M^{OH}_{B} = AVSM Bus overhead

M^{OH}_{N} = AVSM Networking port overhead

C^{OH}_{SM} = AVSC CPU session management overhead

C^{OH}_{P} = AVSC CPU process overahead

C^{OH}_{B} = AVSC Bus overhead

C^{OH}_{DC} = AVSC Disk Controller/disk bus overhead

C^{OH}_{RW} = AVSC Disk read/write/seek overhead

C^{OH}_{N} = AVSC Networking port overhead

Overhead may also be treated as a linear function of the number of various session types. Incorporation of overhead results in the supportable operating states forming a lattice of points within a convex hull defined by the intersection of hyperplanes defined by the resource capacity bound inequalities. For example, with:

n^E = number of encoding sessions
n^D = number of decoding sessions
n^{PF} = number of put file transfer sessions
n^{GF} = number of get file transfer sessions
n^{SS} = number send streaming sessions
n^{RS} = number of receive streaming sessions

then the supportable operating states in an implementation could be given by the following constraints:

For each AVSM 160 (typically one per AVSS 100),

- AVSM CPU capacity (session management)

$$[\, n^E M^E_{SM} + n^D M^D_{SM} + n^{PF} M^{PF}_{SM} + n^{GF} M^{GF}_{SM} + n^{SS} M^{SS}_{SM} + n^{RS} M^{RS}_{SM} \,] + M^{OH}_{SM} \le M^{MAX}_{SM}$$

- AVSM bus capacity:

$$[\, n^E M^E_{B} + n^D M^D_{B} + n^{PF} M^{PF}_{B} + n^{GF} M^{GF}_{B} + n^{SS} M^{SS}_{B} + n^{RS} M^{RS}_{B} \,] + M^{OH}_{B} \le M^{MAX}_{B}$$

- AVSM Networking port capacity:

$$[\, n^E M^E_{N} + n^D M^D_{N} + n^{PF} M^{PF}_{N} + n^{GF} M^{GF}_{N} + n^{SS} M^{SS}_{N} + n^{RS} M^{RS}_{N} \,] + M^{OH}_{N} \le M^{MAX}_{M}$$

For each AVSC 120 (at least one, typically multiple, per AVSS 100):

- AVSC CPU capacity (session management):

$$[\, n^E C^E_{SM} + n^D C^D_{SM} + n^{PF} C^{PF}_{SM} + n^{GF} C^{GF}_{SM} + n^{SS} C^{SS}_{SM} + n^{RS} C^{RS}_{SM} \,] + C^{OH}_{SM} \le C^{MAX}_{SM}$$

- AVSC CPU processes capacity:

$$[\, n^E C^E_{MP} + n^D C^D_{MP} + n^E C^E_{CP} + n^D C^D_{CP} + n^{PF} C^{PF}_{TP} + n^{GF} C^{GF}_{TP} + n^{SS} C^{SS}_{SP} + n^{RS} C^{RS}_{SP} \,]$$

$$+ \; C^{OH} \leq C_{CP}^{MAX}$$

- AVSC Bus capacity:

$$[\, n^{E} C_{B}^{E} + n^{D} C_{B}^{D} + n^{PF} C_{B}^{PF} + n^{GF} C_{B}^{GF} + n^{SS} C_{B}^{SS} + n^{RS} C_{B}^{RS} \,] + C_{B}^{OH} \leq C_{B}^{MAX}$$

- AVSC Disk controller/disk bus capacity:

$$[\, n^{E} C_{DC}^{E} + n^{D} C_{DC}^{D} + n^{PF} C_{DC}^{PF} + n^{GF} C_{DC}^{GF} + n^{SS} C_{DC}^{SS} + n^{RS} C_{DC}^{RS} \,] + C_{DC}^{OH} \leq C_{DC}^{MAX}$$

- AVSC Disk read/write/seek capacity:

$$[\, n^{E} C_{RW}^{E} + n^{D} C_{RW}^{D} + n^{PF} C_{RW}^{PF} + n^{GF} C_{RW}^{GF} + n^{SS} C_{RW}^{SS} + n^{RS} C_{RW}^{RS} \,] + C_{RW}^{OH} \leq C_{RW}^{MAX}$$

- AVSC Networking port capacity:

$$[\, n^{E} C_{N}^{E} + n^{D} C_{N}^{D} + n^{PF} C_{N}^{PF} + n^{GF} C_{N}^{GF} + n^{SS} C_{N}^{SS} + n^{RS} C_{N}^{RS} \,] + C_{N}^{OH} \leq C_{N}^{MAX}$$

- AVSC hardware:

$$[\, n^{E} C_{EH}^{E} \,] \leq C_{EH}^{MAX}$$

$$[\, n^{D} C_{DH}^{D} \,] \leq C_{DH}^{MAX}$$

Here it is assumed that each encode session is represented with either a fixed or an average amount of disk capacity. Depending upon design choices, one embodiment may enforce a per-session file size limit, while another embodiment may permit file size overruns.

Upon receiving one or more requests for services, the AVSM 160 would, for example, perform the following evaluations:

· serialize any multiple pending requests so the following evaluations are done fully separately in sequence for each pending request;

· check if accepting the new request would not exceed the AVSM's own capacity requirements; and

· check all AVSCs 120 within that AVSS 100 to see if at least one AVSC 120 could accept the new request without exceeding the AVSM's own capacity requirements (this

could be done via either the AVSM's own image of the AVSC states or by polling at least one AVSC 120).

- If more than one AVSC 120 can support the request:
- select one according to a conventional procedure such as first available, round robin, or operating lifetime;
- allocate the session to the AVSC 120, ensuring directly or indirectly notification of the requesting application and the invocation of appropriate network connections; or
- otherwise, deny the request.

Clearly there are many other possible implementations. The range of possible implementations could also include methods for ensuring that no single type of application or type of session monopolizes the AVSS 100 at the exclusion of other types of applications or sessions. In the previous illustrative example, this could be accomplished by adding further inequalities to the list above. For example, the total number of file transfer sessions can be limited by adding the constraint

$$n^{PF} + n^{GF} \leq n^{F:MAX}$$

whered $n^{F:MAX}$ is the maximum number of simultaneous file transfers allowed.

The device management services additionally include AVSC validation operations, through which the AVSM 160 queries each AVSC 120 to determine the number, type, and capabilities of the AVSC's storage, encoding, decoding, and transcoding resources. The AVSM 160 uses the query results to update the AVSS database if needed, and further logs any discrepancies as well as the types of operations undertaken in response.

4.7.6 Administrative Services

The AVSM 160 also performs or manages the performance of administrative services that include system performance and utilization monitoring; system diagnostics; event capture operations; billing operations; password maintenance operations; and user maintenance operations.

4.8 Software Architecture And System Interface

4.8.1 Communication Class Hierarchy

In the present invention, the manners in which AVSS-external and AVSS-internal clients may access AVSM, AVSC, and A/V network manager functionality are defined by a set of software communication class hierarchies. ***Figure*** 15 is a block diagram showing a high-level AVSS communication class hierarchy 200 for one embodiment of the present invention. As shown in ***Figure*** 15, the base class for this hierarchy is referred to as "Comm," which serves as a basis for AVSS-external and AVSS-internal client communication. The Comm class also serves as a basis for external and internal A/V network manager client communication, and is described in detail in U.S. Patent No. 5,617,539.

Several subclasses derived from the Comm class encapsulate particular aspects of AVSS functionality for AVSS-external and AVSS-internal client access. These subclasses include the following:

1) AvnmComm - the AvnmComm class provides access to functionality supported through its parent class, as well as client access to A/V network manager services.

1) AvsComm - the AvsComm class provides access to AVSS functionality that includes login authorization; A/V encoding, decoding, and transcoding; file transfer between AVSCs 120; file importing and exporting; file and directory management; and AVSC configuration and status reporting.

2) AvscComm - the AvscComm class provides access to the functionality supported through its parent class, and in addition provides client and server access to additional AVSC-related services as detailed below.

3) AvscAppComm - the AvscAppComm class provides a client interface for accessing file import and export services.

4) AvsmComm - the AvsmComm class provides access to the functionality supported through its parent class, and in addition provides client and server access to the AVSM file and device management services described above.

5) AvsmAppComm - the AvsmAppComm class provides event handlers that support client application program access to AVSS services.

6) AvsmAdminComm - the AvsmAdminComm class provides AVSS-external and AVSS-internal clients access to AVSS administrative functionality.

4.8.2 AVSM Class Relationship

The classes of AVSM objects resident within the AVSM object memory 172 have a hierarchical class relationship. ***Figure*** 16 is a block diagram of an AVSM class relationship 250 organized in accordance with one embodiment of the present invention. The AVSMManager class comprises comprises a container class for supporting session establishment, session management, and session termination operations. The AVSMManager class further includes parameters and methods for facilitating AVSM operation, i.e., implementing the AVSM 160. The AVSMManager class also contains parameters specifying AVSS operational characteristics, such as AVSC session limits, plus port and connection information for premises AVSCs 120, the A/V network manager 34, and known non-premises AVSSs 100. In one embodiment, the AVSMManager class includes methods that facilitate communication between lower-level classes within the AVSM class hierarchy 250.

An AVSMComm class provides a software infrastructure for implementing a server interface that manages client interactions, where clients include user application programs and/or a non-premises AVSS 100. The AVSMComm class also provides a basis that allows the AVSM 160 to behave as a client relative to non-premises AVSSs 100. The AVSMComm class comprises methods for retrieving requests, building objects that are subclassed according to request type, and dispatching requests. The AVSMComm class further comprises methods for receiving replies, building objects subclassed according to reply type, and issuing replies. The AVSMComm class includes a reference to an AVSMRequestList class and an AVSMReplyList class.

The AVSMRequestList class facilitates the implementation of a queue for requests received from AVSS-external clients, as well as a queue for requests directed to non-premises AVSSs 100. The AVSMRequestList class comprises a reference to an AVSMRequest class, which comprises request parameters as well as methods for accessing data associated with a request. In one embodiment, the AVSMRequest class is subclassed according to request type. Thus, a request queue may include a first reference

to an AVSMOpenRequest object that corresponds to an A/V file open request received from a client; and a second reference to an AVSMPlayRequest object that corresponds to an A/V file playback request received from a client.

The AVSMReplyList class facilitates the implementation of a queue for replies directed from the AVSM 160 to external clients, as well as a queue for replies received from non-premises AVSSs 100. The AVSMReplyList class comprises a reference to an AVSMReply class, where the AVSMReply class comprises reply parameters as well as a set of methods for accessing data associated with a reply. In a manner analogous to that for the AVSMRequest class, the AVSMReply class may be subclassed in accordance with reply type.

An AVNMComm class provides a software infrastructure for implementing an A/V network client interface that includes parameters and methods for issuing requests to and receiving replies from the A/V network manager 34. The AVNMComm class includes a reference to an AVNMRequestList class and an AVNMReplyList class. The AVNMRequestList class facilitates the implementation of a queue for requests directed to the A/V network manager 34, and comprises a reference to an AVNMRequest class. The AVNMRequest class includes parameters corresponding to a request directed to the A/V network manager 34, as well as methods for accessing data associated with the request. The AVNMRequest class may be subclassed in accordance with the type of request directed to the A/V network 30. The AVNMReplyList class facilitates the implementation of a queue for replies received from the A/V network manager 34, and includes a reference to an AVNMReply class. The AVNMReply class comprises parameters associated with replies received from the A/V network manager 34, as well as methods for accessing any data associated therewith. The AVNMReply class may be subclassed in accordance with the types of a replies that may be received from the A/V network manager 34.

An AVSCComm class comprises a software infrastructure for implementing an AVSC client interface, and comprises parameters and methods for issuing requests to and receiving replies from AVSCs 120. The AVSCComm class includes a reference to an AVSCRequestList class, which facilitates implementation of a queue for requests directed

to AVSCs 120. The AVSCRequestList class includes a reference to an AVSCRequest class, which includes parameters and methods for generating requests directed to an AVSC 120, and which may be subclassed in accordance with the types of requests that may be directed to AVSCs 120. The AVSCComm class also includes a reference to an AVSCReplyList class, which facilitates implementation of a queue for replies received from AVSCs 120. The AVSCReplyList class includes a reference to an AVSCReply class, which comprises parameters and methods associated with receipt of AVSC replies. The AVSCReply class may be subclassed in accordance with AVSC reply types.

A CellList class serves as a basis for a list that describes each premises AVSC 120. The CellList includes a reference to a Cell class, which provides a basis for describing an AVSC 120. The Cell class includes parameters that specify a network address, bandwidth capabilities, and a number of simultaneous requests that the AVSC 120 can process. The Cell class further includes references to a ListDisks class, a ListEncoders class, a ListDecoders class, and a ListTranscoders class.

The ListDisks class facilitates creation of a list that references a Disk class, which supports an AVSC storage device description. The Disk class contains parameters that include such information as device transfer rate, seek time, and available storage space. The Disk class additionally contains methods for accessing and modifying such parameters.

The ListEncoders class facilitates the implementation a list that references an Encoder class, which supports an AVSC encoder description. Encoder class parameters include such information as encoder type, bandwidth and I/O limitations, supported media formats, and input signal characteristics. The Encoder class additionally contains methods for accessing and modifying these parameters.

The ListDecoders class facilitates the implementation of a list that references a Decoder class, which supports an AVSC decoder description. Decoder class parameters include such information as decoder type, bandwidth and I/O limitations, supported media formats, and output signal characteristics. The Decoder class additionally contains methods for accessing and modifying the Decoder class parameters.

The ListTranscoders class facilitates the implementation of a list that references a Transcoder class, which supports an AVSC transcoder description. Transcoder class parameters include such information as transcoder type, bandwidth and I/O limitations, supported media formats, and input/output signal characteristics. The Transcoder class additionally contains methods for accessing and modifying the Transcoder class parameters.

A LoginList class provides an implementation basis for a list describing currently logged-in users. The LoginList class references a Login class that supports a user description via parameters that include a user ID, a privilege level, a login date and time stamp, and a set of channel handles currently allocated to the user ID, where each channel handle corresponds to AVSC resources allocated to processing user requests as described in detail below.

A SessionList class serves as basis for a list that describes currently active sessions. The SessionList class references a Session class, which provides a foundation for describing any particular session. The Session class is subclassed according to session type, where the subclasses include CopySession, PublishSession, ImportSession, ExportSession, AVSession, FileSession, and ListSession classes.

The CopySession class provides a framework for describing and tracking a file copy operation between two AVSCs 120. The CopySession class includes parameters such as IP or network addresses for the AVSCs 120 involved, a source and a destination filename, and channel handles corresponding to resources reserved on the AVSCs 120 for performing the file copy operation. In one embodiment, the CopySession class parameters also include a flag that specifies whether a copy operation or a transfer operation is required, where the transfer operation comprises file copying followed by deletion of the file from an origin AVSC 120. The CopySession class further includes methods for accessing its parameters.

The PublishSession class comprises parameters and methods that describe and monitor A/V and/or multimedia document publishing operations, through which A/V and/or multimedia files may be copied to non-AVSS servers. PublishSession class parameters include IP or network addresses plus login data for a target or destination

server, as well as a filename. PublishSession class methods includes data conversion and data transfer methods. The PublishSession class may be subclassed in accordance with particular media formats, where such subclasses include parameters such as destination server type and transcoding requirements. Exemplary subclasses include a NetShowPublish class and a RealMediaPublish class.

The ImportSession class comprises parameters and methods that describe and monitor the reading of A/V file data into a target AVSC 120 from a source client application (or source workstation 40 or other computer upon which the client application is executing), and includes parameters specifying the target AVSC's IP or network address and an AVSC channel handle. The ExportSession class provides a basis for writing A/V file data from the AVSC 120 into a target client application program (or target workstation 40 or other computer upon which the client application program is running), and includes parameters specifying the source AVSC's IP or network address and an AVSC channel handle.

The AVSession class comprises parameters and methods for initiating and managing A/V operations, which may include record, play, stream-in, stream-out, pause, resume, status, and stop operations.

The FileSession class comprises parameters and methods that facilitate writing data to and reading data from an AVSC 120. The ListSession class comprises parameters and methods that facilitate the generation of a list that specifies files and file attributes stored upon one or more AVSCs 120.

An AVMFileList class provides a basis for implementing the AVSM file parameter list within the AVSS database. The AVMFileList includes a reference to an AVMFile class, which includes parameters describing an A/V file, such as filename, file author or creator, a file title and description, file size, encoding type, and playback duration. The AVMFile class further includes a reference to an OwnerList class, which in turn references an Owner class. The Owner class provides a basis for describing an A/V file owner, and includes parameters such as user ID, a last access date and time, and an ownership expiration date. The OwnerList class includes methods for adding and deleting owners.

Those skilled in the art will understand that the AVSM class hierarchy 250 can be readily modified or extended to provide or accommodate access to additional types of AVSM functionality.

4.8.3 AVSC Class Relationship

In a manner similar to that for the AVSM objects, the AVSC objects resident within the AVSC object memory 152 are hierarchically interrelated. ***Figure*** 17 is a block diagram of an AVSC class relationship 300 organized in accordance with one embodiment of the present invention. In the AVSC class relationship 300, a MediaResource class serves as a container class for implementing multithreaded AVSC functionality, and includes methods for thread management. An AVSCComm class provides a software infrastructure for implementing an AVSC communication port. The AVSCComm class provides a basis for implementing a server that receives requests and issues replies, as well as a client that issues requests and receives replies. Typically, an AVSC 120 will act as a server the majority of the time; however, the AVSC 120 may act as a client during AVSC-to-AVSC file copy or transfer operations. The AVSCComm class comprises parameters and methods for retrieving requests, building objects that are subclassed according to request type, and dispatching requests. In one embodiment, request dispatch occurs via the creation of a thread of execution corresponding to a request. The AVSCComm class includes references to an AVSCRequestList class and an AVSCReplyList class.

The AVSCRequestList class provides a basis for implementing a request queue, and references an AVSCRequest class. The AVSCRequest class facilitates request description, and may be subclassed in accordance with request type. The AVSCReplyList class provides a basis for implementing a reply queue, and references an AVSCReply class, which may be subclassed according to reply type.

A MessageThreadList class facilitates implementation of a list of threads that are currently active within the AVSC 120, and references a MediaThread class. The MediaThread class provides a framework for implementing a thread of execution that processes and fulfills a request. The MediaThread class includes thread parameters such as a thread ID and thread state information. The parameters may further include a

filename, a password, and an IP or network address. The MediaThread class references a MediaMessage class. The MediaMessage class comprises parameters and methods that direct thread execution, and is subclassed according to thread type.

In the context of the AVSC class relationship 300, a "channel" comprises a group of resources allocated for performing a particular type of operation, such as an A/V file playback or record operation. A ChannelList class facilitates the implementation of a list that identifies or describes a current set of channels within the AVSC 120. The ChannelList class references a MediaChannel class, which comprises a container class for representing a channel. The MediaChannel class selectively includes references to an Encoder class, a Decoder class, a Transcoder class, a Buffer class, a DiskAccess class, and a NetAccess class. The Encoder class provides a basis for describing and controlling an encoder within the AVSC 120, and includes parameters specifying encoder type, supported quality levels, whether the encoder is busy or available, and methods that communicate with a set of software drivers that control encoder hardware. The Decoder class serves as a basis for describing and directing the operation of a decoder within the AVSC 120, and includes parameters specifying decoder type, supported quality levels, availability, and methods that communicate with software drivers that control decoder operation. Similarly, the Transcoder class serves as a basis for describing and directing the operation of a transcoder within the AVSC 120, and includes parameters specifying transcoder type, supported source and target coding formats, availability, and methods that communicate with software drivers that control transcoder operation. The Buffer class comprises parameters and methods that facilitate the implementation of memory and/or disk buffers, where such parameters may include buffer type, size, and fill level, and such methods may include program instructions for reading from and writing to the buffer. Finally, the NetAccess class serves as a basis for managing data exchange between the AVSC 120 and the AVSS internal network 110. Each of the Encoder, Decoder, Buffer, DiskAccess, and NetAccess classes may be subclassed in accordance with the particular nature of the resources to which they correspond.

The MediaChannel class also includes a reference to a MediaFile class, which serves as a wrapper for providing an interface to particular functionality and AVSC

resources allocated for the channel. The MediaChannel additionally includes a reference to a MessageThreadList class, which facilitates implementation of a list that identifies threads currently active within the scope of the channel.

An EncoderList class within the AVSC class relationship 300 serves as a basis for implementing a list that identifies the encoders within the AVSC 120. The EncoderList class includes a reference to the aforementioned Encoder class. Similarly, a DecoderList class serves as a basis for implementing a list identifying the decoders within the AVSC 120. The DecoderList class includes a reference to the Decoder class. A TranscoderList class facilitates implementation of a list identifying the transcoders within the AVSC 120. The TranscoderList class also references the Transcoder class. A BufferList class facilitates implementation of a list that indicates buffer allocation within the AVSC 120, and includes a reference to the Buffer class. A DiskAccessList class facilitates implementation of a list specifying allocation of storage devices within the AVSC 120, and includes a reference to the Disk class. Finally, a NetAccessList class facilitates implementation of a list of allocated network access resources, and includes a reference to the NetAccess class.

As with the AVSM class relationship 250, those skilled in the art will understand that the AVSC class relationship 300 can be readily modified or extended to provide or accommodate access to additional types of AVSC functionality.

4.9 Client And Server Communication

In the present invention, an AVSS-external or AVSS-internal client requiring a service accessed via an instance of a target object calls for the service by issuing a request. In response, the target object may perform one or more portions of the required service, act as a client and issue one or more requests to other objects, and/or issue one or more messages. Upon service completion, the target object issues a reply. Thus, from a hierarchical perspective, the issuance of a high-level request may give rise to the issuance of one or more lower-level requests and replies, followed by the issuance of a high-level reply. Each such request and reply in one embodiment of the present invention is exchanged in accordance with a conventional Internet Protocol (IP) suite, in a manner readily understood by those skilled in the art.

4.10 AVSM Request Categories

The requests understood by the AVSM 160 span several categories, which in one embodiment include the following:

4.10.1 External Client to AVSS Requests

Requests that may be used by AVSS-external clients requiring access to AVSS services include the following:

a) Login - initiates a login session with the AVSS 100 and provides user information and associated A/V network service information to the AVSM 160, where the user information includes a user ID and a password.

b) Logout - terminates user interaction with the AVSS 100.

c) GetFileLimits - returns current administered and physical limits on the length of an A/V file to be encoded.

d) AcquireAVChannel - establishes a session by reserving particular AVSC resources for performing specified types of operations, such as encoding, decoding, transcoding, and/or streaming. Specifies a source AVSC resource and at least one destination AVSC resource to flexibly support multiple modes of operation, which include the following:

1) Playback mode - facilitates playback of an A/V file residing upon an AVSC storage device to a user workstation 40, where such playback can occur at a specified speed or playback rate.
Source resource = disk, destination resource = decoder.

2) Preview mode - facilitates recording setup and record preview operations involving a user workstation 40 (i.e., A/V signal "loop through" without storage of A/V signals to disk).
Source resource = encoder, destination resource = decoder.

3) Record mode - facilitates A/V signal recording from a user workstation 40 to generate an A/V file upon an AVSC storage device.
Source resource = encoder, destination resource = disk.

4) Playback-while-recording mode - facilitates A/V signal recording from a user workstation 40 with simultaneous A/V signal playback to the user workstation 40.
Source resource = encoder, destination resources = disk and decoder.

5) Broadcast-to-network mode - facilitates broadcast of A/V signals from a user workstation 40 to a network (i.e., the AVSS internal network 110 or the data network 20).
Source resource = encoder, destination resource = network.

6) Broadcast-and-playback mode - facilitates A/V signal broadcast from a user workstation 40 to a network, with simultaneous A/V signal playback to the user workstation 40.
Source resource = encoder, destination resources = network and decoder.

7) Broadcast-while-recording mode - facilitates broadcast to a network while performing A/V signal recording from a user workstation 40 to an AVSC storage device.
Source resource = encoder, destination resources = disk and network.

8) Broadcast-with-record-and-playback mode - facilitates broadcast to a network while recording A/V signals from a user workstation 40 to AVSC storage device and simultaneously playing A/V signals back to the user workstation 40.
Source resource = encoder, destination resources = network, disk, and decoder.

9) Stream-in-to-disk mode - facilitates receiving a data stream from a network to an AVSC storage device.
Source resource = network, destination resource = disk.

10) Stream-in-to-playback mode - facilitates data streaming from a network to a user workstation 40 via AVSC decoder.

Source resource = network, destination resource = decoder or transcoder.

11) Stream-in-to-playback-with-save mode - facilitates data streaming from a network to a user workstation 40, and saves data being streamed in to an AVSC storage device.
Source resource = network, destination resource = decoder or transcoder and disk.

12) Stream-out-to-network mode - facilitates data streaming from an AVSC storage device to a network at a specified streaming rate.
Source resource = disk, destination resource = network.

13) Stream-out-to-network-and playback-mode facilitates data streaming from an AVSC storage device to a network at a specified streaming rate with simultaneous A/V signal playback to the user workstation 40.
Source resource = disk, destination resource = network and decoder

Those skilled in the art will understand that a buffer resource upon an AVSC may be included as an intermediate destination resource for several types of operational modes, for example, those involving streaming. Those skilled in the art will additionally understand that many other modes of operation exist, for which a session may be established and resources may be reserved in a manner analogous to that described above. When appropriate (i.e., depending upon the specified mode of operation), the AcquireAVChannel request also specifies parameters such as a filename and password; A/V file encoding type; and/or a minimum frame count that indicates an amount of storage space that must be available upon a storage device. After successful resource reservation, a reply corresponding to AcquireAVChannel (i.e., an AcquireAVChannelReply) returns a session handle to a requesting client.

e) AcquireDataChannel - establishes a session and reserves AVSC resources for particular types of file transfer operations, including copy-to, copy-from, file query, and file listing operations. This request includes parameters specifying a mode such as read-only or read-write, as well as parameters such as a filename, password, and a minimum

amount of storage space that must be present upon an AVSC storage device. After AVSC resource reservation, a reply corresponding to AcquireDataChannel returns a session handle.

f) AcquireAVFileImportChannel - establishes a session for importing an A/V file into the AVSS 100 and returns a session handle and the network or IP address of the AVSC 120 that will initially receive the A/V file.

g) AcquireAVFileExportChannel - establishes a session for exporting an A/V file from the AVSS 100 to the client and returns the network or IP address of the AVSC 120 upon which the file is stored, plus a session handle.

h) AcquirePublishChannel - establishes a session for publishing an A/V file from an AVSC 120 to one or more non-AVSS target servers. Parameters specified include a filename and password, as well as target server type. A reply associated with this request returns a session handle.

i) PublishFile - publishes a file to a non-AVSS target server. Specified parameters include a filename and password, a target server network or IP address, and target server login and password information.

j) RequestPublishLocations - given a specified filename and password, returns known non-AVSS target server identification and network or IP address to which a file has previously been published, as indicated by the AVSS database.

k) DeletePublishedFile - given a specified filename, file password, and non-AVSS target server network or IP address or target server type, deletes file's publication references for target server or target server types from the AVSS database. If target server login, login password, and any delete authorization information is also specified, DeletePublishedFile additionally attempts to delete the published file from the target server itself.

l) ReleaseAVChannel - releases the resource or resources obtained through the AcquireAVChannel, AcquireAVFileImportChannel, AcquireAVFileExportChannel, and AcquirePublishChannel requests, and deletes a corresponding session handle.

m) AVSMStatusRequest - returns status information to a client during file copy, import, export, and publishing operations when a valid session handle is specified, where

such status information may include a number of bytes transferred or an estimated amount of time remaining until operation completion.

n) GetAVFileAttributes -returns attributes for an A/V file, including application program-defined attributes. Certain restrictions may exist with regard to which attributes may be returned. For example, only a super-user and the file author may be allowed to view a complete owner list. A user may be allowed to view file attributes if the user is specified as an owner for the file, and any attributes returned are specific to that user.

Super-users and the file authors can access the following operations in one embodiment:

o) SetAVFileAttributes - sets the mutable attributes of an A/V file, including application program-defined attributes.

p) AddOwner - causes the AVSM 160 to add a specified user ID to the access privilege list corresponding to an A/V file.

q) RemoveOwner - causes the AVSM 160 to remove a specified user ID from the access privilege list corresponding to an A/V file.

r) RequestAVFile - requests an A/V file from a non-premises source AVSS 100. If AV file is present within the domain of the AVSM 160 that receives this request, a file transfer procedure retrieves the A/V file from the non-premises source AVSS 100.

4.10.2 Client To AVSC Via AVSM Requests

Many of the requests the AVSM 160 issues to an AVSC 120 are variants of those sent to the AVSM 160 by client application programs. Requests that the AVSM 160 may receive from external clients and forward or pass to an AVSC 120 for servicing include the following:

a) Open - depending upon a mode specifier that indicates whether an A/V file is to be operated upon relative to A/V resource processes (MEDIA mode) or file transfer processes (DATA mode), opens or creates an A/V file and prepares it for encoding, decoding, and/or transcoding, streaming in, or streaming out (MEDIA mode), or data transfer (DATA mode). Upon completion of this request, a reply is issued that includes a session handle.

b) Close - closes a file associated with a specified session handle.

c) Read - for a file opened in DATA mode, reads a specified number of bytes from the file and transfers them to the requesting client.

d) Write - for a file opened in DATA mode, transfers and writes a specified number of bytes to the file.

e) Seek - for a file opened in DATA mode, positions the file at a specified byte. For a file opened in media mode, positions the file at a specified frame.

f) Play - causes the AVSC 120 to signal a decoder to begin processing a file and feeding the output to the A/V network 30. Parameters include playback speed or rate as well as direction and processing length indicators that allow this request to implement fast-forward, rewind, or similar operations.

g) Record - causes the AVSC 120 to signal an encoder to begin saving A/V input to the file. A record length limitation may be specified.

h) StreamIn - causes the AVSC 120 to stream data from the AVSS internal network 110 into a buffer, data storage, and/or decoding resource, in accordance with resources reserved for a particular channel.

i) StreamOut - causes the AVSC 120 to stream data from a buffer, data storage, and/or encoding resource to the AVSS internal network 110 at a specified data rate, in accordance with resources reserved for a particular channel.

j) Stop - causes suspension of a current encoding, decoding, transcoding, or streaming process.

k) Status - returns current file mode and frame number if in MEDIA mode or byte position if in DATA mode.

4.10.3 AVSM To AVSC Requests

Requests the AVSM 160 issues to a target AVSC 120 in relation to A/V file access and file transfer include the following:

a) AcquireChannel - requests the AVSC 120 to create a channel reserving a specified encoder, decoder, and/or transcoder for use by an AVSS client. This request may additionally be used to reserve file transfer bandwidth for impending file transfer or streaming operations. Request completion results in the return of a channel handle that may be used to identify the allocated resources in subsequent operations.

b) ReleaseChannel - indicates to the AVSC 120 that the resources associated with a specified handle are no longer required and shall be released.

c) SetMediaSetup - sets or updates configuration information for the target AVSC 120. This request is typically employed in the event that the AVSC's hardware configuration has been modified.

d) GetMediaSetup - returns configuration and usage information for the target AVSC 120.

e) GetDriveInfo - returns information about a specified storage device.

f) GetMediaStatus - returns current AVSC utilization and state information.

g) Rename - renames a specified file.

h) Delete - deletes a specified file.

i) CopyTo - initiates the transfer of a specified file to a specified destination AVSC 120.

j) CopyFrom - initiates the transfer of a specified file from a specified source AVSC 120.

4.10.4 AVSC To AVSM Requests

An AVSC 120 may send informational requests to its managing AVSM 160 to indicate state changes associated with file transfer operations, A/V operation completion, and/or general hardware status. Such informational requests include the following:

a) PlayEnd - indicates that a current play operation has completed, due to end-of-file or a play-length being reached.

b) RecordEnd - indicates that a current record operation has completed.

c) HardwareError - indicates a hardware failure associated with a specified encoder, decoder, transcoder, or storage device.

4.10.5 AVSM To AVSM Requests

In addition to receiving external requests from client application programs, a premises AVSM 160 may receive requests from a non-premises AVSM 160. Typically, such requests correspond to file transfer operations, and include the following:

a) RequestAVFileSource - issued by the premises AVSM 160 to the non-premises AVSM 160 upon receipt of a "RequestAVFile" from a client. The non-premises AVSM

160 returns i) the network or IP address of an AVSC 120 that can serve as a file transfer source; ii) attributes for a specified A/V file; and iii) a channel handle.

b) NotifyAVFileSource - sent upon successful completion of an A/V file transfer between a premises and a non-premises AVSC 120, and includes the user ID and source channel handle, such that the non-premises AVSM 160 can release source AVSC resources that had been reserved for the file transfer.

4.10.6 AVSM Administration Requests

Several requests, some of which may be accessible only to a super-user, may be used to perform AVSS configuration and administrative operations, and include the following:

a) SetPrivileged - establishes a super-user session, through which the super-user can access many administrative functions. This request requires a password.

b) GetAVSMLogInfo - returns information stored in the AVSM event log.

c) ClearAVSMLogInfo - clears the AVSM event log.

d) SetAVSMLogLevel - specifies types of requests and events to log, as well as a level of detail for logging, and a maximum AVSM event log size.

e) ListAVSCs - returns a list of AVSCs 120 managed by the AVSM 160.

f) GetAVSCInfo - returns configuration and utilization information for a particular AVSC 120.

g) GetAVSCLogInfo - returns information stored in the AVSC event log, message queue.

h) ClearAVSCLogInfo - clears a specified AVSC's event log.

i) SetAVSCLogLevel - indicates to a specified AVSC 120 types of requests and events to log, as well as a level of detail for logging, and a maximum AVSC event log size.

j) SetAVNMInfo - updates A/V network manager information maintained within the AVSM 160.

k) AddAVSC - adds configuration information corresponding to a newly-added premises AVSC 120 to the AVSS database. Configuration information for the new AVSC 120 is obtained by querying the AVSC 120.

l) RemoveAVSC - removes information corresponding to an AVSC 120 no longer in the premises group from the AVSS database.

m) ListAVSSs - returns a network or IP address for each non-premises AVSS 100 about which the AVSM 160 is aware.

n) GetAVSSInfo - returns routing and/or connection setup information for a particular non-premises AVSS 100 known to the AVSM 160.

o) SetAVSSInfo - sets routing and/or connection setup information for a specified non-premises AVSS 100. In one embodiment, this information pertains to the host AVSM 160 for the specified AVSS 100.

p) AddAVSS - adds a specified non-premises AVSS 100 to those known to the AVSM 160. In one embodiment, routing and connection information for the newly-added AVSS 100 is specified through SetAVSSInfo.

q) RemoveAVSS - removes a non-premises AVSS 100 from those know to the AVSM 160.

r) SetAVFileLimits - sets a maximum A/V file length allowed during encoding operations.

Those skilled in the art will recognize that an AVSS could support additional or fewer requests in an alternate embodiment.

4.11 AVSC Request Categories

The AVSC 120 provides support for a variety of requests, including those in the following categories:

4.11.1 Allocation and Authorization Requests

a) AuthorizationResource - ensures that a client requesting services provided by the AVSC 120 is either an AVSM 160 or a client providing a valid channel handle.

b) AllocateChannel - creates a channel to which specified resources are allocated, and returns a channel handle.

c) ChangeChannel - for a channel identified by a channel handle, adds or deletes specified resources to or from channel, respectively.

d) ReleaseChannel - for a channel identified by a channel handle, frees channel resources (i.e., channel resources are returned to "not busy" or "not allocated" status), removes channel from channel list, and releases channel handle.

4.11.2 File Management Requests

a) CopyFromChannel - establishes a copy session with a source AVSC 120 and performs file copy operations.

b) CopyToChannel - establishes a copy session with a target AVSC 120 and performs file copy operations.

c) RenameChannel - renames a specified file.

d) DeleteChannel - deletes a specified file.

e) FindFilesFirstChannel - performs file directory operations, returning first k files.

f) FindFilesNextChannel - performs file directory operations, returning next n files.

g) GetFileInfoChannel - opens a specified file and returns information about the media content of the file; this request may be employed, for example, to validate file import operations or for consistency checking.

h) PublishDigitalFileChannel - performs format conversion, login operations, and file copy operations to publish a specified file to another server in a specified format.

4.11.3 Media Requests

a) OpenChannel - opens a specified A/V file on a specified channel.

b) ReadChannel - reads from an A/V file on a specified channel.

c) WriteChannel - writes to an A/V file on a specified channel.

d) PlayChannel - plays an A/V file on a specified channel at a specified frame rate.

e) StreamInChannel - streams an A/V file into a specified channel.

f) StreamOutChannel - streams an A/V file from a specified channel at a specified data rate.

g) RecordChannel - records an A/V file on a specified channel.

h) PauseChannel - pauses A/V file operations on a specified channel.

i) StopChannel - stops A/V file operations on a specified channel.

j) ResumeChannel - resumes A/V file operations on a specified channel.

k) SeekChannel – moves to a given position within an A/V file on a specified channel.

l) StatusChannel - returns information about current status of operations on a specified A/V file, including current frame or position within the file, on a specified channel.

m) CloseChannel - closes an A/V file on a specified channel.

4.11.4 Administrative Requests

a) InitializeResource - resets hardware, rebuilds lists, and reallocates objects.

b) GetMediaSetupResource - returns information about encoders, decoders, transcoders, and storage devices within the AVSC 120.

c) SetMediaSetupResource - sets information about encoders, decoders, transcoders, and/or storage devices within the AVSC 120.

d) GetMediaStatusResource - returns current status of AVSC resources, including a number of channels open; a number of encoders, decoders, transcoders in use; storage device usage and available storage space; and buffer and internal network usage.

e) HangupResource - performs failure recovery or system violation recovery operations.

f) ShutdownResource - performs shutdown operations, after which AVSC 120 can be reinitialized.

4.12 Request Sequence Examples

The description that follows details the flow of requests and replies generated in response to exemplary AVSS-external requests corresponding to several operational categories, which are defined as follows:

4.12.1 Session Establishment and Resource Reservation

Figure 18 is an exemplary request sequence diagram for the AcquireAVChannel request described above. In ***Figure*** 18, and AVSS client (i.e., a client application program) issues an AcquireAVChannel request specifying a mode and mode-specific parameters to its premises AVSM 160. The AVSM 160 determines a set of AVSC resources required to fulfill the channel acquisition request, and identifies an appropriate

AVSC 120. The AVSM 160 then issues an AcquireChannel request to the AVSC 120, specifying a set of resources to be reserved for a channel. Upon reserving the resources, the AVSC 120 issues an AcquireChannelReply to the AVSM 160, which includes a channel handle and a return code that indicates whether resource reservation was successful. The AVSM 160 subsequently issues an AcquireAVChannelReply that includes a session handle to the client. The client may subsequently use the session handle to request particular operations in accordance with the types of AVSC resources associated with the channel handle. For any given client, the AVSM 160 may map one or multiple session handles to a single channel and handle. The AVSM 160 is responsible for mapping session handles to the appropriate channel handle during subsequent operations. Those skilled in the art will understand that analogous operations occur for each particular type of channel acquisition request described above.

4.12.2 A/V File Management

Since the AVSM 160 is responsible for maintaining the AVSS database, it must perform some processing in response to client requests affecting A/V files. Since the A/V files are physically stored upon the AVSCs 120, the AVSM 160 passes or forwards requests to the appropriate AVSC(s) 120 following such processing. In general, for AVSS clients requiring access to an A/V file, the AVSM 160 examines the AVSS database to determine whether a specified file exists, and upon which AVSCs 120 the file resides. When an A/V file is created, the AVSM 160 adds a file parameter list to the AVSS database, and selects an available AVSC 120 to support an encoding session. The AVSM 160 issues a Record request to the selected AVSC 120, updates its internal data, and upon completion of the recording operation issues a RecordReply to the client.

Figure 19 is an exemplary request sequence diagram for the "Open" request described above. In ***Figure*** 19, an AVSS client (i.e., a client application program) issues an Open request specifying a session handle, a filename, and a mode (i.e., MEDIA, DATA read/write or read only) to its premises AVSM 160. The AVSM 160 subsequently maps the session handle to the appropriate AVSC channel handle, and forwards the open request to the AVSC 120 corresponding to the channel handle. After opening the A/V file, the AVSC 120 issues an OpenReply to the AVSM 160, which includes a channel handle

and a return code that indicates whether the open operation was successful. The AVSC 160 in turn replies to the AVSS client with a session handle and a return code.

Figure 20 is an exemplary request sequence diagram for the above-mentioned "Close" request. In *Figure* 20, an AVSS client issues a Close request that specifies a session handle and a filename to the AVSM 160. The AVSM 160 maps the session handle to the appropriate channel handle, and issues or forwards the close request specifying the channel handle and the filename to the appropriate AVSC 120. Upon completing the close operation, the AVSC 120 issues a close reply to the AVSM 160, which includes the channel handle and a return code. The AVSM 160 maps the channel handle to the appropriate session handle, and forwards the close reply to the AVSS client.

Figure 21 is an exemplary request sequence diagram for an A/V file "Delete" request. In response to receipt of a delete request that specifies a session handle and a fully-qualified filename from an AVSS client, the AVSM 160 determines upon which AVSCs 120 copies of the A/V file reside. The AVSM 160 then maps the session handle to a first channel handle, and forwards the delete request to a first AVSC 120 upon which such a copy resides. Once the A/V file copy is deleted, the first AVSC 120 issues a DeleteReply to the AVSM 160. The AVSM 160 then maps the session handle to a second channel handle, and forwards the AVSS client's delete request to a second AVSC 120 upon which a copy of the A/V file resides. The second AVSC 120 performs the required delete operation, and issues a DeleteReply to the AVSM 160. The AVSM 160 continues this process by mapping the session handle to a next channel handle, and forwarding the AVSS client's delete request to a next AVSC 120 storing a copy of the A/V file after receiving a DeleteReply from an AVSC 120 that had just completed the delete operation, and so on, until copies of the A/V file no longer reside upon the AVSCs 120. After the relevant AVSCs 120 have deleted the appropriate A/V file copies, the AVSM 160 updates the AVSS database 176 to reflect the deletion, and issues a DeleteReply to the AVSS client.

4.12.3 Encoding, Decoding, Or Transcoding Control

Figure 22 is an exemplary request sequence diagram for a "Record" request. Upon receiving a Record request from an AVSS client specifying a session handle and possibly a filename depending upon operational mode, the AVSM 160 maps the session

handle to the appropriate channel handle. The AVSM 160 forwards the mapped record request to the AVSC 120, which issues commands to the encoder associated with the channel handle. When the recording session is complete, the AVSC 120 issues a RecordReply that specifies the channel handle and a return code to the AVSM 160. The AVSM 160 then maps the channel handle to a session handle, and forwards the RecordReply to the AVSS client, where the RecordReply includes the session handle and a return code.

4.12.4 File Transfer

Externally-generated file transfer requests may result in the generation of multiple intra-AVSS requests and replies, depending upon the location of the requested file. ***Figure*** 23 is an exemplary request sequence diagram corresponding to a request for a file transfer from a non-premises AVSS 100. To take advantage of the file transfer capabilities of the AVSS 100, a client must have a source AVSM name or address as well as a filename. The client supplies these parameters to its premises AVSS 100 via a RequestAVFile request.

The premises AVSM 160 determines whether the required file is locally available, that is, whether it is stored upon one of the premises AVSCs 120. If not, the premises AVSM 160 issues a RequestAVFileSource request to the non-premises AVSS 100. Via an AcquireChannel request, the non-premises AVSM 160 allocates resources in an AVSC 120 that can serve as a source for the file transfer. After the non-premises AVSC 120 resources have been allocated, it replies to the non-premises AVSM 160 with an AcquireChannelReply. The non-premises AVSM 160 then replies to the premises AVSM 160 by issuing a RequestAVFileSourceReply that specifies the location or network or IP address and channel handle of the allocated non-premises AVSC 120.

The premises AVSM 160 issues an AcquireChannel request to allocate a channel and corresponding resources on a premises AVSC 120 for performing the file transfer operation, and in response receives an AcquireChannelReply that specifies a channel handle. The premises AVSM 160 then issues a CopyFrom request to the premises AVSC 120, where the CopyFrom request includes the source AVSC's location or address and channel handle. The premises AVSC 120 initiates the file transfer by issuing an Open request to the source AVSC 120, where the Open request specifies that the file is to be

opened in DATA mode. Upon receiving an OpenReply from the source AVSC 120, the premises AVSC 120 issues a series of Read requests to the source AVSC 120, which result in the file transfer. For each such Read request, the source AVSC 120 performs a read operation and issues a ReadReply to the premises AVSC 120.

After the file has been transferred, the premises AVSC 120 issues a Close request to the source AVSC 120. The source AVSC 120 closes the file, and issues a CloseReply to the premises AVSC 120, which in turn issues a CopyFromReply to the premises AVSM 160. The premises AVSM 160 next issues a ReleaseChannel request to the premises AVSC 120 to release resources associated with the copy operation, after which the AVSC 120 issues a ReleaseChannelReply. The premises AVSM 160 subsequently updates the AVSS database 176 to reflect the presence of the new file. The premises AVSM 160 next sends a NotifyAVFileSource message to the non-premises or source AVSM 160 to indicate to the non-premises AVSM 160 that the transfer is complete. The non-premises AVSM 160 issues a ReleaseChannel request to the source AVSC 120, which releases resources reserved for the copy operation and generates a ReleaseChannelReply directed to the non-premises AVSM 160. The non-premises AVSM 160 then issues a NofityAVFileSourceReply to the premises AVSM 160. Finally, the premises AVSM 160 sends a RequestAVFileReply to the AVSS client that required the file transfer operation.

4.12.5 File Replication

Once a new A/V file resides upon an AVSC 120, the AVSM 160 may issue a series of requests to perform A/V file replication operations. In one embodiment, A/V file replication is required in the event that more than one owner is specified in the file's access privilege list. File replication would thus be performed, for example, after or as part of processing an "AddOwner" request received from a client application program. In another embodiment, A/V file replication is performed even if an A/V file has only one owner, such that a given A/V file resides upon at least two premises AVSCs 120. This approach would enhance system reliability or fault tolerance. In such an embodiment, file replication would occur, for example, following a file transfer operation as described above with reference to ***Figure*** 23.

Figure 24 is an exemplary request sequence diagram corresponding to file replication operations. The AVSM 160 could perform file replication operations, for example, following issuance of a RequestAVFile reply to an AVSS client indicating completion of file transfer operations as previously described. To initiate file replication operations, the AVSM 160 issues a first AcquireChannel request to the AVSC 120 upon which the file resides, that is, the source AVSC 120. After receiving an AcquireChannelReply, the AVSM 160 issues a second AcquireChannel request to a destination AVSC 120 to which the file will be copied. Once the AVSM 160 receives an AcquireChannelReply from the destination AVSC 120, it issues a CopyFrom request to this AVSC 120. The destination AVSC 120 then sends the source AVSC 120 an Open request. Upon receiving an OpenReply, the destination AVSC 120 send the source AVSC 120 a series of Read requests, which result in transfer of the file from the source to the destination AVSC 120. After the source AVSC 120 has responded to a given Read request, it issues a ReadReply to the destination AVSC 120. Upon responding to a last Read request and issuing a last ReadReply, the destination AVSC 120 sends a Close request to the source AVSC 120, which closes the file and issues a CloseReply to the destination AVSC 120. The destination AVSC 120 subsequently issues a CopyFromReply to the AVSM 160. The AVSM 160 then issues a ReleaseChannel request to the destination AVSC 120, and in turn receives a ReleaseChannelReply. According to the particular file replication strategy employed, the AVSM 160 may repeat the destination AVSC 120 selection, AcquireChannel, CopyFrom, and ReleaseChannel procedures described above for one or more other destination AVSCs 120. The AVSM 160 could also select either AVSC 120 upon which a copy of the file currently resides as the source AVSC 120. Once any given AVSC's role as a file source is completed, the AVSM 160 issues a ReleaseChannel request to that source AVSC 120, which in turn releases resources reserved for performing the copying operations and generates a ReleaseChannelReply directed to the AVSM 160. Those skilled in the art will understand that the file replication operations could be performed via CopyTo requests rather than CopyFrom requests.

4.12.6 AVSS Administration

The AVSM 160 maintains data corresponding to AVSC 120 resources and their capabilities. The AVSM may query an AVSC 120 when requested, or as part of an AVSS database update when a new AVSC 120 has been added to the premises group. ***Figure*** 25 is an exemplary request sequence diagram corresponding to new AVSC addition and AVSC query requests. In response to an authorized client's issuance of an AddAVSC request specifying an AVSC 120 and a network or IP address, the AVSM 160 issues a GetMediaSetup request to the AVSC 120. The AVSC 120 generates a GetMediaSetupReply, and provides data describing its resource types, capabilities, and characteristics to the AVSM 160. The AVSM 160 then issues an AddAVSCReply to the requesting client. In response to a GetAVSCInfo request from the client, the AVSM 160 provides data describing the AVSC's resource types, capabilities, and characteristics to the client via a GetAVSCInfoReply.

4.13 Application Program Interface

Application programs executing on user workstations 40 or other computers act as clients relative to the AVSM 160, and may further act as clients relative to the A/V network manager 34. ***Figure*** 26 is a block diagram showing client application programs communicating with the AVSM 160 and A/V network manager 34. In one embodiment, a typical application program comprises a user interface plus a set of software objects based upon or derived from the AVSMAppComm class hierarchy 250 described above. The application program thus serves as a software wrapper that can act as an AVSM client to provide access to particular types of AVSS functionality.

In response to particular user selections or actions, an application program issues requests to the AVSM 160. Based upon replies received from the AVSM 160, the application program selectively updates information presented to the user. Since a portion of the application program comprises objects corresponding to the AVSMAppComm, communication between the AVSM 160 and the application program occurs in a manner analogous to AVSM-to-AVSM communication. Additionally, since the AVSMAppComm can be readily extended or modified to reflect the evolution of AVSM functionality over

time, new types of functionality can be readily accommodated with minimal application program modification.

4.14 Process and Data Primitives

The video storage server can support several types of applications. One of the ways that the several supported applications can share information, as well as cutting down on the coding required to embody the applications, is to share a set of common "primitive" elements between the several applications.

Primitives of the same class are combinable to achieve a specified result. One or more primitives may be combined to form new higher level primitives, which may in turn define yet another even higher level primitive, substantially *ad infinitum*. There are two broad classes of primitives: process primitives and data primitives.

Process primitives are invoked to perform an action. In turn, they may invoke other actions, including invoking other primitives. Typically process primitives establish AVSS sessions of some type, (for instance at least one of playing a file, getting file lists), present the user with a graphical interface, establish network connections, as well as other operations such as rendering synchronized graphics. Examples of process primitives taught by the principles of the present invention are viewers, browsers, and administrative processes.

Process primitives can be organized in a number of manners. A first manner is as a stand-alone process directly launched by a user. Alternatively, they may be launched *from within* another process, for instance a dynamic linked library or DLL. In this case, their thread of execution exists with the thread of execution of the launching process, and also terminates therewith. As a further alternative, process primitives may be launched *by* another process, as a *separate* process, whose thread of execution is not tied to the launching process. In this latter case, the termination of the launching process has no effect on the life of the process primitive.

There are several broad mechanisms for executing process primitives. One process primitive execution methodology implements the direct invocation of the process primitive by the application user. Another process primitive execution methodology is utilized where a target application, including but not limited to third-party software applications,

has previously been taught how to display or act upon the receipt of a data primitive in the form of an attachment, MIME type, file type and so forth. The receipt of the data primitive causes the target application, for instance the MIME compliant software application or the operating system, to launch a process primitive associated with the data primitive. Yet another methodology for executing process primitives, especially those process primitives directly accessed by third-party software, is simply to install the process primitive as a plug-in to that software.

Data primitives refer to a number of specifically formatted file types in the context of their usage by process primitives or other related processes. Data primitives include, but are not necessarily limited to: audio-video files; audio-only files, video-only files; bitmap files; application files; postscript files; graphics files; text files; and synchronization files. Included in synchronization files are a number of time-stamped event file types including, but again not limited to: graphics event files; shareboard event files; window event files; application startup event files; and text event files. The time-stamps in the file signal when to take certain defined actions, thereby enabling the temporal synchronization of the information of one file with respect to another.

A metafile is an abstraction representing a combination of one or more externally stored data primitives which together comprise all externally stored ("out-of-band") information comprising a particular AV or multimedia segment (such as a message). Associated with the metafile is a pointer file, which includes all referencing information for the various component files of the metafile (file names, permission keys, file system, etc.). One or more pointer files and their associated metafiles can be conceptually grouped to form a virtual aggregate file called an omnifile. The omnifile therefore must be in some fashion transferred successfully from one environment to another in order for authored information to be completely replayed in the new environment. This can be done in a number of ways as will be clear to one skilled in the art. One such embodiment is shown at ***Figure*** 27.

In common practice, the term "multimedia file" as been used to refer to an aggregate of all types of media files and external reference file pointers. Multimedia files, like metafiles and indeed like other primitives, are hierarchical: they are combinable into

other files to perform a certain task, for instance as a multimedia file in any of a number of standard formats. Metafiles, as defined herein, are allowed to be distributed across several file systems and do not include pointer files. In contrast, multimedia files can include pointer files and all of their component media files are stored together. Omnifiles do include pointer files but again are a virtual object spanning potentially several vile systems and thus also differ from multimedia files.

An application implementing the principles of the present invention specifically takes some of the file types of interest, and creates a MIME type associated with them. It then enables the teaching of some third party browsers including, but not limited to, Netscape® or Microsoft Internet Explorer®, or some e-mail packages including Eudora® how to handle the MIME types. Accordingly, many of the third-party application types supported by the present invention are taught how to handle the multimedia files, omnifiles, metafiles, audio-video files, and pointer files of the present invention. Therefore, when a third party application receives one of these file types taught by the present invention, it knows how to invoke the proper process primitive.

Referring now to ***Figure*** 28, an exemplar data primitive 3904 is shown which requires a viewer or browser process to display or act upon it. The application has been taught, as described above, how to respond to the receipt of the data primitive, it "knows" when and how to launch process primitives 3912 and 3906. In the viewer/browser exemplar herein presented, receipt of data primitive 3904 by an application causes the application to launch, at 3910 or 3914 either browser 3912 or viewer 3906. Where browser 3912 is launched, it may invoke a plurality, not shown, of viewers 3906. Viewer 3906 invokes, in turn a at least one data primitive 3908 for access to one or more files.

Referring now to ***Figure*** 29, data primitive 3904 is shown embodied as an attachment, for instance a MIME attachment, to a message 3902. By way of illustration but not limitation, message 3902 could be an e-mail message, word processing document, text document, and so forth. Depending on the application, the attachment may be implemented as the previously discussed MIME attachment, or as a file type. When the application is instructed to act upon the attachment, it invokes the process primitive associated with the attachment type, as previously discussed.

It will be understood that the immediately preceding discussion of the viewer/browser process primitive is presented for purposes of illustration and not limitation. The principles of the present invention comprehend an almost limitless number of process primitive configurations, of which the previous exemplar is but one. The teachings of the present invention specifically contemplate all such configurations.

4.14.1 Viewer

Video record and playback capabilities can separately be embedded in each application by stand alone means, but preferentially a standardized video record playback utility used across several applications is desirable. Thus a viewer is a good candidate for a process primitive and is explained here as one example of the use of process primitives as taught by the principles of the present invention.

The viewer process primitive sets up the necessary connections and sessions, as previously described, prepares the files for viewing, and provides the necessary viewer interface to enable the user to access and manipulate the files, as permitted. Because the viewer is a standard video call, it can be treated like any other video call. This enables it to be merged with other video calls, conferences, and the like, in similar fashion to any other session enabled by the principles of the present invention.

The implementation of this feature the present invention is disclosed in ***Figure*** 29. Having reference to that figure, the present invention contemplates the utilization of a shell document 3902 invoked for instance by an application in the MCG (not shown). An example of such an application would be the launching of a video mail session, video conference session, or substantially any of the other applications discussed herein. Embedded in shell document 3902 is a MIME attachment 3904. MIME attachment 3904 invokes viewer 3906, which enables the user to access the AVSS through the network as needed to record or playback video files 3908. Permissions to record or playback specific video files may, or to the user accessing the applications. The shared connection, at 3910, presents the novel advantage of enabling video recording or playback and combining it with other applications running concurrently in a separate session. In some applications there is provided a browser, 3912, which enables the user to select between a number of

applications 3906. Alternatively, browser 3912 may be embedded in, or part of viewer 3906.

4.14.2 MIME Attachment

Because the viewer is common across all the applications, and because the files it invokes are accessible by the several applications, a first application can use the viewer to record or playback a file, and a second application can utilize the viewer for video mail or substantially any other application. Accordingly, the video files are sharable at the file level, the attachment or MIME level, or at the connection level. The utilization of MIME (Multipurpose Internet Mail Extensions) attachments enables the invocation of the viewer and its associated networking connections within a standardized attachment which is accepted by third parties in accordance with standard MIME protocols. Thus the several applications taught in the present invention are interoperable by means of file sharing by the copying of MIME attachments, or by connection sharing.

4.14.3 Synchronized Shareboard

One example of such a concurrent session would be enable the concurrent implementation of share board graphics and a video conference session.

The addition of multimedia synchronization capability to the previously discussed viewer and MIME implementation enables the several video applications previously discussed to include animated graphics files which are synchronized with the video. Share capabilities currently implemented by the principles of the present invention "grabs" a window and stores it as a bitmap file, enabling the user to draw on top of the bitmap file. This enables the document to be used by two or more users which includes overlay graphics, to be stored and synchronized for later synchronous playback.

The synchronization is explained as follows: when the two or more users are conducting a video conference, a first window is opened, and a bitmap superimposed thereon. Any files read into the window or the bitmap may be time stamped. Any animations imposed on the bitmap are draw list events which may also be time stamped. Accordingly the principles of the present invention contemplate the capture of the several times stamps invoked during multimedia recording. This enables the later synchronization, during playback, of the several files to present a synchronous view of the entire session.

Where a video conference includes N users, the recorded version of the synchronized session may be regarded as the N + 1 user. At playback, the recorded version of the session is again treated like any other user.

The recording process previously discussed is substantially the sequential recording of a sequence of events. If it is desirable that the previously recorded events be capable of reversal, it is necessary to render the graphics in such a way that they are reversible. Similarly, where the system enables "go-tos" it is necessary to render the graphics in such a manner that the rendered image is capable of retrieval at specified "go-to" points.

Now we have the capability to grant any screen in the window and share it with any user or any storage device enabled.

Shared applications (not understood). Recording of shared applications is accomplished by a similar means to bitmap capture.

Where annotations that draw overlays are occurring on top of the video window, the workstations must have the capability for performing graphics overlay on top of video.

4.14.4 Browser

The browser aforementioned can also be adapted by those skilled in the art to act as a process primitive in a manner similar to that described thus far.

4.15 Applications Overview

The present invention teaches a number of novel software applications enabled by, and for use in conjunction with the video server system, or AVSS, previously discussed. As the present invention enables the implementation of its features in a scalable fashion, the programmatic elements of the present invention provide, among other benefits, the ability to scale the features and advantages presented herein over a wide range of hardware implementations. An overview of one such hardware implementation is shown at *Figure* 30.

The present invention provides two broad classes of storage applications. Those which utilize only the basic audio and video recording, storage, browsing, and playback capabilities of the current AVSS will be referred to hereinafter as "video" applications. This is typically a reduced-capability, lower cost implementation. A second class of applications utilize audio and video along with a synchronized data sharing capability, e.g.,

synchronized-shareboard/T.120recording, storage, browsing, and playback features. Such capabilities are essential for recording conferences, messages, or presentations where information cannot be conveniently conveyed by audio and video alone. This class of storage applications will be referred to hereinafter as "multimedia" applications. The additional functionality provided by this class of applications may require a somewhat higher implementation cost.

The principles of the present invention contemplate the AVSS supporting several types of applications. One way in which the several applications can share information is to share certain common "primitive" elements. This has the added advantage of cutting down on the coding required to embody those applications which utilize primitives. Accordingly, one or more of the applications taught by the present invention may utilize shared primitives to facilitate the interchange of information of between applications or applications elements. Alternatively, one or more of these applications may be implemented as a "stand-alone", or "one-off" implementation which does not utilize shared primitives.

4.16 Video Applications

As previously mentioned, an AVSS can support several types of applications. By way of illustration, but not limitation, some of these applications include a video mail application which combines, in a novel manner, video clips, or files, with e-mail messages whereby one user can leave a detailed audio-video message on another user's e-mail system. Video mail is like e-mail, but with either a video attachment, or with a video file replacing normal e-mail text altogether. The richness and depth of communication afforded thereby enables significantly greater information interchange than is available by simple voice mail messaging. The Video Answering System taught by the present invention answers a user's e-mail when the user is away or otherwise occupied. This application presents the user with the option of greeting callers in a number of manners, and receiving their video messages in response. One alternative of this application contemplates its implementation using the Video Mail application previously discussed. Video Conference Recording enables a plurality of users to record in real time an

established video conference. This application may be invoked at the user's command or may, alternatively be invoked automatically when certain conference parameters are met.

In addition to these oriented to electronic meetings applications, the architecture of the AVSS system described herein renders, with facility, several additional capabilities. One such capability is the utilization of the present invention as a general-purpose audio-video storage device. This capability enables users to store and forward audio-video files, in a variety of formats, to users throughout the LAN or WAN. The connectivity of such networks to the Internet provides the additional capability of the system as an intranet or Internet gateway for audio, video, audio-video, or multimedia file transfer. Another application is Video Publishing which enables any of a number of system users to create, edit, store and disseminate complex, informationally rich, audio-video documents to a wide variety of recipients by means of LAN, WAN, or to a world-wide audience utilizing the Internet.

4.16.1 Video Mail

A first video application enabled by the principles of the present invention is video mail. In a first embodiment of this application a "video attachment" capability is provided to existing MIME-based mail systems. Alternatively, video mail may also be implemented by other attachment strategies, without attachments, or as a fully developed stand-alone application which does not rely on any underlying commercial e-mail package.

In a first embodiment of the present invention, a video attachment utility utilizes the generic video storage and session establishment method hereinafter described. Moreover, this utility utilizes the generic MIME video attachment methodology hereinafter discussed. As opposed to the video mail methodology taught in U.S. Patent No. 5,617,539 which starts a mode control GUI (or "MCG") directly at the user's workstation, an alternative embodiment presented by the present invention sets a "MCG" flag so that the AVSS starts a MCG on the user's workstation. Mail authoring invokes the request for a session with an encoder/decoder pair, while mail reading invokes a request for a session with a decoder only.

The principles of the present invention contemplate the implementation thereof on a wide variety of hardware implementations. In the simplest case, a single AVSS serves

both the message authoring user and the message recipient. In this implementation, there are no file transfers required out of the AVSS. Files may be transferred from the AVSS for other reasons, but there is no functional reason for the files to reside on another AVSS in this case. This could be considered a LAN implementation of the principles of the present invention.

Where a given organization is sufficiently large or so geographically distributed that a single AVSS cannot handle the traffic for all the users thereof, multiple AVSSs may be implemented. This case has two sub-cases: the first sub-case is a WAN implementation, and the second is where the implementation at a given site, for instance a large campus, is so large it requires more than one AVSS. In the second sub-case, the multiple AVSSs are interconnected by trunking 16 between switches 32 and/or the local data LAN 20. Where a file is required on a different AVSS than the recording AVSS in the second sub-case, it is simply transferred over the local interconnection environment 16 and 20. In the first sub-case, require the transfer of relatively large files from one AVSS to another, this implementation may use of switched WAN services, frame relay, or one or more of their functional equivalents. Moreover, because there is may be so much bandwidth required for these transfers, it may be necessary to provide bandwidth management solutions. Examples of such network bandwidth management solutions include, but are specifically not limited to conducting file transfers at non-peak times, conducting file transfers in a preemptible manner, and other bandwidth conservation methodologies known or apparent to those having ordinary skill in the art. When file transfers are conducted in a preemptible manner, if a user initiates a higher priority action, for instance she initiates a video conference, the file transfer may be preempted; i.e. aborted, halted and restarted after the high priority application, etc.

Referring now to ***Figure*** 31, the transaction flow among application elements which facilitate a local or LAN implementation of video mail is shown, where a mail message incorporating a video message is both recorded and read from the same AVSS. Having continued reference to ***Figure*** 31, when the user, at 1404, initiates a new e-mail message, the source e-mail system 1402 queries, at 1406, whether the user intends to attach a video attachment to the e-mail. If the user intends to submit a video attachment with the e-mail

message, a video authoring request is initiated at 1412 to video mail application 1420. Video mail application 1420 creates a unique video file name at 1422 and requests of the recording AVSS 1430, at 1424, an encode session. The audio-video file is then recorded on AVSS 1430. AVSS 1430 returns the video attachment at 1432 to video mail application 1420. Video mail application 1420 in turn sets the file name pointer at 1434 for e-mail program 1402. Once the e-mail message and video attachment have been completed, the user sends the e-mail, for instance using SMTP protocol 1410, by initiating the send procedure at 1408. Once send procedure 1408 is initiated, e-mail program 1402 initiates a notification at 1414 to video mail application 1420 that the message has been sent. Video mail application 1420 then instructs the AVSS 1430 to release the encode session at 1426.

At this point, the e-mail message itself, not shown in this Figure, has been sent to the user in the normal manner, and the recorded A/V file resides in AVSS 1430. When the e-mail program 1402 receives the e-mail message at 1492, it sends, at 1460, a receipt target and information request to video mail application 1420. Responsive to the receipt target and information request 1460, video mail application 1420 extracts a source AVSS address at 1472. Video mail application 1420 then makes a file transfer request 1480 to AVSS 1430.

Responsive to request 1480, AVSS 1430 confirms it already has the requested A/V file, and confirms, at 1448, that the video file transfer is completed. Responsive to file transfer confirmation 1448, video mail application 1420 at 1474 releases the mail message after the A/V file is received. Video mail application 1420 then releases the mail message to e-mail system 1402 at 1462.

At this point, e-mail system 1402 makes the mail available to the user at 1494. Steps 1494 and 1460, in operative combination, ensure that the user is not notified of a message with an associated video attachment before the video attachment arrives. When the user opens the video attachment at 1496, e-mail system 1402 initiates an attachment open event and sets a file pointer at 1464 to video mail application 1420. In response to set file pointer 1464, video mail application 1420 opens a viewer and prepares to decode the AV file at 1476. Video mail application 1420 in turn requests a decode session from

AVSS 1430 at 1482. Decoding of the A/V file by AVSS 1430 renders the file available to the user.

At 1498, once the user closes the message or the video attachment, a view message/attachment and file pointer close event is initiated at 1466. This causes video mail application 1420 to release the view and release the file at 1478. Responsive to release event 1478, video mail application 1420 issues, at 1484, a decode session release command to AVSS 1430. When, at 1493, the user deletes either the message or its video attachment, e-mail system 1402 initiates a message/attachment delete event 1468 to video mail application 1420. Responsive to this event, video mail application 1420 deletes, at 1473, one holder of the file, and at 1486 releases user ownership of the file to AVSS 1430. Alternatively, of course, a video file may be set to expire after a pre-assigned lifetime.

It should be noted that receipt target and information request 1460, release mail message 1462, view message/attachment and file pointer close event 1466, and message/attachment delete event 1468 as taught by this invention are novel concepts and as such are not supported by any known widely available e-mail domain servers. Study of the principles herein disclosed will make obvious to one having ordinary skill in the art that additional dialogs and displays in the video mail application can provide the information supplied by the previously listed messages. Further, a variety of alternate implementations are of course possible and the teachings of the present invention render them clear to those skilled in the art. These alternatives include workarounds for the absence of any or all of 1460, 1462, 1466, and 1468; for example, the unavailability of 1468 could be handled by a file lifetime monitor which takes action to delete a file after a designated period of inactivity.

Referring now to ***Figure*** 32, the transaction flow among application elements which facilitate wide-area video mail is shown, where a mail message incorporating a video message is transmitted from a recording, or source, AVSS 1430 to a target AVSS 1450.

When the user, at 1404, initiates a new email message, the source email system, 1402, queries at 1406 whether the user intends to attach a video attachment to the email. If the user intends to submit a video attachment with the email message, a video authoring request is initiated at 1412 to the video mail application program 1420. Video mail

application program 1420 creates a unique video filename at 1422 and requests of the recording AVSS 1430, at 1424, an encode session. The video attachment is then recorded on the recording AVSS, 1430. AVSS 1430 then returns video attachment 1432 to video mail application 1420. Video mail application program 1420 in turn sets the video filename pointer at 1434 for source email program 1402. Once the email program and video attachment have been completed, the user sends the email, for instance using SMTP protocol 1410, by initiating the send procedure at 1408. Once send procedure 1408 is initiated, source email package 1402 initiates a notification to the video mail application 1420, at 1414, that the email message has been sent. Video mail application 1420 then instructs the recording AVSS 1430 to release the encode session, at 1426.

At this point the email message itself, not shown in this figure, has been sent to a remote AVSS utilizing normal SMTP methodology, while the encoded A/V file resides in recording AVSS 1430. When the email message is received, at 1492, at target email domain 1490 a receipt target and information request 1460 is sent to target video mail application 1470. Responsive to the receipt target and information request 1460 target video mail application 1470 extracts the source AVSS address at 1472. Target video mail application 1470 then sends target AVSS 1450 a file transfer request 1480. This in turn initiates the request 1481, by target AVSS 1450, to recording AVSS 1430 for the A/V file.

The recording AVSS, 1430, transfers the A/V file, at 1436, to the target AVSS 1450. Target AVSS 1450 confirms to the target video mail application 1470, at 1448, that the video file transfer is completed. Responsive to file transfer confirmation 1448, target video mail application, 1470, at 1474 releases the mail message after the A/V file is received. Target video mail application 1470 then releases the mail message to the target email domain 1490 at 1462.

At this point target email domain 1490 makes the mail available to the user at 1494. Steps 1494 and 1460, in operative combination, ensure that the user is not notified of a message with an associated video attachment before the video attachment arrives. When the user opens the video attachment at 1496, target email domain 1490 initiates an attachment open event and sets a file pointer, at 1464, to target video mail application 1470. In response to the set file pointer 1464, target video mail application 1470 opens a

view and prepares to decode the file for the user at 1476. Target video mail application 1470 in turn requests a decode session from the target AVSS 1450 at 1482. Decoding of the A/V file by the target AVSS 1450 renders the file available to the user.

At 1498, once the user closes the message or the video attachment, a view message/attachment and file pointer close event is initiated at 1466. This causes the target video mail application 1470 to release the view and release the file at 1478. Responsive to release event 1478, target video mail application 1470 issues, at 1484, a decode session release command to target AVSS 1450. When, at 1493, the user deletes either the message or its video attachment, target email domain 1490 initiates a message/attachment delete event 1468 to target video mail application 1470. Target video mail application 1470 deletes, at 1473, one holder of the file, and at 1486 releases user ownership of the file to target AVSS 1450. Alternatively of course, video files can expire after a pre-assigned lifetime.

It should be noted that receipt target and information request 1460, release mail message 1462, view message/attachment and file pointer close event 1466, and message/attachment delete event 1468 taught by this invention are novel concepts and as such are not supported by any known widely available e-mail domain servers. Study of the principles herein disclosed will make obvious to one having ordinary skill in the art that additional dialogs and displays in the video mail application can provide the information supplied by the previously listed messages. Further, a variety of alternate implementations are of course possible and the teachings of the present invention renders them clear to those skilled in the art. These alternatives include workarounds for the absence of any or all of 1460, 1462, 1466, and 1468; for example, the unavailability of 1468 could be handled by a file lifetime monitor which takes action to delete a file after a designated period of inactivity.

The exemplar discussed above and illustrated in ***Figure*** 32 demonstrates a wide-area implementation of the present invention utilizing two systems, 1400 and 1440. Shown in the figure is a first methodology whereby two or more instances of a conventional electronic mail system, two or more AVSSs, and two or more instances of a simple video mail software application "middleware" can be used to create a multi-AVSS, WAN-

capable video mail system. This relatively simple network implementation is presented herein for clarity. Study of the principles herein disclosed will make obvious to one having ordinary skill in the art that a number of target systems 1440 may be similarly implemented. All such implementations are specifically contemplated by the principles of the present invention.

The novel concepts of file ownership and video message life cycle are shown in ***Figures*** 33 and 34. In several of the applications taught herein, including video mail, file ownership evolves through the different phases of a message's lifetime. At message authoring, for example, the file is owned by the message author, while at message review the file is owned by the message recipient. This notion of changing file ownership is presented in ***Figure*** 34, which more clearly points out both ownership and readability of the video files associated with a video mail attachment over the message lifetime. Not shown in the figure are the effects of messaging forwarding, but this is simply a second authorship/recipientship transaction exactly like that shown in the figure.

Having reference now to ***Figure*** 33, the life cycle of an exemplar video message file is discussed as follows:

When a video file is created, at 1510, associated with a message by means of a reference pointer 1512, then transmitted, a mailing list 1514 is obtained from the conventional email system, 1513, and presented to the recording AVSS at 1516. Recording AVSS 1516 determines the recipients' addresses from mailing list 1514, which are then associated with the name of their serving AVSS by means of directory services. The directory services provide a mechanism whereby names, e-mail address or login identities of users may be looked up and associated with their video address in a LAN or WAN environment. The AVNM server in the present embodiment could provide such directory services, or these services may be provided by well known directory protocols such as LDAP.

At 1518 the programmatic elements of the present invention make a determination as to whether or not the mailing list 1514 associated with the video mail message is empty. If, at 1520, it is determined that the mailing list is not empty, a further determination is made for each recipient in the list if the current recipient of the message is served by the

recording AVSS at 1522. If, at 1524 the determination is made that the current recipient is served by the recording AVSS the file is retained on the AVSS and the next recipient is chosen from the mailing list at 1526. Responsive to the selection of the next recipient at 1530, step 1518 is again invoked until the mailing list is empty. Responsive to a determination of 1528 that the current recipient is not on the recording AVSS the file is transferred to a target AVSS 1580. The completion of the copy at 1529 returns to step 1526 to select the next recipient from the mailing list. Responsive to the selection of the next recipient, at 1530, step 1518 is again invoked until the mailing list is empty.

It is a principal feature of the present invention that the relatively large video files associated with multimedia and video communications be distributed where required and maintained thereat, but only for so long as required. In this manner the principles of the present invention present a heretofore unattained level of systems economy with respect to mass storage, bandwidth, and other system delimiters. Accordingly, the principles of the present invention specifically contemplate the automated deletion of video files once certain deletion criteria have transpired. Examples of these criteria include, but are specifically not limited to: the reading of a giving file by all of its intended recipients, the passage of a certain period of time, a certain number of invocations of the message, and other message accounting parameters well known to those having ordinary skill in the art. Having this deletion criteria in mind, a determination is made at 1582 if one or more deletion criteria has been met. In the event that the deletion criteria has not been met the system loops back, at 1586, and returns to wait for the deletion criteria to be met at 1582. Responsive to a determination, at 1584, that the deletion criteria has been met at 1588 the file is deleted from the target AVSS at 1588.

Returning now to the loop through the mailing list at step 1518, if, at 1540 a determination is made that the mailing list is empty a query is made a 1542 as to whether any file recipients are served by the recording AVSS. Responsive to a determination at 1540 that no file recipients are served by the recording AVSS, the file is deleted from the recording AVSS at 1550 and this function of the present invention is completed at 1552. Responsive to a determination by step 1542 at 1544 that file recipients are served by the recording AVSS, a determination is made at 1545 at to whether file deletion criteria has

been met. If a determination is made at 1546 that the file deletion criteria has not been met the system loops back and returns to wait for the deletion criteria to be met at 1545. Responsive to a determination by step 1545 at 1560 that the file deletion criteria has been met the file is deleted from the recording AVSS at step 1550 which action completes this function of the present invention at 1552.

From the foregoing, several novel aspects of the present invention are made manifest.

Within each AVSS, copies of the file can be distributed to one or more additional disks with the same AVSC or multiple AVSCs so as to diminish blocking to file access. This improves both system responsiveness and system reliability. In smaller implementations of the present invention, this file distribution utilizes full replication of the video files. In larger implementations, a "hashing" mapping is utilized, and is explained as follows: where a file may be in high usage, rather than leaving it on only one AVSS, for instance the AVSS on which the file was authored, thereby leaving it only on the one disk which may result in unwanted delays in access time, the principles of the present invention contemplate the distribution of high usage files to one or more storage devices within an AVSC, or indeed to a number of different AVSCs within the system. This may be accomplished by means of any of a number of hashing schemes known to those having ordinary skill in the art. This of course improves the availability of the file, and thus the reliability of the system which relies on the file.

The life cycle advantages presented by an exemplar embodiment of the present invention include, but are not necessarily limited to, the following:

(A) Video files are maintained only on those AVSSs serving a specified recipient for the video file, unless stored at another location for purposes of reliability and data redundancy.

(B) Video files are deleted automatically once all messages which include the video file have been deleted; and

(C) Where a recipient is located on an AVSS other than the recording AVSS, the video file is automatically transferred to the target AVSS. The transfer function may be implemented as "copy" or "reliable move".

These advantages ensure that relatively large video files are transferred only where needed, and retained only on those AVSSs which require them, and then only for as long as the files are required. Unneeded files are automatically deleted from any AVSS when no longer required by any recipient served by that AVSS.

Referring now to ***Figure*** 34, during the recording and review processes, 1602 and 1604, a given file is both readable and owned by its author. Once the author sends the file, at 1606, it is still owned by the author but is unreadable. This condition continues through SMPT and video file transfer 1608 and the receive phase, 1610. Once the recipient is notified, at 1612, of the arrival of the email message and video file, both file readability and file ownership pass to the recipient. This condition continues through the message read and delete phases, 1614 and 1616 respectively. Of course, once the file is deleted it is neither owned nor readable.

The author could select to be a recipient or simply remain an owner. The file would therefore remain readable by the author during the send 1606, transfer 1608, received 1610 and notified 1612 steps. The author would participate in the read 1614 and delete 1616 phases.

Certain AVSS capabilities are required depending on the conference client implemented at individual desktops or rooms. When the previously discussed video mail system is implemented inside an enterprise incorporating desktops or rooms outfitted with workstation conference clients as described in U.S. Patent No. 5,617,539, the following AVSS features are assumed:

1. Generic control protocol interface/API.

2. A generic multi-platform audio-video recording/playback utility (similar to vfstool) referred to herein as the "mode control GUI" or "MCG".

3. Multi-session recording/playback capability.

4. Analog A/V I/O.

5. An AVSC decoder is co-allocated when an encoder is allocated. This ensures that the decoder is always available during the record session for review.

6. Variable capacity scaling to match the needs of supported applications.

7. File transfer capability (pull model) among AVSSs driven by specific file transfer requests made by applications.

8. Effective "loopback" at the AVSC of incoming video to outgoing video during record mode.

9. A video editing capability. This capability may be internally implemented as part of an applications program, or in the alternative, may be capable of invoking third party video and/or audio editors.

Where desktops or rooms are not outfitted with the workstation conference clients taught in U.S. Patent No. 5,617,539, but rather are fitted with standard MPEG or other encoder/decoders, the following additional capabilities are required:

10. The capability to accept and playback appropriate digital files from third parties as controlled by applications.

11. The capability to transfer appropriate digital files to third parties as controlled by applications.

Sending video email naturally implies the creation of a video file. The principles of the present invention contemplate numerous video file creation scenarios. Video files may be pre-recorded, edited, and stored using the AVSS as a video file storage repository. They may be created at the same time the user is sending the video email. Video files may be imported from other video sources as described elsewhere herein, and attached to video mail messages. Finally, a video mail attachment may completely obviate the need for text with the message. In this latter embodiment of the present invention, the video attachment becomes the message, to the exclusion of text. Accordingly, it will be appreciated that substantially any methodology used to create a video file may be implemented to create video attachments for video mail, and are all comprehended by the teachings of the present invention.

When a user wishes to send a new audio-video attachment to a video mail message, this is accomplished by creating a new audio-video file by selecting FILE: NEW from the viewer main menu and then recording the video. Video recording may comprehend, in one or more embodiments, several levels of editing capability. The most rudimentary of these enables a user to delete a file and then re-record it. Only slightly

more sophisticated is an embodiment which enables a user to first review his recording, and then delete it if needed

A further improvement is an editing scheme which enables the user to insert/delete/import material into a file. Finally, the video file is saved as an audio-video file on the local file system. The present invention contemplates each of these editing strategies in each of the applications taught herein.

While the present invention contemplates the incorporation therein of the above-described editing features, it also contemplates the utilization of a third-party video editor for any and all video editing. The third-party editor may be invoked from the present invention by means of primitive, plug-in, invocation button, scripts, or other invocation methodologies well known to those having ordinary skill in the art.

Where desired, the user then uses her normal email package to create an e-mail text message. She then attaches the AV file pointers to the email and then transmits or sends the email. An alternative embodiment contemplates a more closely integrated mail package which includes an Attach Video menu item in the mail package compose dialogue. To slightly simplify the previously discussed process, the Attach Video menu item would launch the viewer with the -n switch to indicate the viewer should automatically create a new video file and open an encode session.

When a user receives an email with an audio-video attachment, he opens the attachment using his email reader. This launches the viewer to open the audio-video attachment. If the video is password protected, the user is prompted the supply the password. If the password is incorrect, the file is not opened. Alternatively, the viewer will in turn, if necessary launch the conference mode of operation. In the case where the file is stored on the AVSS to which the viewer is connected, when conference successfully connects to the AVSS, the VCR controls for playback are enabled on the viewer. Utilizing the play, seek, and rewind buttons of those controls the user plays the video and sees and hears the output at the workstation.

In the case where the file is not stored locally, the AVSS will initiate a file transfer to receive the MPEG video from the remote AVSS. The user is notified that the transfer is taking place. When the file transfer is complete, VCR type controls for playback will

be enabled on the viewer. Alternatively, the user could choose to connect to the remote AVSS in a manner similar to connecting to the local AVSS.

The preceding discussion has centered on a first embodiment of the present invention. Alternative embodiments contemplated by the teachings herein disclosed include: the attachment of A/V files by means of pointing to file locations as opposed to direct use of MIME systems; invocation of one or more of the previously discussed processes at the opening or closing of an attachment, or the opening or closing of a message; A/V network and server socket management schemes; video viewer and location and close management methodologies; and screen cleanup and connection management methodologies.

4.16.2 Video Answering System

The video answering application utilizes the AVSS to record an audio and video message from an incoming caller whose call attempt is either not answered or is refused by the recipient. The present invention also contemplates the incoming caller simply wishing to leave a message without connecting to the recipient. One implementation of this feature of the present invention supports the case were no A/V codec trunks are available at that the time when a call is placed to a user. The video answering system includes several major components: an answering module; a browser module; a playback module; and a module wherein file transfers are potentially handled among AVSSs.

The principles of the present invention contemplate several methodologies whereby the video answering application is invoked. One way of invoking video answering is to provide an option to a caller at any time during the "ring" cycle to leave a message for recipient. Additionally, a caller may be presented the option for leaving the message in any of the following cases: after a specified duration of a ring cycle, i.e., a ringing time-out; when a call is refused; and when the caller receives a busy signal due to an excessive number of waiting calls.

When this application is invoked, the caller may be given the option of leaving a message in a number of ways. Such notification methodologies include, but are specifically not limited to: simple text notification; simple audio tone; an audio-only greeting; a video-only greeting; an audio-video greeting, and a multimedia greeting. The

decision to implement any of these notification methodologies depends on several factors including available storage capacity, bandwidth, desired system response parameters, desired system "look and feel," as well as other system constraints well known to those having ordinary skill in the art.

Several implementations contemplated for WAN installations include alternatives for placement of the user greetings, which alternatives include user greetings located on the user's AVSS, or alternatively be distributed to each AVSS on the WAN to be stored locally thereat. These alternatives depend on many systems installation factors including the number of users, system usage, bandwidth, and so forth. With respect to message authoring, the message may be recorded locally and sent to a remote site as in video mail, previously discussed. Alternatively the system may be configured such that it establishes a direct link to the receiving AVSS and the message is recorded on the received side. This later implementation results in more assuredly prompt delivery of the message, but requires more immediate bandwidth.

The caller may explicitly choose to not to leave a message by means of either a specific response to a dialog box, or simply by activating the hang-up button on the call viewer.

One implementation of this feature the present invention provides a caller with the opportunity to leave a message automatically either as part of an existing call status, e.g.: a user busy pop-up, with the automatic playing of a pre-recorded video greeting, or other automatic message system invocation methodologies. Once the user accepts the option to leave the message, a record session request is passed to the AVSS. When the request is granted, an MCG is provided, and an AVNM connection is established. In the event that the recipient attempts to answer the call when the caller is recording the message, a non-destructive escape is provided which enables the caller to complete the message and then connect the call to the called party. A similar non-destructive escape is utilized when the called party attempts to call back when the message recording is a process. The principles of the present invention further contemplate a destructive escape if the caller wishes to abandon the message during the recording session. Finally, in the event that the AVSS has insufficient resources to grant the record request, a fall back mode presents the caller

with the option to leave a non-video message. Such a non-video message is provided by the "Leave Word" function of the incorporated reference.

In one embodiment of the present invention, recipients are notified when there are messages present in their respective queues. Since there could be more than one message in queue at any given time, the video answering system provides a browser to enable the recipient to review the messages waiting in her queue. The browser can display information about the video messages, including, but not limited to: caller's name, time and date of call, video file name, playback duration, description, text note from caller, and creation time of video. Finally, a playback mode is provided to enable the recipient to play the messages selected for viewing.

File ownership in the video answering application is as follows: When a message is being authored, the file is owned by the message's author. When the message is being reviewed, file ownership passes to the recipient, as identified by the AVNM.

Referring now to ***Figure*** 35, an overview of one embodiment of the video answering system of the present invention is discussed. When a caller, for instance at workstation 1802, calls a recipient, for instance the user at workstation 1804, and the video answering system is invoked as previously discussed, a request is sent from workstation 1802 to AVNM 1702. AVNM 1702 then forwards a request at 1710 to video answer module 1704, which in turn submits a session request to AVSS 1708 at 1714. Responsive to session request 1714, AVSS 1708 provides a reply, 1716, to the video answer module.

Responsive to reply 1716, the video answer module 1704 establishes, at 1712, a connection control with AVNM 1702 and notifies video playback module 1706 of the establishment of a video answering session at 1718. Responsive to this notification, video playback module 1706 submits its own session request to AVSS 1708 at 1720. Responsive to this session request, AVSS 1708, at 1722, establishes a second connection control with AVNM 1702 at 1722.

A data flow diagram detailing the operation of one embodiment of the present invention is given at ***Figure*** 36. Having reference to that figure, a caller initiates a video call request at 3502. When the video call request is not accepted at 3504, the recipient's

greeting is invoked at 3506. As previously discussed, the video call request may not be accepted for a number of reasons, including but specifically not limited to: the caller exercising her option at any time during the "ring" cycle to leave a message for the recipient; after a specified duration of a ring cycle, i.e., after a ringing time-out; when a call is refused; and when the caller receives a busy signal due to an excessive number of waiting calls.

If the video call is not accepted, the recipient's greeting is played at 3506 and the caller is presented, at 3508, with the option of leaving a message for the recipient. This option may again be presented in a number of manners, by way of example but not limitation including: a simple text notification; a simple audio tone; an audio-only greeting; a video-only greeting; an audio-video greeting; and a multimedia greeting. If the user, at 3510, exercises her option not to leave a video message, the video answering session terminates at 3512. In the alternative, if the user exercises her option, at 3514, to leave a video message, she may create the message at 3516 in any of the manners previously discussed for the creation of video messages.

Responsive to the creation, by the caller, of the video message at step 3516, at 3518 the message is sent to the appropriate AVSS. At some later point in time, the message is delivered to the recipient at 3520. Subsequent to the recipient invoking a browser, reader, or other file inspection methodology for the purpose of reading the message, not shown in this view, the user is presented with the option, at 3522, of deleting the message.

In the event the recipient elects, at 3524, to delete the message, it is deleted from the AVSS at 3526. In the alternative, where the recipient elects, at 3528, not to delete the message, it retained on the AVSS at 3530.

The principles of the present invention contemplate two broad strategies for implementing the video answering system taught herein. A first broad strategy implements a "layered" methodology, integrating a number of applications, some of which may be pre-existing, into the video answering system of the present invention. One such layered implementation contemplates the use of the previously discussed video mail application as a message handling vehicle. This embodiment inherently defines many of

the major file ownership issues. Further, the previously discussed authoring, browsing, playback, and notification functions are all provided by the video mail application itself. Another version of a layered implementation contemplates the utilization of a dedicated instance of a conventional email system program to provide dedicated video answering system message notification and browsing.

A second broad strategy contemplates the creation of a unique "stand-alone" application to perform the previously defined functions. This strategy, which does not utilize video mail or other program as a message handler, requires the implementation of user interfaces to present the caller with the option of leaving a message. Moreover, such an implementation requires non-mail software and new user interfaces to accomplish the tasks of message notification, message browsing, and message playback.

4.16.2.1 Layered Implementation of Video Answering System

This implementation contemplates the use of the previously discussed video mail application, or other discrete application as a message handler or other system element for the video answering system. According to this strategy, after a video connection has been established responsive to a video call not being accepted, video mail can be authored on either the transmit side, i.e., the caller's AVSS, or on the receive side, i.e., the recipient's AVSS. Which implementation constitutes the embodiment is an economical decision, based on a number of system-specific factors.

Video mail created responsive to the video answering system can be transmitted to the recipient off-line, i.e. in a non-real-time mode. This implementation would likely have minimal impact on system bandwidth in most embodiments. One option for this implementation is to author on the send side, and utilize a priority queue to transmit the message during a period of low bandwidth utilization to the recipient's AVSS. This moves the message out of real time and transmits it at a lower bit rate than authoring on the receive side, which would necessitate full-bandwidth connectivity. The alternative to this latter embodiment is of course to author video mail messages responsive to video answering system invocation on the receive side or transmit the message at the same baud rate as in video conferencing. Either embodiment is a systems administrator issue:

conservation of bandwidth against a degree of time delay in the message responses. Where messages are needed almost immediately, the expense of bandwidth may be necessitated.

Where the video message system is invoked responsive to the fact that no communications trunks are available between sites, it may still be desirable to leave a message in any event, for later transmission when communications become available. This functionality may be enabled by a script provided by the system administrator or other automated invocation methodology known to those having ordinary skill in the art.

Where the enterprise is not too large, all greetings files from all users could be stored at all sites. Greetings files from all users at all sites enables a rich environment for video answering, where, even when there are no communications trunks available, a caller is greeted with an audio-visual greeting from any recipient. Again, this is an issue of capability versus storage capacity. Accordingly, the system administrator can determine where greetings are stored in accordance with the principles of the present invention.

Where an enterprise generally experiences low communications volumes, messages can be recorded on the receive side to good effect. This embodiment minimizes time delays in getting mail messages to the recipients. Even in this embodiment, where trunks become unavailable, or encounter periods of high use, the message can be recorded on the callers side under control of a script, and then sent as a mail message when bandwidth is available.

Other modifications to this embodiment include giving the caller the option, on the GUI, of prioritizing her message. When sending a file, e.g. an MPEG file, use of video mail enables a caller to transmit the file as a response to an answering machine response.

There are video mail systems that are entirely separate from video conferencing systems. For example, when a caller is recording a video mail message, she may be recording it in MPEG-1 video format. When a caller is talking to a recipient in real time, she may be sending video in, for example, H.320 format. The principles of the present invention contemplate the implementation of video answering by invoking video mail in such a way that it doesn't use H.320. Alternatively, where H.320 is recorded, the principles of the present invention specifically contemplate the use of this same "live"

format for both recorded and real time video applications. This implementation further contemplates the utilization of bandwidth management techniques, recording schemes, and video compression algorithms to minimize the bandwidth impact of the relative large video messages engendered by the use of H.320 format video, as well as some other video formats.

The use of video mail as the message handler for the video answering application presents an additional complication in that it can be recording on the caller's side or on the recipient's side. The latter option ties the application more closely to the act of calling the recipient, thereby ensuring prompt delivery. In one embodiment of the present invention, a call-back feature is implemented, which automatically initiates a call back to the sender to talk to them in real time, or a reply-back feature, to which automatically invokes video mail to enable the recipient of a video message to reply with a video message of her own.

Where video mail is utilized, an attachment, for instance a MIME attachment constructed as herein after discussed, may be included in a caller's message to the recipient, the activation of which enables the recipient to return the call of the original caller. Such a MIME attachment could initiate a dialog box or button which, when activated, launches a reply call and/or message response. This provides a replacement for the "Leave Word" function taught in U.S. Patent No. 5,617,539. Alternatively, the principles of the present invention contemplate having the "Leave Word" function implemented, using it to notify the recipient of the receipt of a message, and where it can be found, e.g., the recipient's mail queue. Alternatively, the "Leave Word' function could enable querying the message from the mail queue, or it could have an entirely separate account only for video mail.

4.16.2.2 Stand-alone implementation of Video Answering System

In contrast to the previously discussed layered implementation of this application, an alternative embodiment of the present invention is characterized by being a stand-alone implementation of the video answering system of the present invention. This embodiment does not utilize any other programs, such as video mail, to provide the requisite message handling or other features of the video answering system. Many of the previously

discussed engineering choices pertain to this embodiment, including but not limited to greetings used; location of stored greetings; how the greetings are transmitted; and whether messages are recorded remotely or locally. Because this embodiment does not utilize the functionality of other programs, these system engineering choices are not dependent on the message handling system of such an application to implement the answering machine function.

Additionally, the GUI can be better tailored to its function as an answering machine when a stand-alone version is implemented. The stand-alone strategy obviates the need for the recipient to go to the mail system to check her mail file, or any other file specified for answering machine messages. This points out an inconvenience in those versions of video answering which implement video mail as a message handler: these implementations act more like mail systems and less like an answering machines. The stand-alone version has an increased potential for being more responsive to the user with fewer intermediate steps for the user to perform in order to access, review, and process her video answering system messages. A video mail-based system is set up as a stand-alone messaging environment, while an answering machine could be more easily tuned to the fact that the recipient had been called and been left a message. This makes the answering machine function much easier to use, and, in most implementations, has at least one less layer than mail system-based implementations. Moreover, the use of video mail-based systems may present limitations on greetings, file, and recording locations, etc.

Another consideration is that, in some organizations, mail and answering machine functions may have very different urgencies. Accordingly, a call message may have a corporate priority above video mail messages. Where this is the case, answering system messages should be easier to get to, easier to review, and easier to respond to than mail messages in these organizations. In contrast, mail messages are more like memos: they are generally more thoughtfully produced documents. Moreover, mail messages not only have mail browsers associated therewith, but they typically also have one or more text fields. Accordingly, use of video mail as a message handler would likely present the recipient with one or more blank text fields when an answering machine message is displayed.

As the use of a stand-alone answering system removes the extra layers inherent in the previously discussed video mail-based application, the recipient can see a listing of those persons who had called, like in the Leave Word function of the incorporated reference. This presents the user with the option of simply replying to the message by returning the call or by clicking on the entry to see what had been left in the answering machine messages: video; audio; or a combination thereof. In any case, response can be by message or by call. Accordingly, this embodiment contemplates the inclusion, in the message transmitted responsive to the video answering machine, of a broad array of video, audio, text, and multimedia attachments therein.

4.16.3 Video Conference Recording

The Video Conference Recording application allows users to record the audio-video portion of audio-video conferences.

In conference recording for a call or conference of *N* participants, there are potentially *N+1* possible viewpoints to record from: the conference as viewed by each individual and the conference as viewed as a sort of composite "global view", which comprehends the combined views, audio, video and multimedia, of all the conference participants. The most comprehensive form of a "global view" would be provided by recording each participant's video and audio separately in multiple concurrent record sessions, for later combination and playback.

Although this extremely comprehensive embodiment would enable a reviewer to freely look back at each participant in full detail at any time, this approach is very resource and disk-space intensive, as it requires a separate record for each participant. While the principles of the present invention specifically contemplate such an embodiment, for all but the most massively implemented hardware suites it will be appreciated that combining the several participants' views into a single global view file is generally preferred, as it is far less resource intensive. Accordingly, it will be appreciated that there is a strong overhead cost basis for recording only one "global view" video and audio signal.

Referring now to ***Figure*** 37, an overview of the video conference recording application of the present invention is discussed. When the user, for instance 1802,

desires to invoke the video conference recording feature taught herein, a request is sent to the AVNM 1810. AVNM 1810 then forwards a request at 1812 to video conference recording application 1830 to initiate a conference recording session. Video conference recording application 1830 then submits a session request, 1814, to AVSS 1816. AVSS 1816 establishes connection control at 1818 with AVNM 1810. Video conference recording application 1830 also allocates a conference bridge at 1820 to AVNM 1810.

A user invokes, at 1806, a browser 1821 which in turn invokes a video playback application 1822. Invocation of video playback application 1822 initiates a session request at 1824 to AVSS 1816. Responsive to the session request, AVSS 1816 establishes connection control at 1820 with AVNM 1810.

Referring now to ***Figure*** 38, an overview of several of the components of the present invention required to implement video conference recording is discussed. Having reference to that figure, a first workstation 1802 can comprise any of a number of the previously discussed workstation implementations including camera 2302, microphone 2304, monitor/video card 2306, and speaker 2308. These components may optionally be connected by means of cabling, or other connection means known to those having ordinary skill in the art, to additional hardware element add-on box 2310 which in turn is connected with MLAN switch 2206. While the present invention contemplates the incorporation of a number of workstations to MLAN switch 2206, only a second workstation, 1804, is shown in this figure for purposes of illustrational clarity. Those having ordinary skill may art will recognize that a number of workstations may be so connected.

MLAN switch 2206 is connected with AVNM 1810, not shown in this view, at 2332. A conference bridge 2208 and AVSS 1816 are severally connected to MLAN switch 2206. Conference bridge 2208 further comprises a transceiver set 2336 in operative combination with MLAN switch 2206. Connected to transceiver set 2336 are video switch 2340 and audio mixer 2342. Further connected to video switch 2340 is a video mosaic generator 2346.

AVSS 1816 includes a further transceiver 2352, an encoder 2354, and a decoder 2356. A storage device, 2408, is coupled with encoder 2354 and decoder 2356.

When a point to point, or two-party, video conference is established, point-to-point connectivity is established between workstations 1802 and 1804 through MLAN switch 2206, as shown in ***Figure*** 39. A video signal 2902 is transmitted from camera 2302 of workstation 1802 to monitor 2320 of workstation 1804. Moreover, an audio signal 2904 is transmitted from microphone 2304 to speaker 2322 of workstation 1804. Similarly, camera 2316 of workstation 1804 transmits its video signal 2906 to monitor 2306 of workstation 1802, while microphone 2318 transmits its audio signal 2908 to speaker 2308. Having continued reference to that figure, the simple implementation of a conference between two users does not invoke either conference bridge 2208 or AVSS 1816.

The inclusion of a third party, or the implementation of the video conference recording request, invokes a conference bridge 2208 as shown in ***Figure*** 40. While this figure may be used to illustrate the principles of a multi-party conference call, only two workstations are illustrated herein for purposes of clarity. Having continued reference to the figure, the invocation of conference bridge 2208 is shown. In this case audio signals 3002 and 3004 are transmitted by means of MLAN switch 2206 through transceiver 2336 to audio mixer 2342, and thence to their respective recipients. In similar fashion video signals 2508 and 2502 are transmitted through MLAN switch 2206 through transceiver set 2336 and video switch 2340 to video mosaic generator 2346. Mosaic generator 2346 transmits a signal including a mosaic video, 2510, showing all users to video switch 2340. Video switch 2340 then splits this video signal into signals 2506 and 2506'.

When a user initiates a video conference recording request, the signal processing is substantially similar to that shown in ***Figure*** 40, with the additions illustrated in ***Figure*** 41. Having reference to the latter figure, a third video signal 3104, again comprising video mosaic 2510, is split at video switch 2340 and transmitted through MLAN switch 2206 to AVSS 1816. Similarly the audio signals 3002 and 3004 are combined by the audio mixer 2342 producing a summed audio signal 3102. Summed audio signal 3102 is transmitted through MLAN switch 2206 to AVSS 1816. The video mosaic 2510 and summed audio signal are received at

transceiver 2352, encoded at encoder 2354, and stored on storage device 2408. A subsequent request from a user for information stored on storage device 2408 is transmitted by means of decoder 2356 through MLAN switch 2206 and thence to the requesting users workstation.

The present invention contemplates that a user may select between any of a number of video representations made available by mosaic generator 2346. By way of illustration, but not limitation, three such alternatives are shown in ***Figures*** 42, 43, and 44. The previously discussed scenario is shown at ***Figure*** 42 wherein user 1, user 2, and the AVSS all see a mosaic of both users. Referring now to ***Figure*** 43, the view presented to each user, at their selection, is that of a close-up of the other user. Despite this selection, the AVSS continues to receive a mosaic of all users. Referring now to ***Figure*** 44, user 1 in this view sees a mosaic of himself and user 2, and user 2 sees a close-up of user 1. As before, the AVSS continues to receive a mosaic of all users being recorded.

The logic required to implement the previously discussed video conference recording application is presented in the data flow diagram of ***Figure*** 45. This logic may be implemented as software, hardware, firmware, or any combination of the foregoing. Having reference to that figure, a video conference recording request is initiated at 3402. The principles of the present invention specifically contemplate a number of methodologies for initiating this request. One such methodology has been previously discussed, wherein a given user initiates a request for video conference recording. Such a request makes usable the recorded video conference to any user having permission thereto. An alternative to this embodiment contemplates the situation wherein, for legal or record purposes, it is desired that *all* video conferences be recorded. In this alternative, the administrator having administrative responsibility for the system taught and disclosed herein may mandate, at her option, that video conference recording be implemented for all video conferences conducted, or for certain specified video conferences, for instance between a specified set of users.

Once the video conference recording request 3402 is initiated, video conference recording application 1830, not shown in this view, is initiated at 3404. When a

conference bridge was not previously allocated, such a conference bridge is now allocated at 3406. The initiation of the conference recording application initiates an AVSS session request at 3408 which in turn establishes connection control with AVNM 1810 at 3410. This in turn enables AVNM connectivity with the users at 3412.

Conference bridge allocation 3406 enables the establishment of a network A/V connection from a MLAN switch 2206, not shown in this figure, at 3414. Video signals are transmitted to video switch 2340 at 3416, which in turn transmits the signals to mosaic generator 2346 at 3420. Mosaic generator 2346 in turn transmits the mosaic video back to video switch 2342, at 3416, from whence the mosaic video 2510 is transmitted to the user's and AVSS 1816 at 3418.

Referring again to step 3414, audio signals are transmitted to audio mixer 2342 at 3422. Audio mixer 2342 sends the summed audio signals at 3426 to AVSS 1816. As shown at step 3424, audio mixer 2342 further transmits to each user a copy of the summed audio signal, less that user's own audio signal.

At this point mosaic video and summed audio are stored on storage device 2408 at step 3430. When a user, having permissions, desires to access recorded video conference information, he may do so by means of browser 1821 invoked by MCG, not shown in this view, or other user interface at 3450. Browser 1821 then accesses video playback application 1822 at 3452. Step 3452 in turn initiates another AVSS session request at 3408, enabling multiple concurrent recording and playback sessions by authorized users.

Referring now to ***Figure*** 46, the playback of recorded Video conference calls is explained. A previously recorded conference call is stored on storage device 2408 of AVSS 1816. When playback of the conference call is invoked, it is transmitted at 4170 through decoder 2356, which separates the recorded conference call into its composite video and audio signal components, 4180 and 4182 respectively. In the exemplar presented in ***Figure*** 46, only two conference participants, at workstations 1802 and 1804, are shown for purposes of illustrational clarity. Of course the principles of this embodiment of the present invention contemplate a larger plurality of user workstations.

Video signal 4180 is transmitted through MLAN switch 2206 to transceiver 2336,

and thence through video switch 2340 to mosaic generator 2346. Note that mosaic generator has inputs for each N conference participant plus one for video signal 4180. In this manner, previously recorded video conferences are treated as additional conference participants during playback. The output from mosaic generator 2346 is a mosaic 4190 having $N+1$ frames: one for each participant, plus one for the recorded conference being played back. The output from mosaic generator 2346 is transmitted to video switch 2340, where it is split into two video signals, 4188 and 4188' and transmitted to workstations 1802 and 1804 as shown.

A corresponding audio signal 4182 is simultaneously transmitted through MLAN switch 2206 and transceiver set 2336 to audio mixer 2342. Audio mixer 2342 sums the audio inputs, 3004 and 3002, from users at workstations 1802 and 1804 respectively with audio signal 4182 in the following manner: a first summed audio signal, 4184, is transmitted to a first user at workstation 1802, and is composed of the sum of audio signals from a second user at workstation 1804 and from the recorded video signal 4182. A second summed signal 4186 is transmitted to a second user at workstation 1804, and is composed of the sum of audio signals from the first user at workstation 1802 and from the recorded video signal 4182. In this embodiment, note that in each case the workstation's own signal is not transmitted back to that workstation for purposes of improving audio clarity, but that the summed signal contains only audio from other "participants", which includes the signal from the recorded conference. The system may also maintain a summed audio signal for all participants.

From the foregoing, the following features and advantages of a first embodiment the present invention are shown:

1. The "global view" of the sum of all user's audio signals is used by the Video Conference application so as to capture all parts of the conversation.

2. For multi-point conferences, the "global view" for both audio and video is readily obtained from the conference bridge hardware in the following manner:

   A. Global view video is naturally produced by the video mosaic box.

   B. Global view audio is provided by a special mix in the audio matrix mixer. This "global" mix is exactly the one used in ganging distributed

conference bridges. In other words, the "global" mix is the audio signal recorded. A subset of the global mix is sent to each of the conference users. This subset includes the global mix less the user's own audio signal. This is necessary in order to preclude "echoing" and other adverse audio effects.

Each user is provided with a choice between global view video and a selected close-up view. This feature is enabled by the standard MCG.

3. For point-to-point calls (i.e., a two-user conference), a signal capturing global view is generally not inherently available from within the hardware layer and is synthetically created as described.

In multi-party conferences, a conference bridge is automatically allocated. Where a single global viewpoint is to be recorded, two-user calls mandate that a conference bridge be allocated by the video conference application. This conference bridge is most efficiently used if it comes from the same pool used for real-time multi-party conferences.

In the case of protracted conference recordings it may be desirable to "tag" points in time where certain discussion events occurred. One embodiment of the present invention contemplates the use of such tags. Tags are preferably given a unique identifier, for instance a searchable text label or letter, whereby a specific discussion event is uniquely identified.

A user interface is provided to invoke and name a conference recording, and to invoke and operate the tag interface, where implemented. Additional user interfaces are implemented on the MCG for message notification; message browsing; and invocation of message playback.

It should be further noted that the conference bridge is not sensitive as to the nature of the input source. Accordingly, by way of illustration but not limitation, input can be by means of security camera, VCR, or substantially any other video or audio source, and so forth. Moreover, a conference call can specifically include a previously recorded video file All these inputs can be recorded as they are discussed. From this, and as previously discussed, it follows that the system enables multiple simultaneous source sessions: e.g.: one or more recording sessions and one or more playback sessions, and

they are all completely independent. Each is connected to the conference bridge, and the user interfaces are available to one or more users during the video meeting.

The Video Conference Recording application previously discussed utilizes and implements the following capabilities:

1. Generic control protocol interface/API.

2. A generic multi-platform audio-video recording/playback utility referred to herein as the "mode control GUI" or "MCG".

3. Multi-session recording/playback capability.

4. Analog audio-video input and output.

5. A decoder co-allocated when an encoder is allocated. This ensures that the decoder is always available during the record session for review.

6. Variable capacity scaling to match the needs of supported applications, and hardware configurations.

Moreover, the following capabilities may be required or advantageous, depending on how wide-area calls are handled, or where architecturally convenient.

7. File transfer capability (pull model) among AVSSs driven by specific file transfer requests made by applications.

8. Effective "loopback" at the AVSC of incoming video to outgoing video during record mode.

9. A video editing capabilities. This capability may be internally implemented as part of an applications program, or in the alternative, may be capable of invoking third party video and/or audio editors.

4.16.4 Video Documents

The Video Documents application allows stored video files to be included in an on-line electronic document such as Word ™ or Framemaker ™. This can be used for many enterprise-wide applications including, but not necessarily limited to: training, corporate memory, procedures, references, marketing, and so forth. There are also many potential overlaps with the Intranet and Internet, as discussed below.

One embodiment of this feature of the present invention is shown in ***Figure*** 19. Having reference to that figure, substantially any archival video are combinable with text

or documents. Moreover, the principles of the present invention comprehend video overlay graphics, which overlay the video, as well as a compendium of a plurality of video files which further include additional text or graphics, standalone videos, and MIME attached video files. Accordingly, the video document may bring up a video window alongside the document as viewed by the user, or overlaying the document, which enables the user to play the video while viewing the document. Video can come from any previously discussed source. Videos in a video document are sharable during a conference call or by video mail or messaging.

An embodiment of the present invention contemplates attaching the viewer to a message as a MIME or other functional attachment. A given call may be expanded to include other participants and other mechanisms to merge the document into a running conference. In other words, by the establishment of another concurrent session. This is more than simple video as it enables synchronized graphics either overlaying the video or accompanying the video.

Of course, any such implementation which necessitates the interface with third-party software raises some interoperability issues. Some of these issues include:

The necessity, in some implementations, to make available an additional document type for the supported package using MIME extensions.

The workstation Conference client video window and the MCG may be used for video delivery. However, in some applications of the principles of the present invention, it may make more aesthetic sense to include the video window and some associated controls, e.g., the playback control, in the document itself. One means of implementing this feature would be as a graphics type within an anchored frame.

The necessity, in some implementations, to capture both "video type" delete events and "entire document" delete events so as to not fill the file system with unused video files.

The necessity, again, in some implementations, for an automatic file transfer or user-warning mechanism to ensure that video files are transferred when the document is transferred to a domain not served by the authoring AVSS.

Each of these issues is, of course, highly application specific. The implementation of specific solutions thereto is within the purview of those having ordinary skill in the art, in light of the teachings herein enumerated.

The system can support video document applications either using conventional third-party document systems or document systems enhanced to offer the ability to obtain and or file copy events from the document system.

The present invention can use word processing GUIs and the MCG. Accordingly, additional user interfaces are not required.

The Video Documents application requires the following capabilities:

1. Generic control protocol interface/API.

2. A generic multi-platform audio-video recording/playback utility (similar to vfstool) referred to herein as the "mode control GUI" or "MCG".

3. Multi-session recording/playback capability.

4. Analog A/V I/O.

5. An AVSC decoder is co-allocated when an encoder is allocated. This ensures that the decoder is always available during the record session for review.

6. Variable capacity scaling to match the needs of supported applications.

7. File transfer capability (pull model) among AVSSs driven by specific file transfer requests made by applications.

8. Effective "loopback" at the AVSC of incoming video to outgoing video during record

Additionally, the following feature is required to include other video file sources:

9. The capability to accept and playback appropriate digital files from third parties as controlled by applications.

Finally, in a first embodiment of the present invention, in order to support Internet access, the following feature is required:

10. The capability to transfer appropriate digital files to third parties as controlled by applications.

12. A video editing capabilities. This capability may be internally implemented as part of an applications program, or in the alternative, may be capable of invoking third party video and/or audio editors.

4.16.5 General Purpose Video Storage

In many cases there are needs for less sophisticated "raw" video storage capabilities reachable from workstations over the video distribution network. These "raw" needs amount to the functionality of a network-accessible VCR or writable laserdisk with its information organized according to file system conventions. Sources for the stored video content may be, for example, clips from broadcast news programs, copies of camcorder footage, captured segments from videotapes, video files transferred from the CDs, DVD, or the Internet. Although user workstations are likely involved with the acquisition, capture, or transfer of such video information (via auxiliary audio/video input jacks at the desktop workstation, file transfer actions, etc.), in general the genesis of this class of video is in contrast video captured from video calls, video conferences, message authoring, or video document authoring. Further, the storage of this class of "raw" video information would not support supplementing the video with any annotations, text, shared graphics, etc.

Current trends in computing lead users to treat such "raw" video clips as any other file in their networked computing environment, freely copying individual copies of large video files and storing them on local disk or in standard data-network file servers. Such an approach has several disadvantages:

- such video only available at workstations with decoding capabilities for the needed video protocol and file format
- data networks and standard data file systems get heavily loaded given even a modest amount of video usage
- large numbers of private copies of large video files load local disks and file servers even further by huge multiples.

It is obvious to one skilled in the art that the current invention easily addresses these shortcomings by offering:

- centralized shared encoding, decoding, and transcoding

- moving video over appropriate video-engineered networks rather than data networks
- sharing of a small number (one to a few) of these large-size files across the entire community of users who need access to the file
- still permitting file-transfer and digital streaming where required or desired.

To do this, the video file formats used must match those supported by the AVSS.

By appropriately designing the invention's handling of this class of video information, the video information can be freely exchanged with other types of applications. For example, subject to file permissions, video information can be exchanged between "raw" video clips of the general purpose video storage application and other AVSS applications:

- a "raw" video clip can be incorporated into a videomail message, video document, video publishing applications, video web pages, etc.
- a "raw" video clip can be viewed within a video call or conference
- any video captured within a recorded video call, recorded video conference, video message, or other networked video applications could be captured as a "raw" video clip.

In some situations such exchange of video information between applications would involve an entire unaltered video file. The actual methods for the exchange for this case can be accomplished in at least one of two ways:

- creating a new application-owner of the existing file
- playing back the file as rendered video which is then re-recorded, possibly during viewing, by another networked video application

Other methods are also possible for one skilled in the art.

In other situations, only segments of an original video file are to be transferred between applications, or other edits of the original video file may be required. For these cases, the actual methods for the exchange could include at least one of the two following ways:

- use of a video file editor on the existing file to create a new (edited) file, and assigning the appropriate application-owner to this new file
- playing back the file as rendered video and, during viewing, re-record selected segments by means of another networked video application.

Other methods are also possible for one skilled in the art.

The General Purpose Video Storage application requires, in most implementations, the following capabilities:

1. Generic control protocol interface/API.

2. A generic multi-platform audio-video recording/playback utility (similar to vfstool) referred to herein as the "mode control GUI" or "MCG".

3. Multi-session recording/playback capability.

4. Analog A/V I/O.

5. An AVSC decoder is co-allocated when an encoder is allocated. This ensures that the decoder is always available during the record session for review.

6. Variable capacity scaling to match the needs of supported applications.

7. File transfer capability (pull model) among AVSSs driven by specific file transfer requests made by applications.

8. Effective "loopback" at the AVSC of incoming video to outgoing video during record

9. The capability to accept and playback appropriate digital files from third parties as controlled by applications.

10. The capability to transfer appropriate digital files to third parties as controlled by applications.

12. A video editing capabilities. This capability may be internally implemented as part of an applications program, or in the alternative, may be capable of invoking third party video and/or audio editors.

In some limited domain cases, only features 1-8 may be required.

4.16.6 Intranet Video Storage Utility

Intranet refers to the use of Internet utilities, such as web pages, web browsers and web sites, as a means for distributing enterprise-internal information. In that web page

authoring tools commonly accept MIME attachments, clearly the AVSS video MIME attachment service primitive can be used in a web page within an enterprise outfitted with the invention. As shown in ***Figures*** 3 and 4, the AVSS can readily be connected with the Internet to facilitate the use of its capabilities with web pages and other Internet utilities.

Use of the AVSS video MIME attachment allows not only the attachment of video clips to arbitrary intranet web pages but also any other features that could be included in the MIME attachments, such as synchronized shareboard sessions, discussed later). Further, as any AVSS video file or AVSS MIME attachment can, subject to permissions, be transferred easily from AVSS-application to AVSS-application, the intranet can serve as another useful enterprise-internal video publishing method.

It should be noted that other types of AVSS-based video applications could be written to serve as web page building blocks by those skilled in the art. Thus, the AVSS advantages described above can be obtained by those skilled in the art via means other than the AVSS MIME attachment.

The Intranet Video Storage application enables raw audio-video files as well as video documents be stored, searched, and accessed within the enterprise, in accordance with Intranet browser interfaces and other conventions.

The General Purpose Video Storage application requires, in most implementations thereof, the following capabilities:

1. Generic control protocol interface/API.

2. A generic multi-platform audio-video recording/playback utility (similar to vfstool) referred to herein as the "mode control GUI" or "MCG".

3. Multi-session recording/playback capability.

4. Analog A/V I/O.

5. An AVSC decoder is co-allocated when an encoder is allocated. This ensures that the decoder is always available during the record session for review.

6. Variable capacity scaling to match the needs of supported applications.

7. File transfer capability (pull model) among AVSSs driven by specific file transfer requests made by applications.

8. Effective "loopback" at the AVSC of incoming video to outgoing video during record

9. The capability to accept and playback appropriate digital files from third parties as controlled by applications.

12. A video editing capabilities. This capability may be internally implemented as part of an applications program, or in the alternative, may be capable of invoking third party video and/or audio editors.

In some limited domain cases, only features 1-8 may be required.

4.16.7 Internet Gateway

Current trends in desktop computing technology, networking, and Internet usage has just started the emergence of video files and streaming over the Internet. These few early video exchanges are essentially all low resolution and usually low frame-rate, hence the resulting impact on limited Internet bandwidth, limited corporate network bandwidth, and limited enterprise file system space has been noticeable but manageable. As video rapidly increases in importance to business, limited Internet bandwidth, limited corporate network bandwidth, and limited enterprise file system space will be immediately taxed. Also to be noted is that increasing business use of video will demand increasing resolution and frame-rate, ballooning the bandwidth and file size requirement for each second of video information. Finally, current trends continue to encourage a plethora of video standards and protocols; to support all of them and their respective evolutions at each desktop workstation demands costly computing power, applications software, dedicated hardware, and administration; in many enterprises, this is completely intractable.

As shown in ***Figures*** 3 and 4, the AVSS can readily be connected with the Internet. With this connectivity, the AVSS can be used as a gateway for incoming Internet video streams (which it can read into and thus convert into a file) as well as a proxy-server for incoming video file transfers from the Internet. Once these resulting video files are in the AVSS, perhaps initially captured as "raw" video (as described earlier), they then can be viewed at user workstations or used in other AVSS applications. The AVSS can provide any transcoding operations that may be needed. This approach permits, at no appreciable additional cost, an enterprise outfitted with the invention to pull

in large amounts of video information from the Internet, store it economically, and make it available to any user with a workstation fitted with the invention's low-cost audio-video networking hardware and software.

The AVSS can also be used as a repository for video files accessed outside the enterprise via the Internet. The simplest implementation of this nature would simply make "raw" video files available on the network. This could be extended to include annotation animations, generated for example by shareboard or a similar data-sharing application; such annotation animations could in fact be available stand-alone or temporally synchronized to audio, video, or audio-video material. Software viewers and players (with software-only video decoding, for example) could be created as application software for use with, or incorporation into, Internet browsers. The software viewers and players can be implemented and deployed in various ways in a manner readily understood by those skilled in the art, for example:

- an applet downloaded from the server over the Internet
- a full application downloaded from the server over the Internet, said application such that it can be installed on the Internet-user's personal computer
- a stand-alone application product bought and sold in the marketplace

It is noted that all of the above functionality could further be extended in scope to include the capability of handling the full AVSS MIME attachments.

The Internet Gateway application implements at least one of the following functions: the reception of incoming audio-video information from the internet; and the making of internal audio-video information digitally accessible to third parties on the Internet.

Implementation of a first embodiment of this part of the present invention requires the following AVSS features:

8. Effective "loopback" at the AVSC of incoming video to outgoing video during record

9. The capability to accept and playback appropriate digital files from third parties as controlled by applications.

12. A video editing capabilities. This capability may be internally implemented as part of an applications program, or in the alternative, may be capable of invoking third party video and/or audio editors.

Where a remote user is outside the enterprise, the principles of the present contemplate the utilization of third-party browsers including, but specifically not limited to Netscape, Microsoft Internet Explorer, and/or FTP.

Embodiments of the Internet Gateway application would typically require the following capabilities:

1. Generic control protocol interface/API.

2. A generic multi-platform audio-video recording/playback utility (similar to vfstool) referred to herein as the "mode control GUI" or "MCG".

3. Multi-session recording/playback capability.

4. Analog A/V I/O.

5. An AVSC decoder is co-allocated when an encoder is allocated. This ensures that the decoder is always available during the record session for review.

6. Variable capacity scaling to match the needs of supported applications.

7. File transfer capability (pull model) among AVSSs driven by specific file transfer requests made by applications.

8. Effective "loopback" at the AVSC of incoming video to outgoing video during record

Additionally, at least one, and in some implementations both, of the following capabilities are required by some embodiments:

9. The capability to accept and playback appropriate digital files from third parties as controlled by applications.

10. The capability to transfer appropriate digital files to third parties as controlled by applications.

12. A video editing capabilities. This capability may be internally implemented as part of an applications program, or in the alternative, may be capable of invoking third party video and/or audio editors.

4.16.8 Video Publishing

Video publishing is accomplished by a user posting video on the AVSS for viewing within the desktop collaboration system or throughout the standard data-based Internet/Intranet.

Desktops (analog or digital) can access stored video documents, either over the LAN, the WAN, or the Internet. They can also be made available to CMW users, as well as outside workstations which have reduced graphics capability. Video publishing enables the publishing of the documents to the outside world, as well as the importing, from the outside world, of additional material, again including text, graphics, audio, video or multimedia files. This latter feature comprehends the import and export of a number of disparate video and other formats including, but specifically not limited to, MPEG1 – 7, Motion JPEG, Video for Windows, Quicktime, DVI, recorded H.320, wavelets, and wavelet-compressed fractals.

The implementation of video publishing on the AVSS comprehends a transcoding methodology embodied as hardware, software or firmware to enable the transcoding among the several formats required, thereby making the video files substantially format transparent to the receiver thereof. Any user with a workstation and permissions from the system administrator can accordingly publish documents to any user on the net or any other person outside the net who has access to the files. This enables high quality video publishing from analog equipment without the expense of implementing digital equipment.

At some point, it becomes cost-prohibitive to maintain all the video files ever created by an enterprise on rapid online storage, such as magnetic or magneto-optical hard drives. At some point long term or mass storage must be implemented for outdated or seldom-accessed video files. The present invention contemplates the inclusion therein of an automated routine which determines the relative time importance of files and either moves them to and from one or more types of long term storage device, including mass storage, magnetic tape, or other long term storage technology well known to those having ordinary skill in the art, or which deletes the files from the system. This algorithm either presents the user with the option of archiving her video files, or does so automatically. This may be done by user script from the System Administrator, or other archival storage

technology well known to those having ordinary skill in the art.

4.17 Multimedia Applications

The present invention enables the establishment of real time data sharing sessions between two workstations using shareboard or other synchronized data sharing technologies. The implementation of shareboard enables a given application to be invokable on each workstation involved in the video conference, video mail or other application taught herein. Any user having permission to access the file may then import onto his screen, as another window, a copy of the application onto that screen. Independent scrolling of each screen is enabled. On top of this application in the window the users may then independently point, draw, type text, and perform other graphics functions by means of graphics overlay files. The user can further grab other file programs and so forth and draw them into the conference window. Further, the users may independently telepoint the items on one or more of these applications. Each of these shareboard features are further explained in the incorporated reference.

The present invention enables the shareboard features previously discussed to be extended to the use of stored applications. This enables a user to simultaneously narrated and telepoint, for instance point into the subject of interest and using language like "this one here and that one over there". Accordingly, it will be appreciated that what is required is minimally the user's voice being synchronized with the actions of the pointer. The present invention not only enables this feature in real time, but further enables that this synchronized speech and graphics capability is storable and retrievable such that when the stored file is invoked the data, speech, and graphics synchronization remains accurate. This enables the file to be recorded, stored, and sent to another user as video mail, as an input in response to an answering system greeting, as a document, or substantially in any other file format taught or made obvious by the teachings of the present inventions. It should be noted that this storage includes underline bitmaps of any application so invoked.

The shareboard reference, fully discussed in the incorporated reference, is used in a first embodiment of the present invention. This provides for a uniform user interface. As shareboard is an intricate feature of the video conference methodologies taught herein, the extension of its features to the other applications taught herein enables like

functionality without the implementation of additional recording tools or user interfaces. In a very real sense the utilization of shareboard not only means that a user must learn only one interface, usable in real time or otherwise, but it also helps with the users ideation that he is enabled, by the principles of the present invention, to share data across the several applications forming the application suite herein. The combination of multimedia synchronization, previously discussed, combined with shareboard functionality solves a number of compatibility, data reuse, and user interface problems. Moreover, the user shareboard in operative combination with the multimedia synchronization previously discussed enables the implementation of the principles of the present invention utilizing very specific data storage formats as well as the sharing of bitmaps.

A slightly more general case in the use of shareboard is application sharing. When an application is invoked and a plurality of conference users can simultaneously utilize it, for instance each entering data in a single shared spreadsheet program. The present invention is no longer operating with only a snapshot of a bitmap image, but rather is actually working in the process of the application and the several users are simultaneously changing files together.

4.17.1 Multimedia Mail

The Multimedia Mail application adds synchronized datashare, e.g., synchronized-Shareboard/T.120 recording, storage, browsing, and playback capabilities to the Video Mail application described in the previous section.

This inclusion of this feature provides significant value in that mail messages can now include the same media options as real-time desktop video conferencing. Thus a user can telepoint to one number in a spreadsheet, and then circle another number in the spreadsheet, as she first smiles and then says "How on earth could this number be half of this number?" and the entire cross-media message gets captured and conveyed as it would have been in a live desktop video conference, including all the subtle communications included by gesture, tone of voice, body language, and so forth.

The full content of other multimedia storage applications with synchronized datashare, e.g., synchronized-Shareboard T.120 recording and playback capabilities. Thus a user can forward a multimedia answering application message, multimedia

conference recording, and so forth with other authors or authoring venues in multimedia e-mail or other multimedia application taught herein. This application requires a new AVSS feature:

11. Synchronized datashare, e.g., synchronized-shareboard/T.120 recording, storage, browsing, and playback. This event list information is best stored in a separate file from the MPEG A/V file; the pair of this event list and the MPEG A/V file could be called a "multi-media meta-file."

4.17.2 Multimedia Answering System

The Multimedia Answering application adds synchronized datashare, e.g., synchronized-Shareboard/T.120 recording, storage, browsing, and playback capabilities to the Video Answering application described in the previous section.

Utilization of this feature provides significant value in that a user can leave a more complete message in comparatively very little time should the call recipient themselves or the necessary connectivity not be available at the time a call attempt is made. This is because all relevant graphic overlay can be included in either the recipient's greeting or the caller's message.

Again, this application, like all other multimedia applications discussed herein utilizes the previously discussed feature 11.

4.17.3 Multimedia Conference Recording

The Multimedia Conference Recording application adds synchronized datashare, e.g., synchronized-Shareboard/T.120 recording, storage, browsing, and playback capabilities feature 11 to the Video Conference Recording application described in the previous section. This ensures that all transactions spanning the full spectrum of media used in desktop teleconferences of two or more participants can be captured for later review.

4.17.4 Multimedia Documents

The Multimedia Documents application adds synchronized datashare, e.g., synchronized-Shareboard/T.120 recording, storage, browsing, and playback capabilities of feature 11 to the video documents application described in the previous section. This ensures that procedural descriptions leveraging video can also include synchronized

telepointing and annotation. This is extraordinarily valuable in on-line training and reference material applications.

4.17.5 General Purpose Multimedia Storage

The General Purpose Multimedia Storage application adds synchronized datashare, e.g., synchronized-Shareboard/T.120 recording, storage, browsing, and playback capabilities feature 11 to the General Purpose Video Storage application described in the previous section. The advantages presented by such an implementation mirror those discussed above in the section entitled "Multimedia Documents".

4.17.6 Intranet Multimedia Storage Utility

The Intranet Multimedia Storage application adds synchronized datashare, e.g., synchronized-Shareboard/T.120 recording, storage, browsing, and playback capabilities of feature 11 to the Intranet Video Storage application described in the previous section. Again, the advantages presented thereby are similar to those discussed above in the section entitled "Multimedia Documents".

The principles of the present invention have been discussed herein with reference to certain embodiments thereof. Study of the principles disclosed herein will render obvious to those having ordinary skill in the art certain modifications thereto. The principles of the present invention specifically contemplate all such modifications. The present invention may be practiced without any element disclosed herein.

CLAIMS

1. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one converter configured to

i) convert audio/video signals,

(a) originating at any one of the workstations,

(b) into a form suitable for storage;

C) at least one storage cell configured to

i) store,

(a) the converted audio/video signals

- for later retrieval; and

D) at least one signal path,

i) interconnecting

(a) the workstations, the converter(s) and the storage cell(s),

wherein system is configured to

i) store converted signals,

(a) onto the storage cell,

(b) such that the stored converted signals

- can later be retrieved

i. under direction of one or more of the workstations.

2. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

(a) video and audio capture capabilities;

B) at least one converter configured to

i) convert audio/video signals,

(a) originating at any one of the workstations,

ii) into a form suitable for storage;

C) at least one storage cell including

i) at least one storage cell,

ii) each storage cell being configured to

(a) store,

- for later retrieval,
- signals

i. converted by at least one of the converters, and

(b) facilitate transfer

- of previously stored audio/video signals
- to another storage cell
- whether included in that or another storage cell system; and

D) at least one signal path,

i) interconnecting

(a) the workstations, the converters and the storage cells,

wherein the system is configured

ii) to co-operate with the storage cell

iii) to manage

- the storage and
- transfer,

i. of the converted audio/video signals,

ii. among storage cells.

3. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one storage server

i) the storage server including

(a) at least one storage cell having

- at least one storage disk,
- a storage disk controller
  - i. associated with each disk, and
- at least one converter; and

(b) a storage cell manager (AVSM), and

ii) configured to

(a) store,

- for later retrieval,
- audio/video signals
- converted by the converter(s); and

C) at least one signal path,

i) interconnecting,

(a) the workstations and the storage server,

wherein the networked multimedia system is configured to

ii) store the converted audio/video signals by

(a) selecting any one of the group consisting of disks, disk controllers, converters, storage cells and storage cell managers (AVSM), according to the following approach:

- if a first converter
  - **i.** of a first cell
  - **ii.** has reached its capacity or bandwidth limit,
  - **iii.** then a second converter, of the first cell, is selected;
- if a first disk controller
  - **i.** of the first cell
  - **ii.** has reached its capacity or bandwidth limit
  - **iii.** then a second disk controller of the first cell is selected;
- if a first disk,
  - **i.** associated with a first of the disk controllers
  - **ii.** has reached its capacity or bandwidth limit,
  - **iii.** then a second disk associated with the first disk controller is selected;
- if the first storage cell
  - **i.** associated with a first storage cell manager (AVSM)
  - **ii.** has reached its capacity or bandwidth limit,
  - **iii.** then a second storage cell associated with the first storage cell manager (AVSM) is selected; and
- if the first storage cell manager (AVSM) has reached its capacity,
  - **i.** then a second storage server, is selected, and

(b) storing the converted signals using each of the selected ones of the group.

4. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one converter arranged to

i) convert audio and/or video information,

(a) originating at a workstation,

(b) into a form suitable for storage;

C) a least one storage cell, each including

i) at least one storage disk

(a) configured to receive and store,

- for later retrieval,
- the converted audio/video signals,

D) at least one storage cell manager (AVSM); and

E) at least one signal path,

i) interconnecting

(a) the workstations, the converter and the storage cells,

wherein the system is configured to perform any one of the group of functions consisting of:

ii) transferring

(a) the stored converted signals

(b) between any two storage disks of any storage cell;

iii) transferring

(a) the stored converted signals

(b) between any two storage cells,

- under control of a single storage cell manager (AVSM); and

iv) transferring

(a) the stored converted signals

(b) between any two storage cells

- respectively under control of different cell managers (AVSM).

5. The networked multimedia system of any one of claims 1, 3, or 4 wherein

A) the system is configured to

i) facilitate transfer

(a) of converted audio/video signals

(b) previously stored by a first storage cell

(c) to another storage cell

6. The networked multimedia system of any one of claims 1 to 4, wherein

A) the converter is at least one of

i) a transcoder, an encoder and a combination encoder/transcoder.

7. The networked multimedia system of any one of claims 1 to 4, wherein

A) retrieved signals can

i) result in audio/video reproduction

ii) at one or more of the workstations.

8. The networked multimedia system of any one of claims 1 to 4, wherein

A) the converted signals are stored

i) in at least one file, which can be accessed by

(a) more than one workstation at the same time and/or

(b) more than one application type.

9. The networked multimedia system of claims 8, wherein

A) multiple copies of each such file can exist.

10. The networked multimedia system of claim 9 further comprising:

A) a storage server defined by at least the following

i) at least one of the storage cells,

ii) at least one of the converters and

iii) at least one controller configured to do at least one of the group of

(a) determine whether signal conversion is to occur;

(b) if the system comprises more than one converter,

- determine which of a plurality of converters will accomplish the conversion;

(c) if the system comprises more than one storage cell,

- determine which of the storage cells will store the converted signals;

(d) control the subsequent retrieval of the stored signals; and

(e) determine which copy of the file is accessed for retrieval.

11. The networked multimedia system of claim 10, wherein

A) the storage server

i) is physically distributed or decentralized across the system.

12. The networked multimedia system according to claim 8, wherein the system is further configured to

A) generate a sequence of graphics rendering events

i) associated with computer generated images and/or overlay graphics at a workstation, and

B) save the generated sequence.

13. The networked multimedia system according to claim 12, wherein

A) the generated sequence of graphics rendering events

i) can be played back to render computer generated images and/or overlay graphics

(a) at a workstation,

(b) together with a workstation-user related audio and video

(c) in a determinable temporal relationship, and

B) the system can

i) save the event sequence

(a) related to the displayed computer generated and/or overlay graphics images and/or the audio and video

ii) such that the event sequence can later be reproduced

(a) at a workstation

(b) in the determined temporal relationship.

14. The networked multimedia system according to claim 13, wherein

A) the at least one file includes

i) the saved sequence of graphics rendering events.

15. The networked multimedia system according to claim 6, further comprising:

A) at least one decoder, configured to

i) decode signals retrieved from storage.

16. The networked multimedia system of claims 8, wherein

A) the file is a metafile including

i) at least one of the group of an audio-video file, audio only file, video only file, a graphics event file, a window event file, an application startup event file, a bit map file, a postscript file, a graphics file, a synchronization file and a text file.

17. The networked multimedia system of claim 16, wherein the metafile further includes

i) at least one pointer referencing

(a) a predetermined file or group of files

- on one or more of the storage cells

18. A method of using a networked multimedia system comprising the steps of:

A) capturing audio and video at

i) one or more workstations, each including

(a) video and audio reproduction capabilities, and

(b) video and audio capture capabilities;

B) converting the captured audio/video signals,

(a) into a form suitable for storage;

C) storing,

(a) the converted audio/video signals

(b) within a storage cell,

(c) such that the stored converted signals

- can later be retrieved

i. under direction of one or more of the workstations.

19. A method of using a networked multimedia system comprising the steps of:

A) capturing audio and video at

i) one or more workstations, each including

(a) video and audio reproduction capabilities, and

(b) video and audio capture capabilities;

B) converting captured audio/video signals,

i) into a form suitable for storage

ii) by using at least one converter;

C) storing

i) for later retrieval,

(a) signals

(b) converted by at least one of the converters,

ii) onto at least one storage cell;

D) transferring

i) previously stored audio/video signals

(a) to another storage cell

- whether included in that or another storage cell;

E) managing

i) the storage and

ii) transfer,

(a) of the audio/video converted signals,

(b) among storage cells.

20. A method of using a networked multimedia system comprising:

A) capturing audio and video at

i) one or more workstations, each including

(a) video and audio reproduction capabilities, and

(b) video and audio capture capabilities;

B) converting the captured audio and video

i) into a form suitable for storage;

C) storing

i) for later retrieval,

ii) the converted audio/video signals

iii) by using

(a) at least one storage cell having

- at least one storage disk,

- a storage disk controller
  - i. associated with each disk, and
- at least one converter; and

(b) a storage cell manager (AVSM); and

D) storing the converted audio/video signals,

i) by selecting any one of the group consisting of disks, disk controllers, converters, storage cells and storage cell managers (AVSM), according to the following approach:

(a) if a first converter
- of a first cell
- has reached its capacity or bandwidth limit,
- then a second converter, of the first cell, is selected;

(b) if a first disk controller
- of the first cell
- has reached its capacity or bandwidth limit
- then a second disk controller of the first cell is selected;

(c) if a first disk,
- associated with a first of the disk controllers
- has reached its capacity or bandwidth limit,
- then a second disk associated with the first disk controller is selected;

(d) if the first storage cell
- associated with a first storage cell manager (AVSM)
- has reached its capacity or bandwidth limit,

- then a second storage cell associated with the first storage cell manager (AVSM) is selected; and

(e) if the first storage cell manager (AVSM) has reached its capacity,

- then a second storage server, is selected, and

ii) storing the converted signals using each of the selected ones of the group.

21. A method of using a networked multimedia system comprising the steps of:

A) capturing audio and video at

i) one or more workstations, each including

(a) video and audio reproduction capabilities, and

(b) video and audio capture capabilities;

B) converting captured audio and/or video,

i) into a form suitable for storage;

C) providing a least one storage cell, each including

i) at least one storage disk

(a) configured to receive and store,

- for later retrieval,
- the converted audio/video signals,

D) providing at least one storage cell manager (AVSM); and

E) performing any one of the group of transferring functions consisting of:

i) transferring

(a) the stored converted signals

(b) between any two storage disks of any storage cell;

ii) transferring

(a) the stored converted signals

(b) between any two storage cells,

- under control of a single storage cell manager (AVSM); and

iii) transferring

(a) the stored converted signals

(b) between any two storage cells

- respectively under control of different storage cell managers (AVSM).

22. The method of any one of claims 19, 21 or 22 further comprising the step of:

A) transferring

i) the stored audio/video signals

ii) to another storage cell.

23. The method of any one of claims 19 to 22, further comprising the step of:

A) reproducing

i) audio and/or video

ii) at one or more of the workstations

iii) based on the retrieved signals.

24. The method of any one of claims 19 to 22, wherein

A) converted signals are stored

i) in at least one file, which can be accessed by

(a) more than one workstation at the same time and/or

(b) more than one application type.

25. The method of claim 24, wherein

A) multiple copies of each such file can exist.

26. The method of claim 24, further comprising the steps of:

A) generating a sequence of graphics rendering events

i) associated with computer generated images and/or overlay graphics at a workstation, and

B) saving the generated sequence.

27. The method of claim 26, wherein

A) the generated sequence of graphics rendering events

i) can be played back to render computer generated images and/or overlay graphics

(a) at a workstation,

(b) together with a workstation user related audio and video

(c) in a determinable temporal relationship

the method comprising the step of:

ii) saving the event sequence

(a) related to the displayed computer generated and/or overlay graphics images and/or the audio and video

(b) such that the event sequence can later be reproduced

- at a workstation
- in the determined temporal relationship.

28. The method of claim 27, wherein

A) the at least one file includes

i) the saved sequence of graphics rendering events.

29. The method of claim 25, further comprising the step of:

A) decoding signals retrieved from storage.

30. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one signal converter configured to

i) convert audio and/or video information

(a) originating at a workstation,

(b) into a form suitable for storage

C) at least one storage cell configured to

i) store,

(a) audio and video information

- captured at a workstation

(b) as at least one file,

- for later retrieval;

D) at least one signal path,

i) interconnecting

(a) the workstations, the converter(s) and the storage cell(s); and

E) at least one pointer referencing

i) a predetermined file or group of files,

(a) on one or more of the storage cells,

ii) wherein the system is configured to transmit,

(a) at least the pointer

(b) to a receiving application program

iii) render the contents

(a) of the file or group of files

(b) at a workstation

(c) by retrieving data

- from the file or group of files

31. The networked multimedia system of claim 30, wherein

A) the pointer file

i) has at least one function selected from the group consisting of

(a) identifying a data file,

(b) identifying at least one storage cell on which the data file is stored,

(c) identifying a media type of the data file,

(d) providing access authorization to the data file,

(e) providing a natural-language title of the data file,

(f) providing a natural-language description of the data file,

(g) identifying a creator of the data file, and

(h) noting a time of creation of the data file.

32. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one signal converter configured to

i) convert audio and/or video information

(a) originating at a workstation,

(b) into a form suitable for storage

C) at least one storage cell configured to

i) store,

(a) audio and video information

- captured at a workstation

(b) as at least one file,

- for later retrieval;

D) at least one signal path,

i) interconnecting the workstations, the converter(s) and the storage cell(s);

E) a viewer configured to enable a workstation user to do at least one of

i) setting up connections and sessions;

ii) preparing files for viewing, and

iii) providing a viewer interface for the user to access and manipulate files.

33. The system of claim 32, wherein

A) the viewer is

i) invoked as a standard video call, and

ii) is capable of being merged with at least one of

(a) video calls, video conferences, video messages, multimedia calls, multimedia conferences, and multimedia messages.

34. The system of claim 33, wherein

A) the viewer is implemented as a process primitive.

35. The system of claim 33 wherein

A) the viewer includes a plurality of viewers,

the system further comprising

B) a browser for selecting at least one of the plurality of viewers.

36. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one signal converter configured to

i) convert audio and/or video information

(a) originating at a workstation,

(b) into a form suitable for storage

C) at least one storage cell configured to

i) store,

(a) converted audio and video information

- captured at a workstation

(b) as at least one file,

- for later retrieval;

D) at least one signal path,

i) interconnecting

(a) the workstations, the converter and the storage cell(s);

E) at least one stored-video application program

i) on at least one of

(a) the storage cell

(b) a workstation; and

F) at least one process primitive

i) that can be shared

ii) across at least two of

(a) the stored-video application programs.

37. The networked multimedia system of claim 36, wherein

A) at least one of the stored-video application programs

i) is one from the group consisting of:

(a) videoconference recording; video mail; video answering system; video documents; and video publishing.

38. The networked multimedia system of claim 37, wherein

A) the process primitive

i) is one from the group consisting of:

(a) viewer; browser; MIME attachment; an annotation authoring tool; and video editor.

39. The networked multimedia system of claim 38, wherein

A) the system is further configured to

i) share

(a) at least one data primitive

(b) across at least two of

- the plurality of stored-video application programs.

40. The networked multimedia system of claim 39, wherein

A) the data primitive

i) is from the group consisting of

(a) a video file, a graphics event file, and a metafile.

41. The networked multimedia system of claim 40, wherein

A) the metafile includes at least one of the group of

i) an audio-video file, audio only file, video only file, a graphics event file, a window event file, an application startup event file, a bit map file, a postscript file, a graphics file, a synchronization file, and a text file.

42. The networked multimedia system of claim 41, wherein

A) the metafile includes

i) an associated pointer file

B) to define an omnifile..

43. The networked multimedia system of claim 39, wherein

A) the system is configured to

i) invoke of at least one of the process primitives and the data primitives as

(a) an attachment to the file,

(b) the attachment being acceptable by third parties according to a standard data interchange protocol.

44. The system of claim 43 wherein

A) the standard data interchange protocol

i) is a MIME protocol, and

B) the attachment

i) is a MIME attachment.

45. The system of claim 44, wherein the MIME attachment

A) invokes one of a viewer and a browser, and

B) initiates signal transfer along the signal path.

46. The system of claim 44, further comprising:

A) a plurality of applications

i) accessible by at least one of the workstations,

ii) the applications being rendered interoperable by at least one of

(a) file sharing by the copying of MIME attachments and

(b) connection sharing.

47. The networked multimedia system of any one of claims 31 to 46 wherein the system is configured to

A) establish real time data sharing sessions

i) between at least two workstations

ii) using a synchronized data sharing process

(a) as a shared conference window.

48. The system of claim 47, wherein

A) the synchronized data sharing process is shareboard, and

B) the use of shareboard renders

i) an application program simultaneously invocable on a plurality of workstations

(a) whereby a workstation user can

- access a file,
- import data as a window copy from the application program onto the video reproduction capability of a workstation,
- scroll through screens of the application program independent of other invocations of the applications on other workstations, and
- perform graphics functions utilizing graphics overlay files on the application program

i. independent of other invocations of the application program on other workstations.

49. The system of claim 48, further comprising at least one of the group of:

A) an authoring tool for at least one of

i) drawing objects on the shared conference window, and

ii) typing text on the shared conference window;

B) a grab tool for

i) grabbing another file program, and

ii) drawing at least a portion of the file program

(a) into the shared conference window; and

C) a telepointing tool

i) for independently pointing at objects

(a) on the shared conference window.

50. The networked multimedia system of any one of claims 31 to 46, further comprising:

A) at least one video conference application for

i) establishing a video conference session

(a) among the interconnected workstations, and

B) a video conference recording application for

(a) recording at least a portion

- of the established video conference session
- on at least one storage cell.

51. The system of claim 50, wherein

A) the video conference recording application

i) is implemented at the option of at least one user.

52. The system of claim 50, wherein

A) the video conference recording application

i) is automatically implemented as at least one of

(a) an element of a video conference call initiator, and

(b) an element of a video conference call control routine.

53. The system of claim 50, wherein

A) the signal path includes at least

i) a conference bridge

(a) which is invoked at the initiation of the video conference recording application.

54. The system of claim 50, wherein

A) the signal path includes at least one

i) conference bridge

(a) previously invoked at the initiation of the video conference session.

55. The system of claim 50, wherein

A) the signal path includes

i) a conference bridge port

(a) providing a global view of the video conference session participants.

56. The system of claim 50, wherein

A) the signal path includes

i) a normally configured conference bridge port

(a) treated as a standard user port on the conference bridge.

57. The networked multimedia system of any one of claims 31 to 46 further comprising:

A) at least one video mail application configured to do at least one of

i) author a video mail message for transmission to the storage cell and

ii) read a video mail message previously stored on the storage cell.

58. The system of claim 57, wherein

A) the video mail application includes

i) a MIME-based video attachment capability

(a) provided to an existing MIME-based mail application.

59. The system of claim 57, wherein

A) the video mail application is configured to

i) share

(a) a video mail message

- across a plurality of workstations as

(b) a broadcast video e-mail,

- thereby requiring the storage of fewer copies of the message than the number of the plurality of workstations receiving the broadcast video e-mail.

60. The networked multimedia system of any one of claims 31 to 46, wherein the system is configured to

A) to record

B) on a storage cell, at least one of

i) an audio and video message, and

ii) a multimedia message

C) from an incoming caller.

61. The system of claim 60 further configured to

A) record the video message

i) on one of

(a) the recipient's storage cell, and

(b) the caller's storage cell such that

ii) the message is stored to optimize at least one of

(a) message availability,

(b) system overhead for system network configuration, and

(c) system data storage facilities.

62. The system of claim 60, further configured to

A) respond to a call

i) to a workstation user

ii) by producing a recorded greeting selected from the group consisting of

(a) a stored video greeting,

(b) a text greeting, and

(c) a graphics greeting.

63. The system of claim 62, wherein

A) the recorded greeting

i) is stored on a storage cell

ii) associated with the workstation user.

64. The system of claim 62, wherein

A) at least one recorded greeting

B) is stored on a plurality of storage cells.

65. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one signal converter configured to

i) convert audio and/or video information

(a) originating at a workstation,

(b) into a form suitable for storage

C) at least one storage cell configured to

i) store,

(a) audio and video information

- captured at a workstation

(b) as at least one file,

- for later retrieval;

D) at least one signal path,

i) interconnecting the workstations, the converter(s) and the storage cell(s)

E) wherein the system is configured to

i) enable files

(a) stored on a storage cell

(b) to be included in an on-line electronic document.

66. The system of claim 65 where the system

A) provides access to stored files

i) by utilizing a standardized attachment methodology.

67. The system of claim 66, wherein

A) the standardized attachment methodology is MIME.

68. The system of claim 66, wherein

A) the files are selected from the group consisting of

i) archival video, video overlay graphics, and a compendium of a plurality of video files which further include at least one of additional text or graphics, standalone videos, and MIME attached video files.

69. A networked multimedia system comprising:

A) a plurality of workstations, each including

i) video and audio reproduction capabilities, and

ii) video and audio capture capabilities;

B) at least one signal converter configured to

i) convert audio and/or video information

(a) originating at a workstation,

(b) into a form suitable for storage

C) at least one storage cell configured to

i) store,

(a) audio and video information

♦ captured at a workstation

(b) as at least one file,

◆ for later retrieval;

D) at least one network providing

i) a signal path,

(a) interconnecting the workstations, the converter(s) and the storage cell(s)

E) wherein the system defines a proxy server configured to do at least one of

i) reducing the total number of copies of video files by file sharing,

ii) reducing network load by transporting video files over a separate audio-video network,

iii) transcoding among multiple audio-video formats, and

iv) allowing any one of the workstations to serve as a video publisher for the system.

70. The system of claim 69, wherein

A) the workstation serves as a video publisher

i) subject to user permissions.

71. The system of claim 69, wherein the system is configured

A) as an intranet video storage server for at least one of

i) reducing the total number of copies of video files in the enterprise by file sharing,

ii) reducing enterprise network load by transporting video files over a separate audio-video network,

iii) transcoding among multiple audio-video formats, and

iv) allowing any audio-video workstation in the enterprise to serve as a video publisher for the enterprise.

72. The networked multimedia system of claim 69, wherein

A) the system is configured as a proxy server

i) enabling the implementation of at least one animated annotation on the internet.

73. The system of claim 72, wherein

A) at least one of the animated annotations

i) is synchronized with respect to one or more of

(a) an accompanying video file,

(b) an accompanying audio file.

74. The system of claim 71, further configured to

A) enable the authoring of an animated annotation utilizing a window-sharing tool.

75. The system of claim 74, wherein

A) the window-sharing tool is selected from the group consisting of

i) a shareboard application and an interactive meeting enabling computer application.

Figure 1

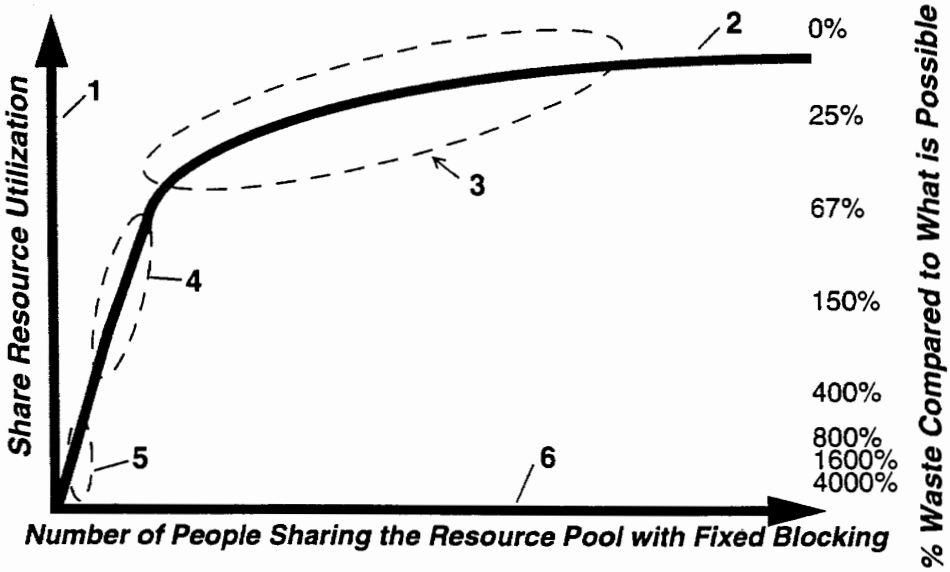

Share Resource Utilization
1
2
3
4
5
6
0%
25%
67%
150%
400%
800%
1600%
4000%
% Waste Compared to What is Possible
Number of People Sharing the Resource Pool with Fixed Blocking

Figure 2

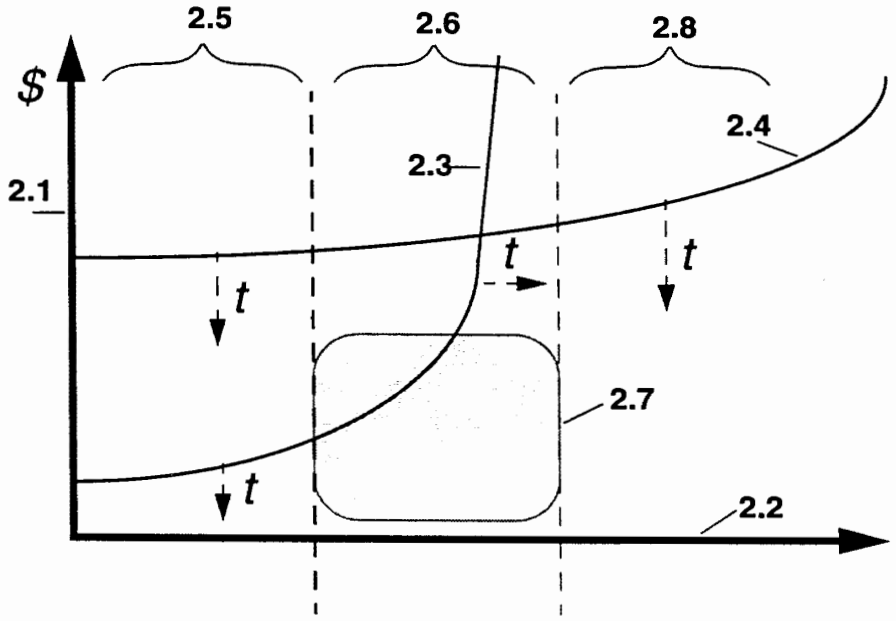
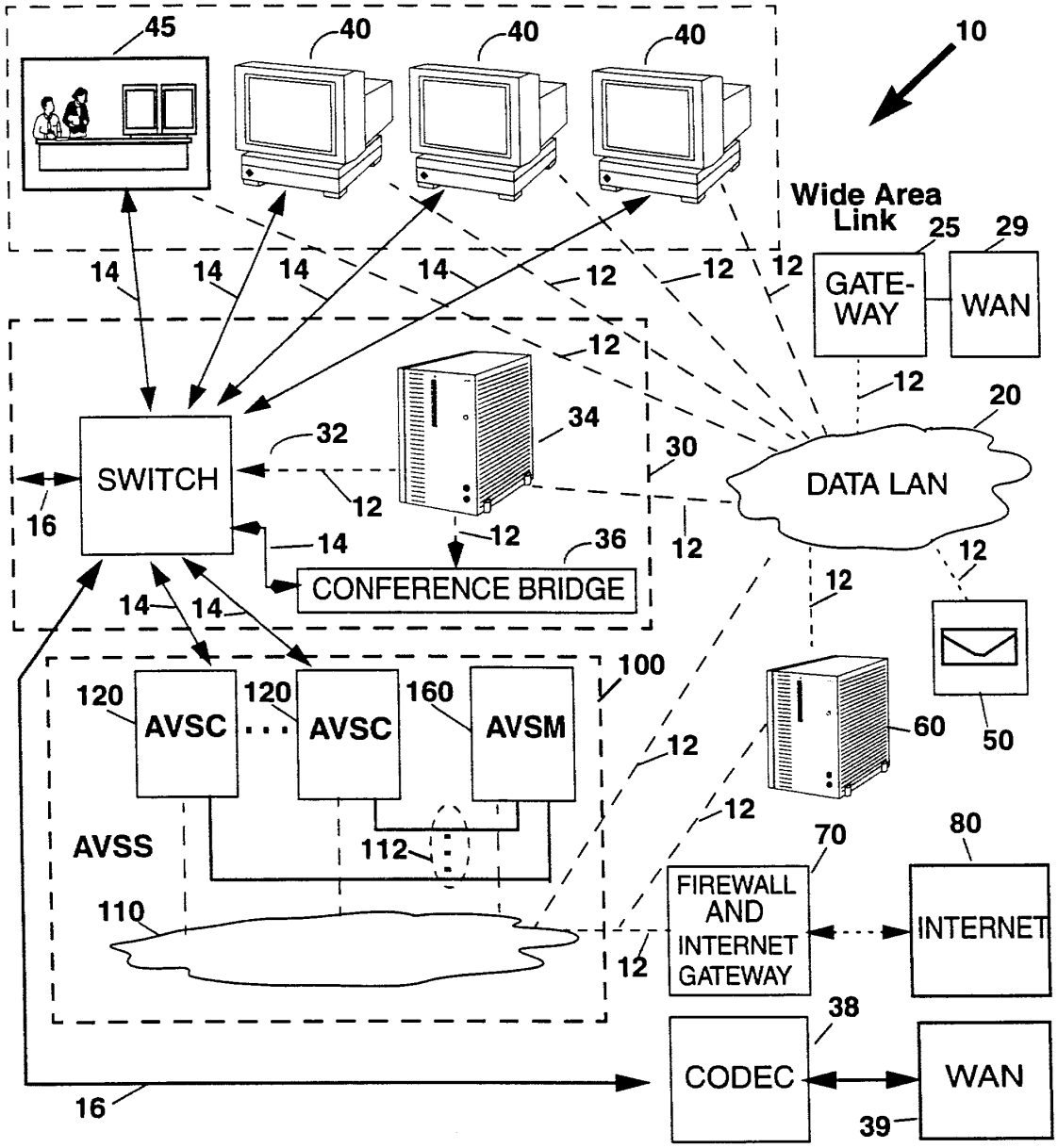
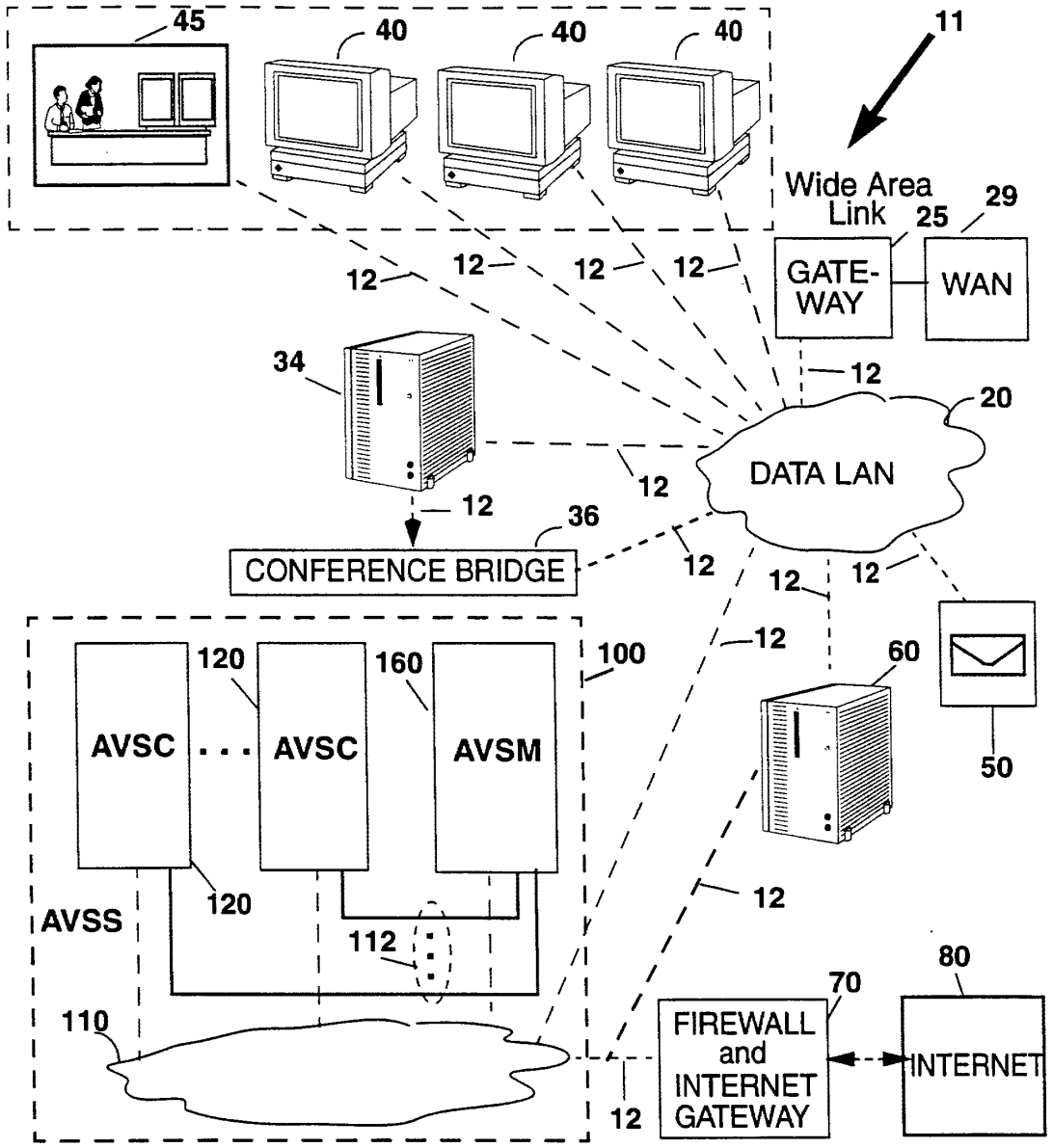


Figure 3


45
40
40
40
10
Wide Area Link
25
29
GATE-WAY
WAN
14
14
14
14
12
12
12
12
12
20
34
32
30
SWITCH
DATA LAN
16
12
12
14
12
36
CONFERENCE BRIDGE
12
12
14
14
12
100
120
AVSC
120
AVSC
160
AVSM
60
50
12
12
AVSS
112
70
80
110
FIREWALL AND INTERNET GATEWAY
INTERNET
12
38
CODEC
WAN
16
39

3/46

Figure 4


45
40
40
40
11
Wide Area Link
25
29
GATE-WAY
WAN
12
34
20
DATA LAN
36
CONFERENCE BRIDGE
100
120
160
AVSC
AVSC
AVSM
AVSS
112
110
60
50
70
80
FIREWALL and INTERNET GATEWAY
INTERNET

4/46

Figure 5

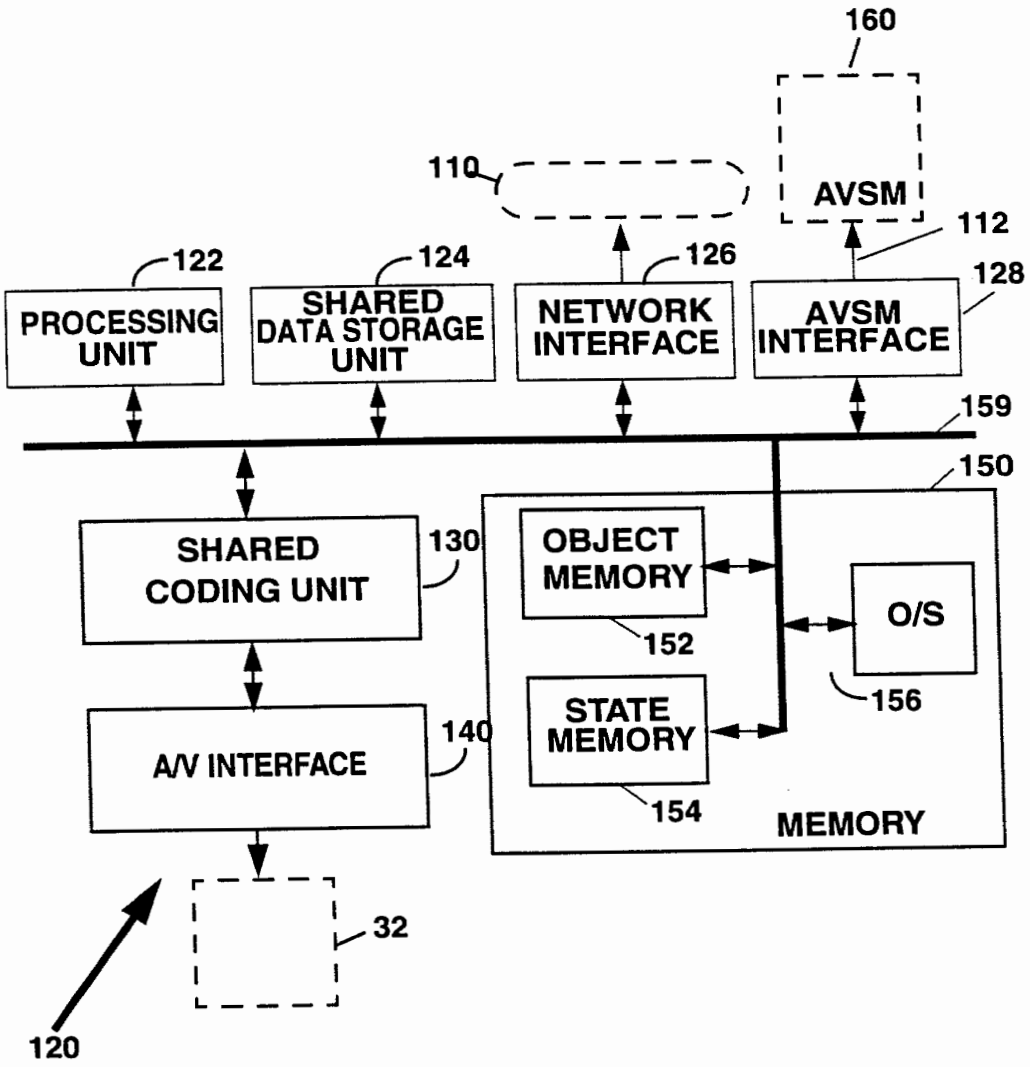

160
AVSM
110
112
122
124
126
128
PROCESSING UNIT
SHARED DATA STORAGE UNIT
NETWORK INTERFACE
AVSM INTERFACE
159
150
SHARED CODING UNIT
130
OBJECT MEMORY
152
O/S
156
STATE MEMORY
154
MEMORY
A/V INTERFACE
140
32
120

Figure 6

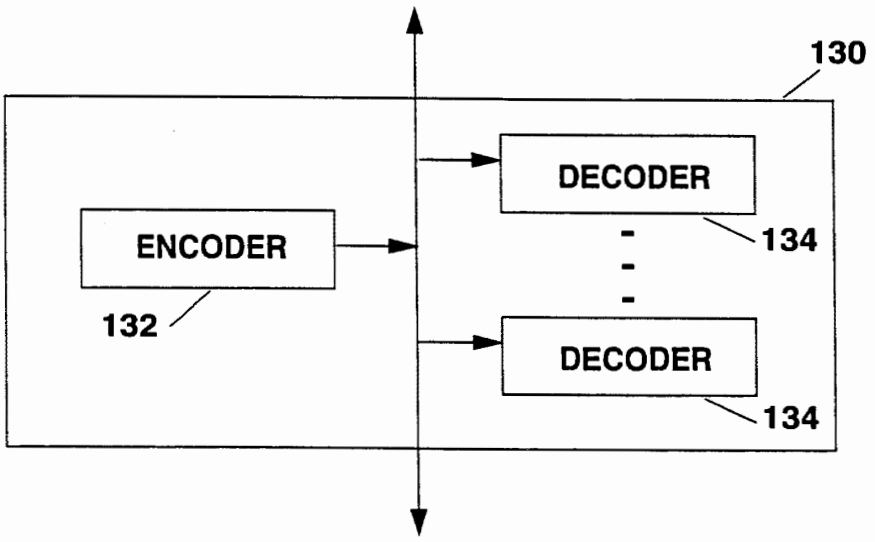


Figure 7

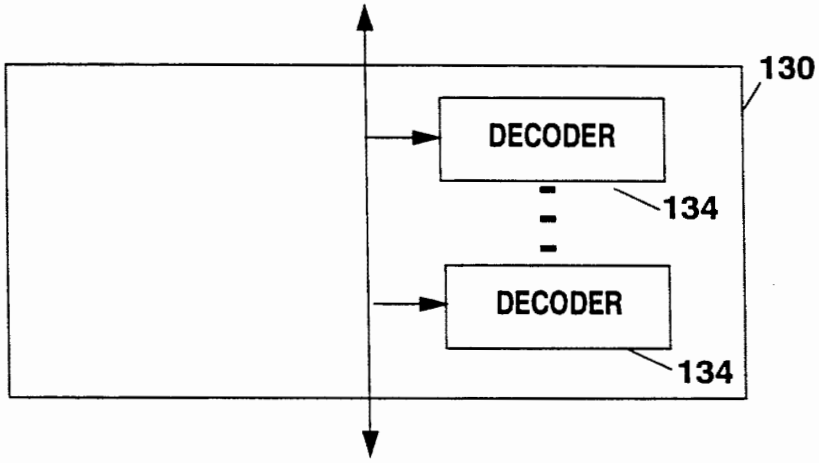


Figure 8

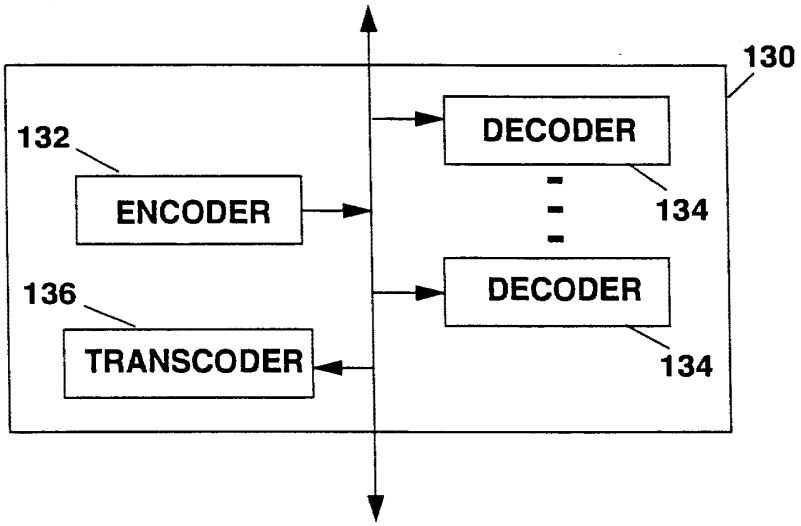


Figure 9

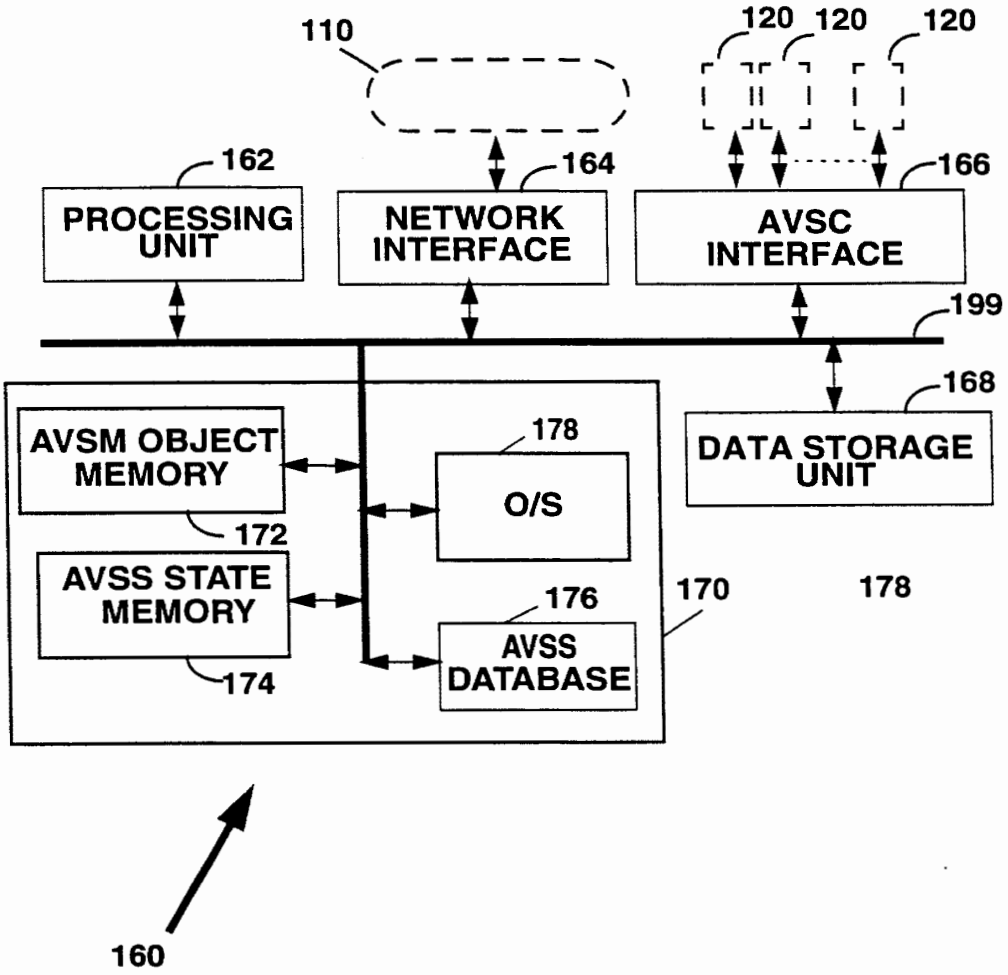

110
120
120
120
162
164
166
PROCESSING UNIT
NETWORK INTERFACE
AVSC INTERFACE
199
168
AVSM OBJECT MEMORY
178
O/S
DATA STORAGE UNIT
172
AVSS STATE MEMORY
176
AVSS DATABASE
170
178
174
160

Figure 10

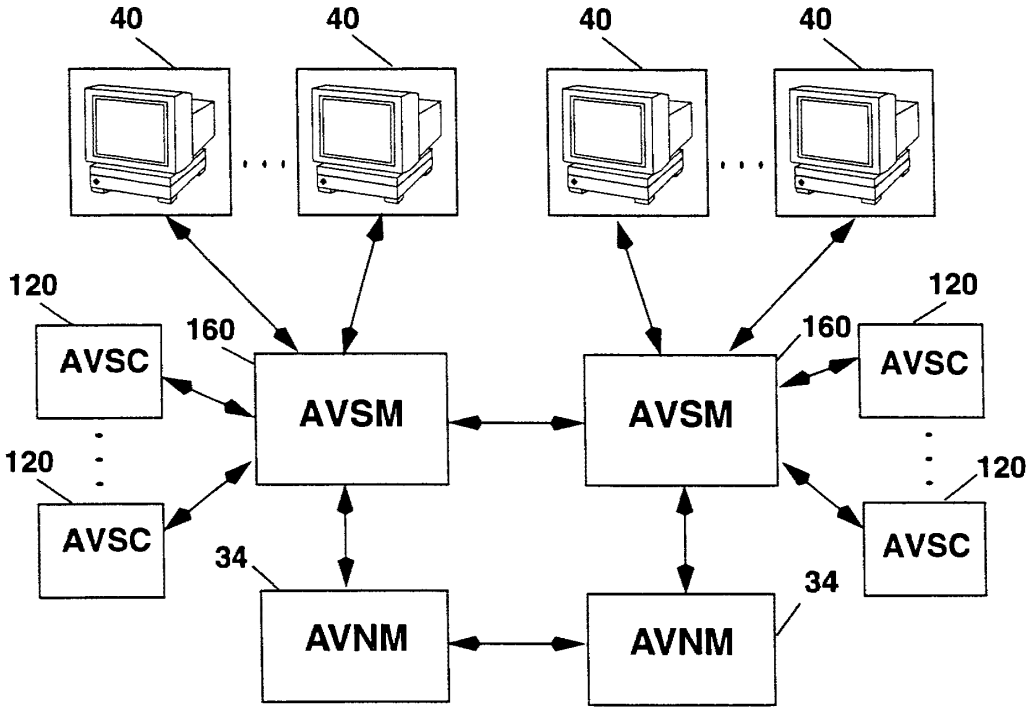

40
40
40
40
120
160
AVSC
AVSM
AVSM
160
120
AVSC
120
120
AVSC
AVSC
34
34
AVNM
AVNM

Figure 11

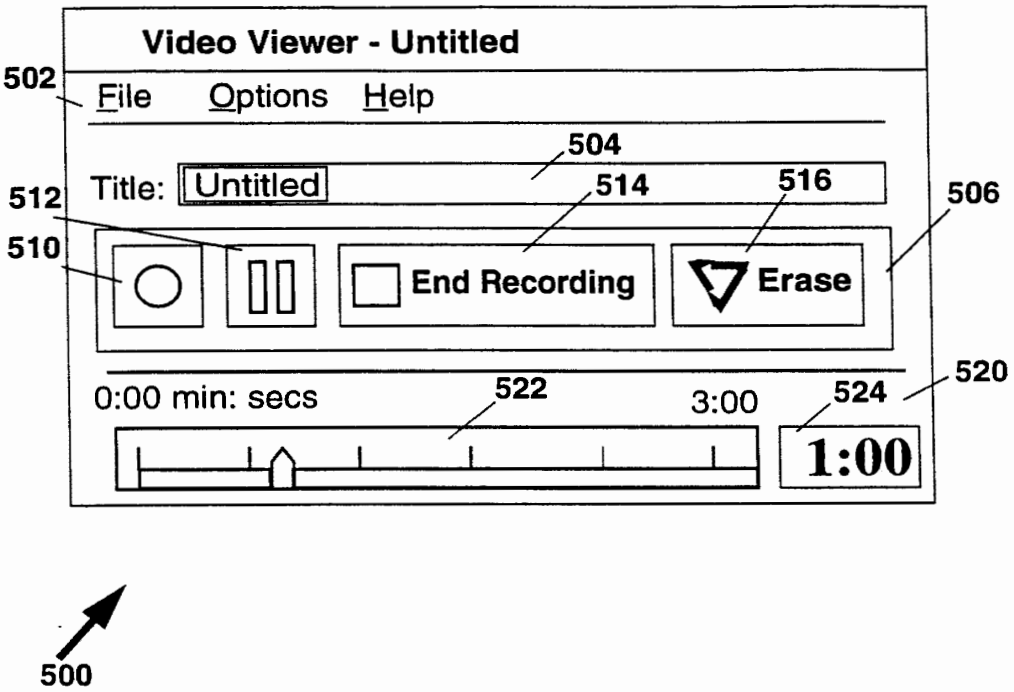

Video Viewer - Untitled
502
File Options Help
504
Title: Untitled
512
514
516
506
510
End Recording
Erase
520
0:00 min: secs
522
3:00
524
1:00
500

Figure 12

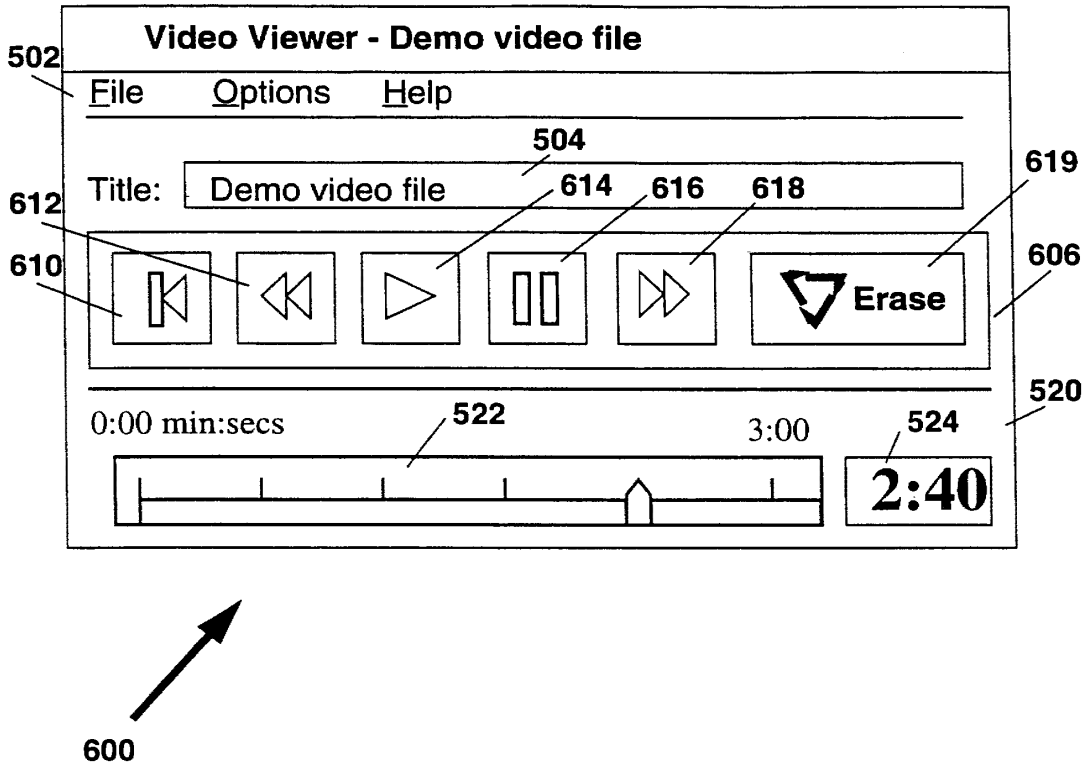

Video Viewer - Demo video file
502
File
Options
Help
504
Title:
Demo video file
614
616
618
619
612
610
606
Erase
520
0:00 min:secs
522
3:00
524
2:40
600

Figure 13

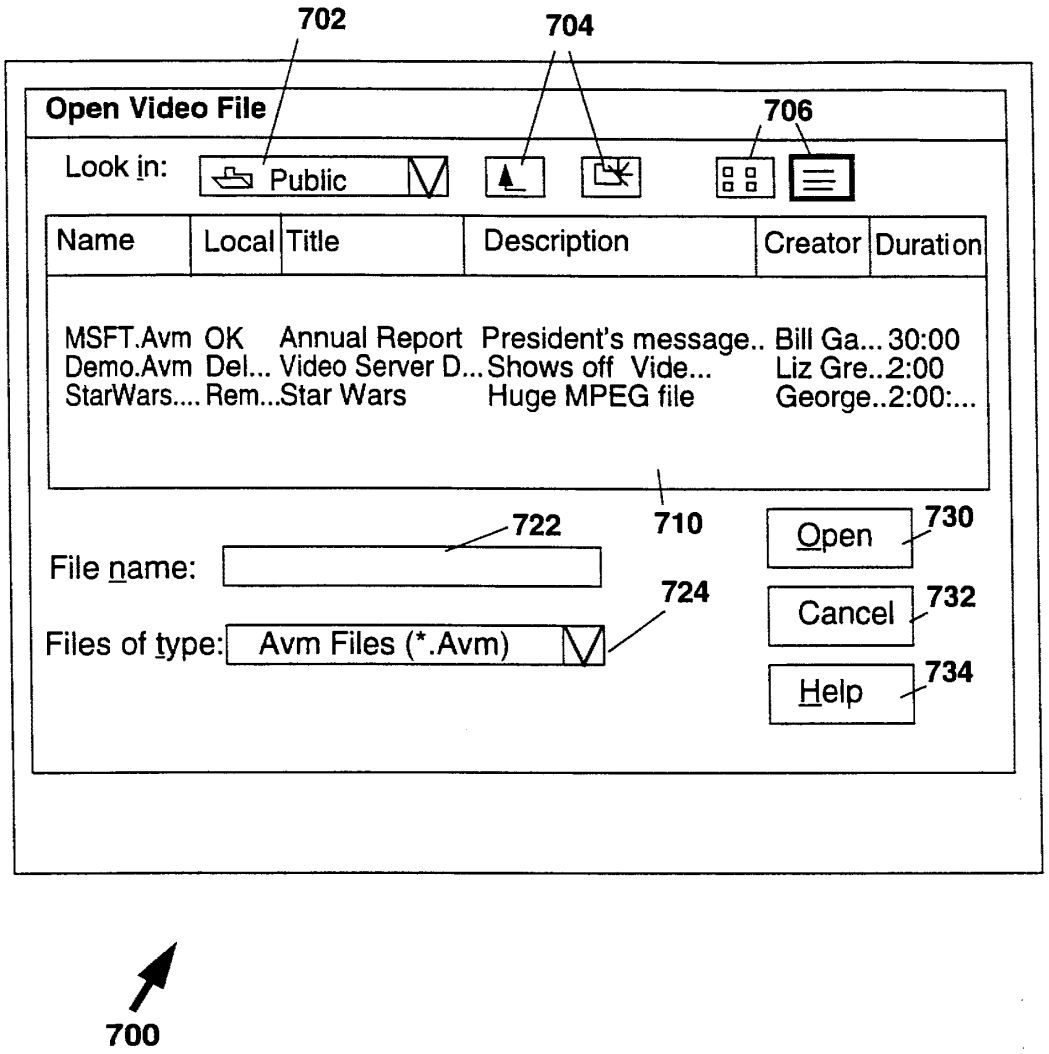
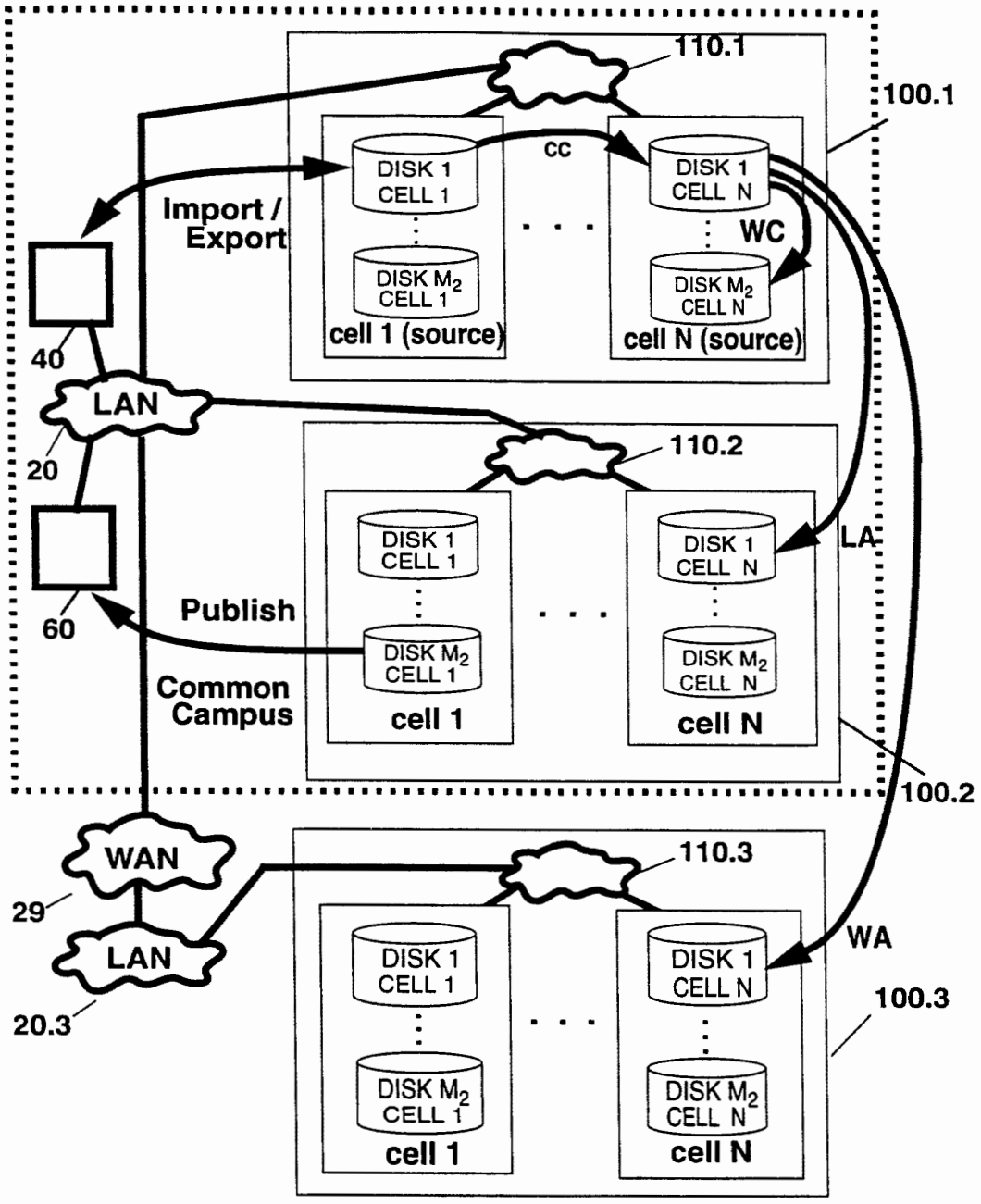

702
704
706
Open Video File
Look in:
Public
Name
Local
Title
Description
Creator
Duration
MSFT.Avm OK Annual Report President's message.. Bill Ga... 30:00
Demo.Avm Del... Video Server D... Shows off Vide... Liz Gre..2:00
StarWars.... Rem...Star Wars Huge MPEG file George..2:00:...
710
722
File name:
724
Files of type:
Avm Files (*.Avm)
Open
730
Cancel
732
Help
734
700

Figure 14



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Figure 15

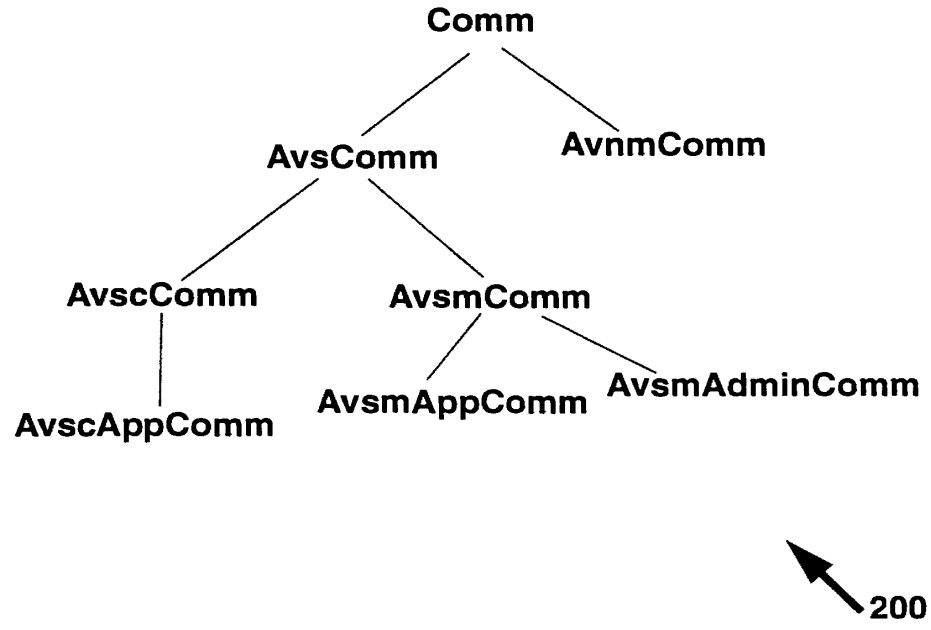

Comm
AvsComm
AvnmComm
AvscComm
AvsmComm
AvscAppComm
AvsmAppComm
AvsmAdminComm
200

Figure 16

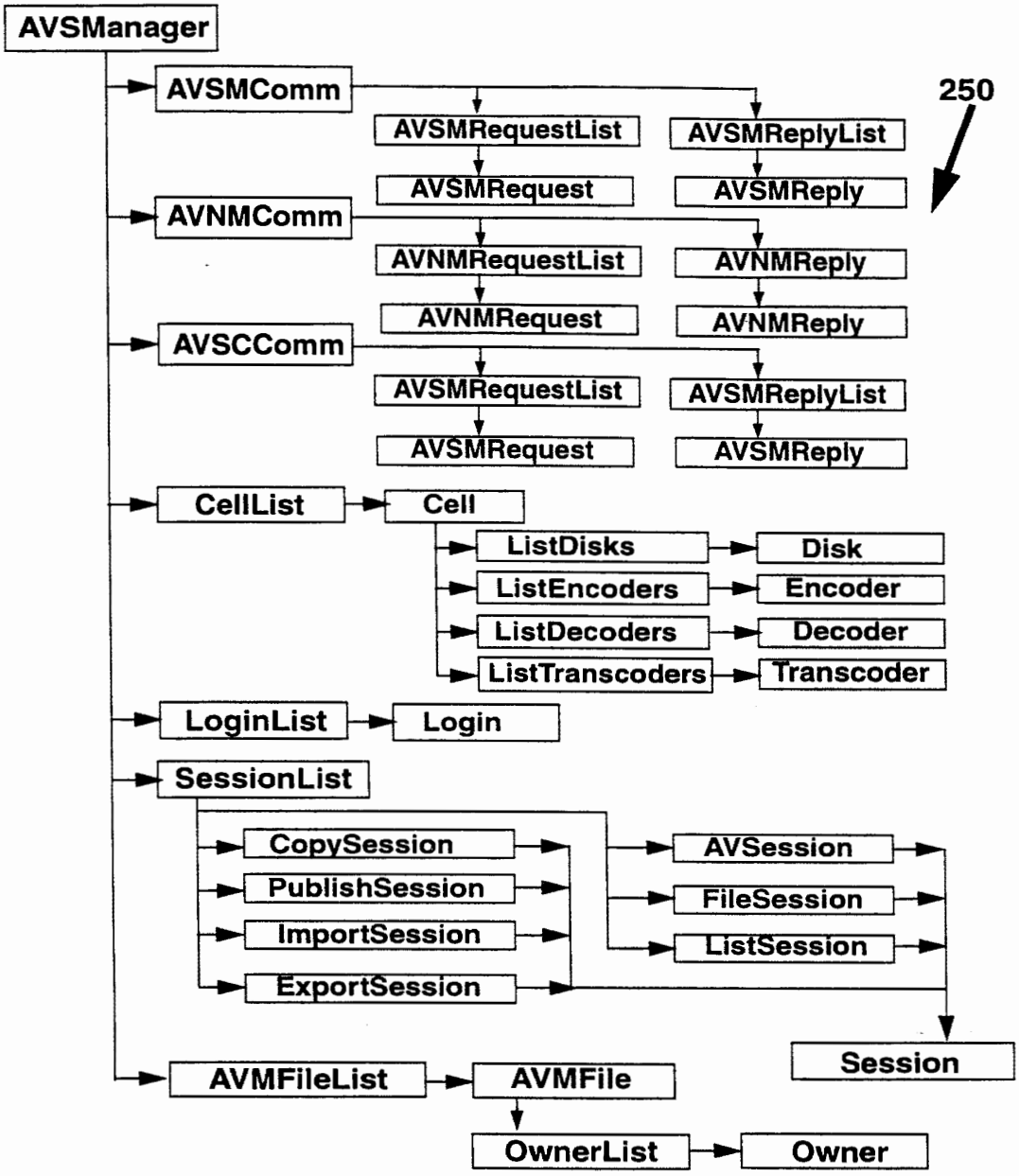
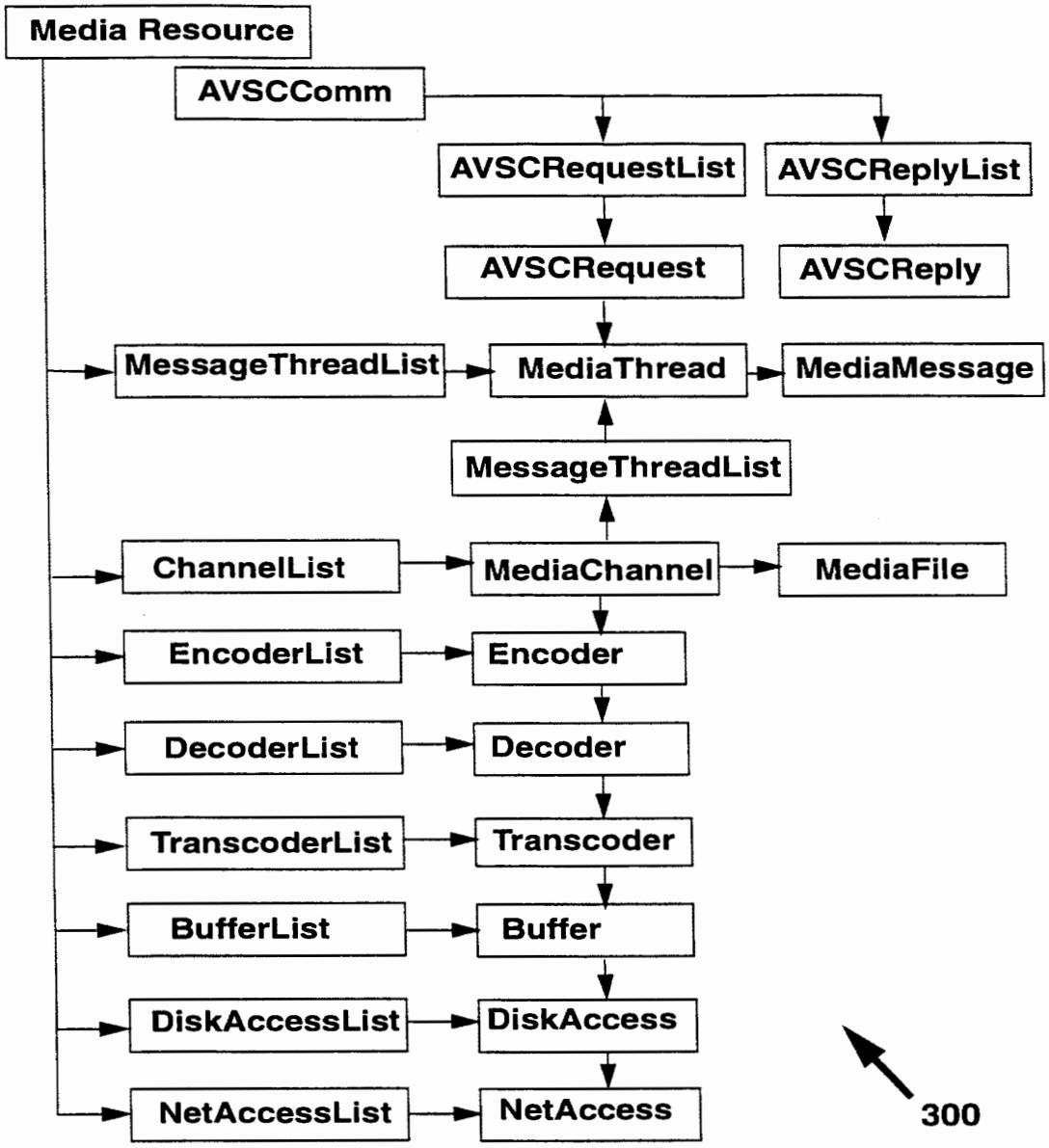

AVSManager
AVSMComm
AVSMRequestList
AVSMReplyList
AVSMRequest
AVSMReply
250
AVNMComm
AVNMRequestList
AVNMReply
AVNMRequest
AVNMReply
AVSCComm
AVSMRequestList
AVSMReplyList
AVSMRequest
AVSMReply
CellList
Cell
ListDisks
Disk
ListEncoders
Encoder
ListDecoders
Decoder
ListTranscoders
Transcoder
LoginList
Login
SessionList
CopySession
PublishSession
ImportSession
ExportSession
AVSession
FileSession
ListSession
Session
AVMFileList
AVMFile
OwnerList
Owner

Figure 17



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Figure 18

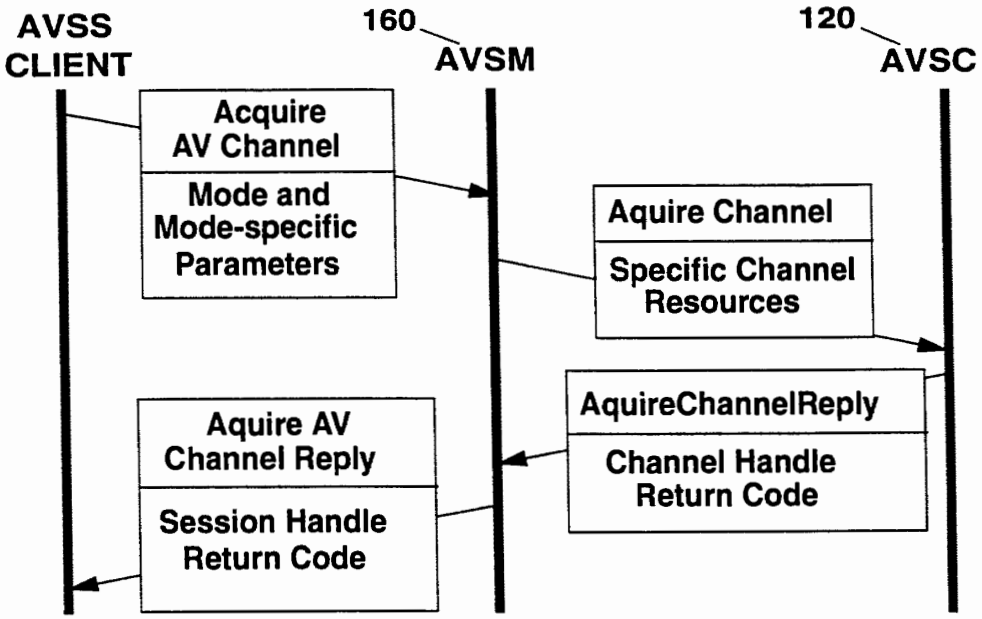

AVSS CLIENT
160
AVSM
120
AVSC
Acquire AV Channel
Mode and Mode-specific Parameters
Aquire Channel
Specific Channel Resources
AquireChannelReply
Channel Handle Return Code
Aquire AV Channel Reply
Session Handle Return Code

Figure 19

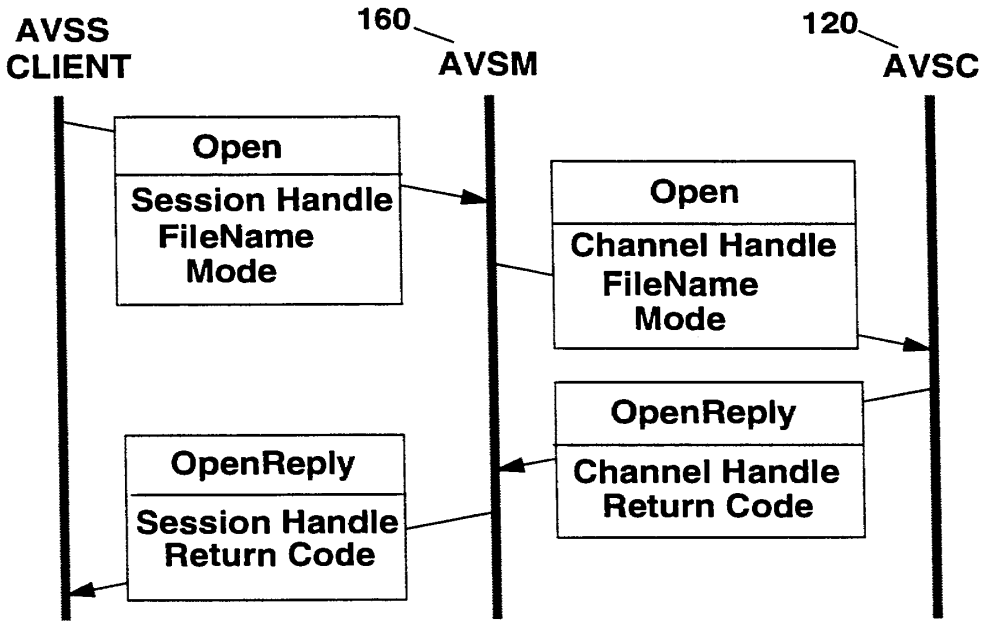

AVSS
CLIENT
160
AVSM
120
AVSC
Open
Session Handle
FileName
Mode
Open
Channel Handle
FileName
Mode
OpenReply
Channel Handle
Return Code
OpenReply
Session Handle
Return Code

Figure 20

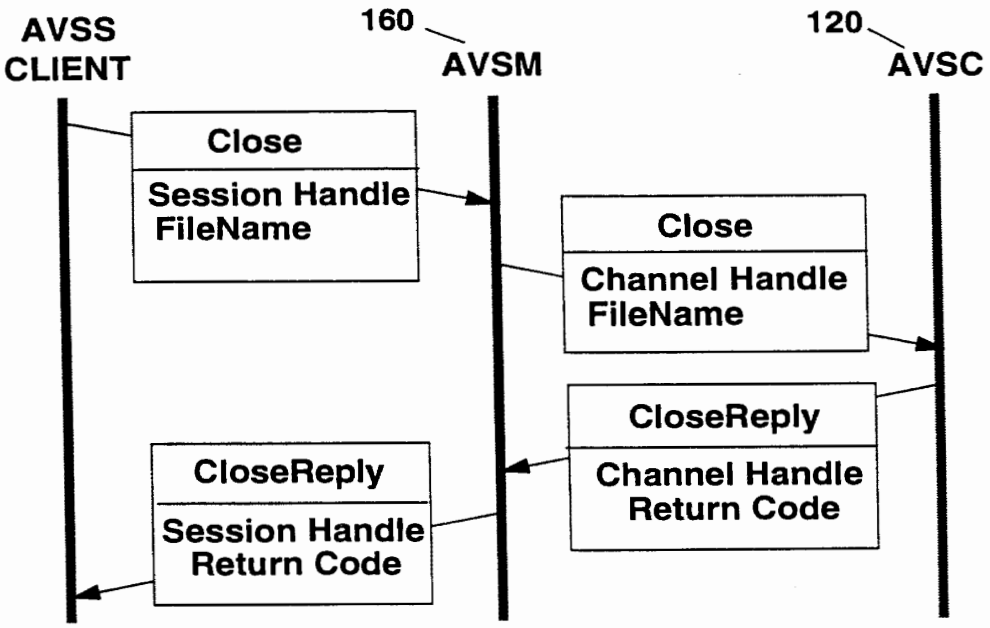

AVSS
CLIENT
160
AVSM
120
AVSC
Close
Session Handle
FileName
Close
Channel Handle
FileName
CloseReply
Channel Handle
Return Code
CloseReply
Session Handle
Return Code

Figure 21

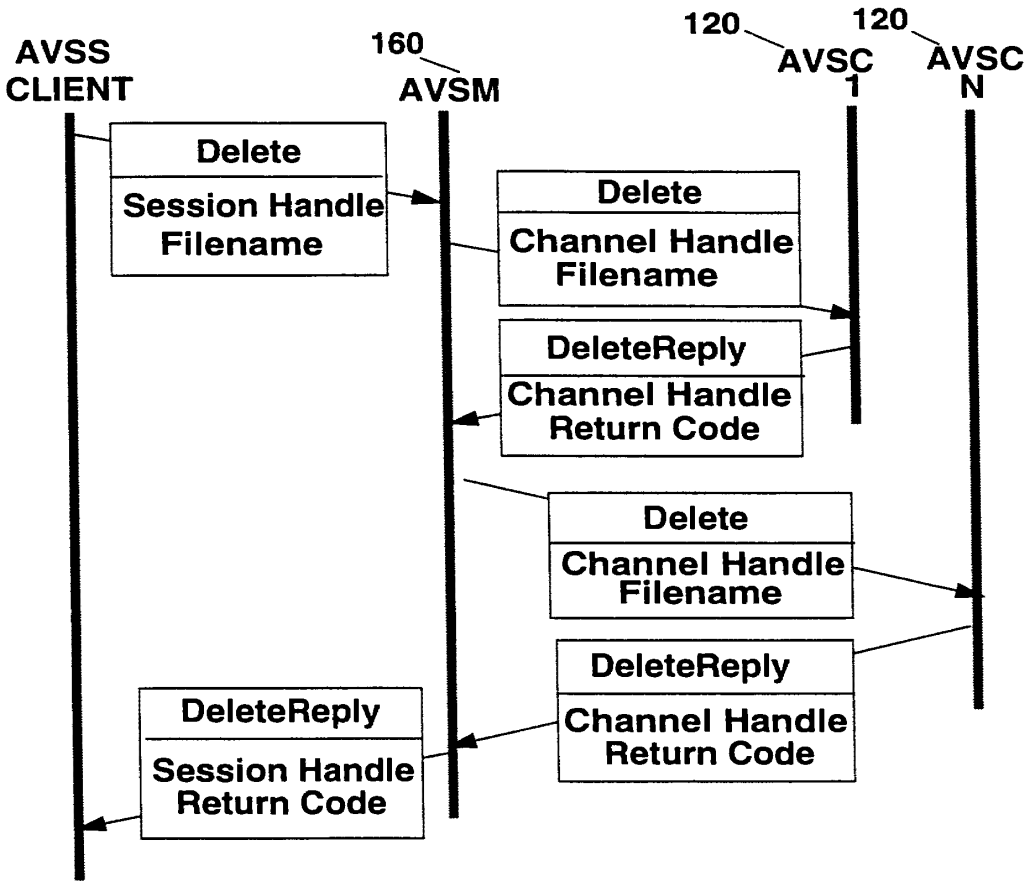

AVSS CLIENT
160 AVSM
120 AVSC 1
120 AVSC N
Delete
Session Handle Filename
Delete
Channel Handle Filename
DeleteReply
Channel Handle Return Code
Delete
Channel Handle Filename
DeleteReply
Channel Handle Return Code
DeleteReply
Session Handle Return Code

Figure 22

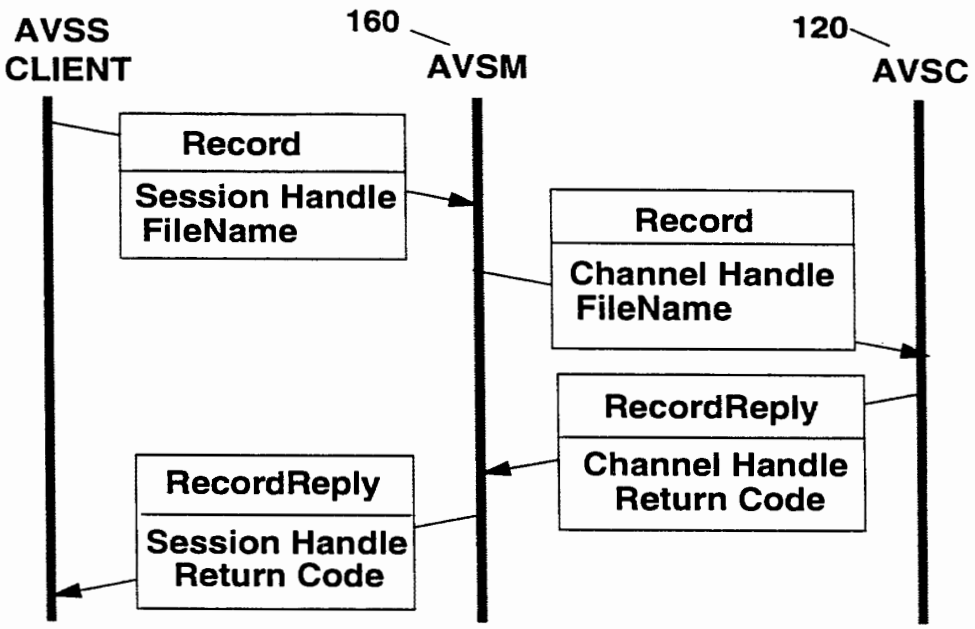
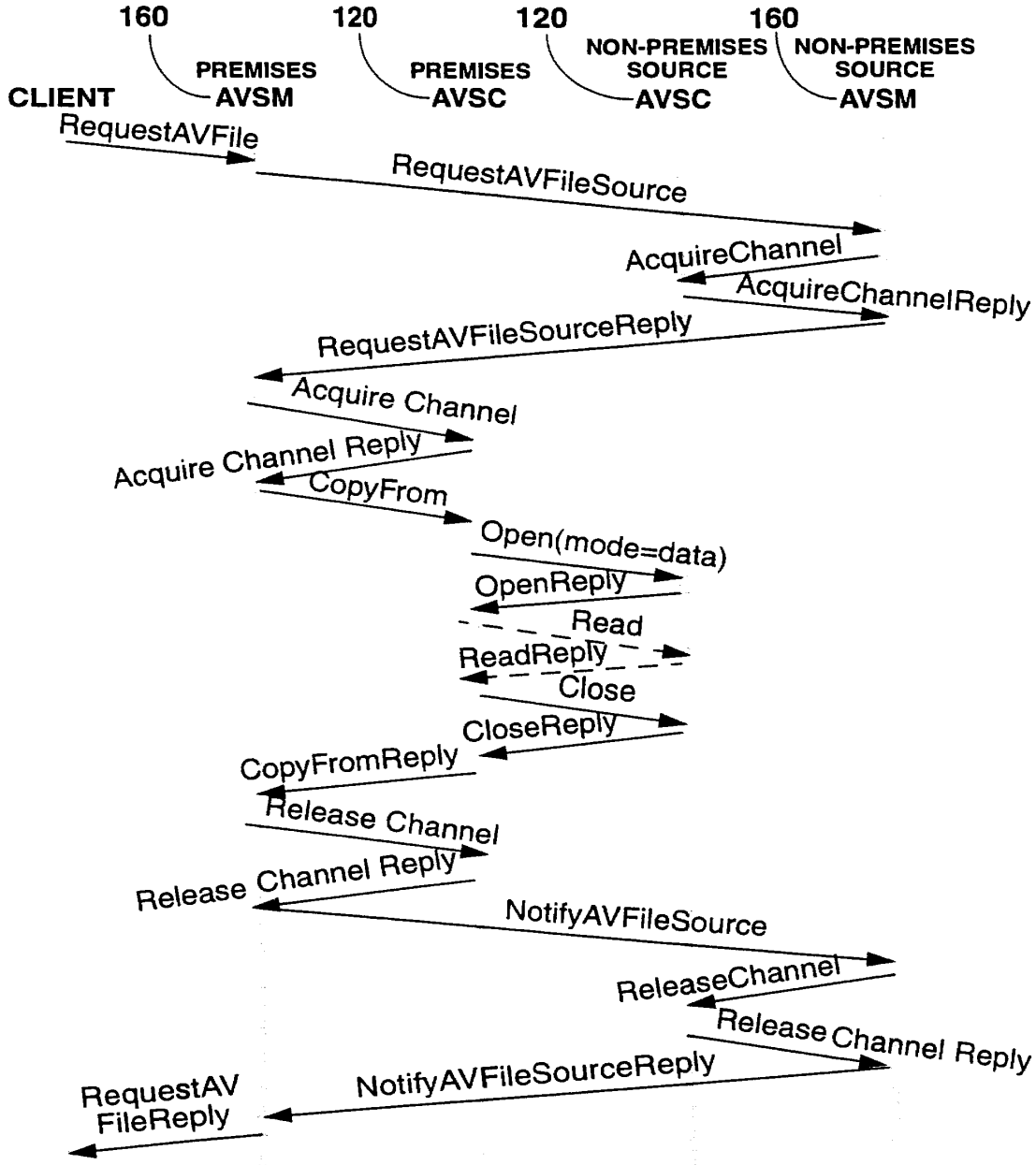
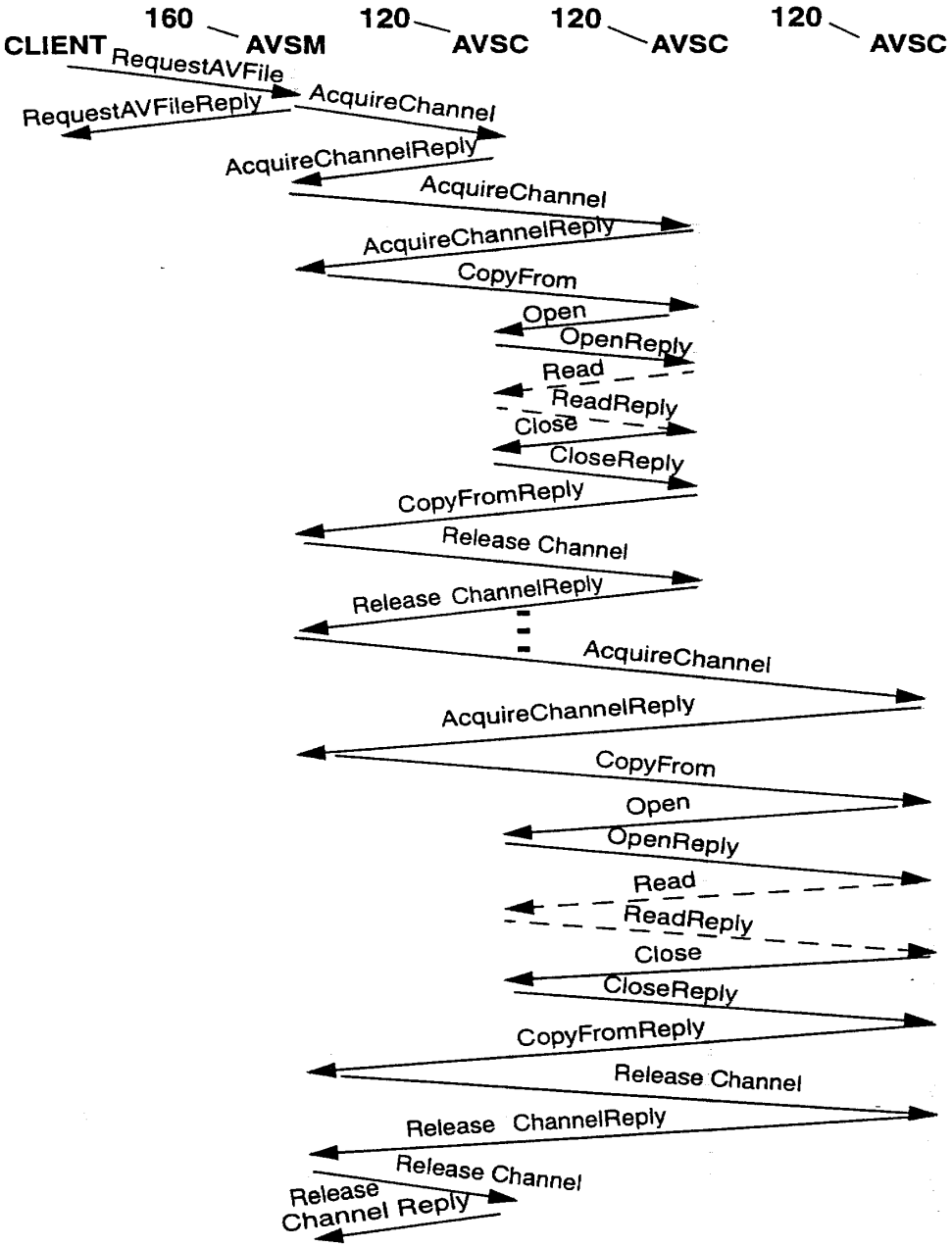

AVSS
CLIENT
160
AVSM
120
AVSC
Record
Session Handle
FileName
Record
Channel Handle
FileName
RecordReply
Channel Handle
Return Code
RecordReply
Session Handle
Return Code

Figure 23



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Figure 24



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Figure 25

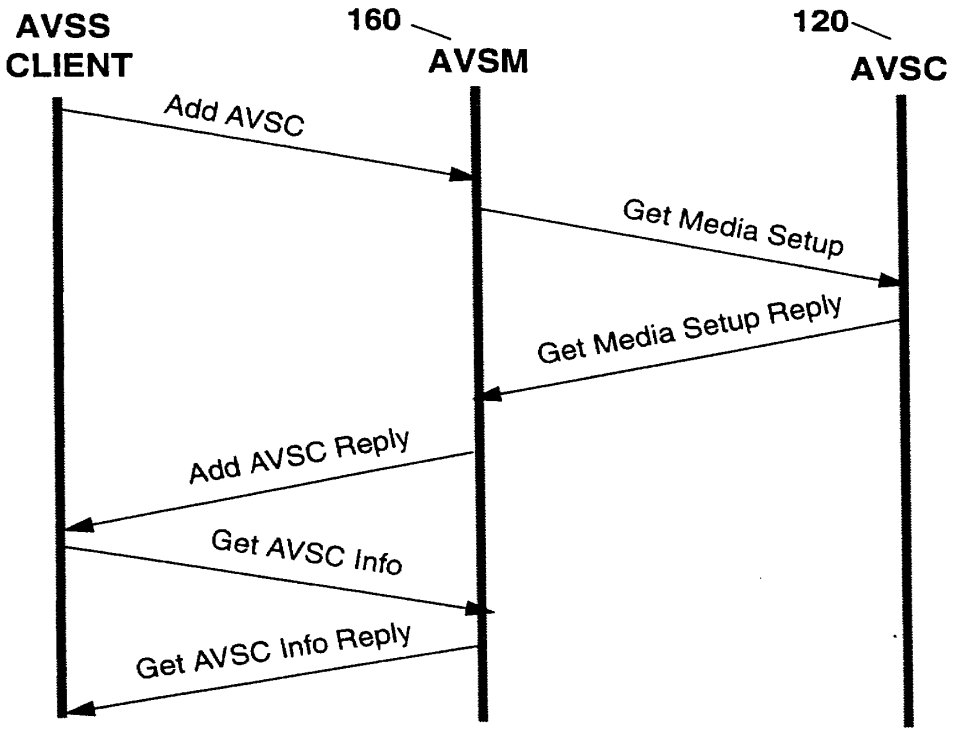
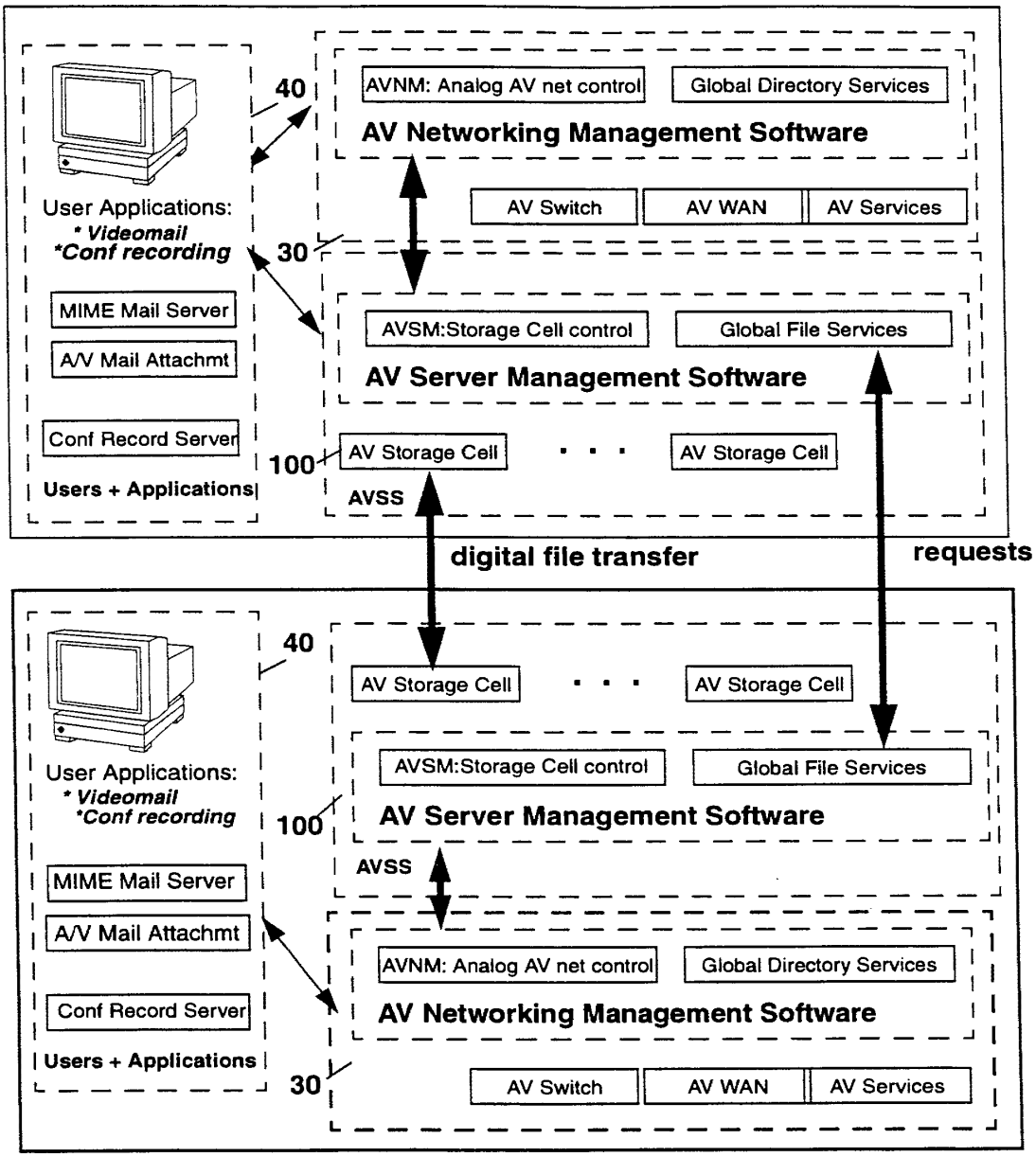

AVSS
CLIENT
160
AVSM
120
AVSC
Add AVSC
Get Media Setup
Get Media Setup Reply
Add AVSC Reply
Get AVSC Info
Get AVSC Info Reply

Figure 26



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Figure 27

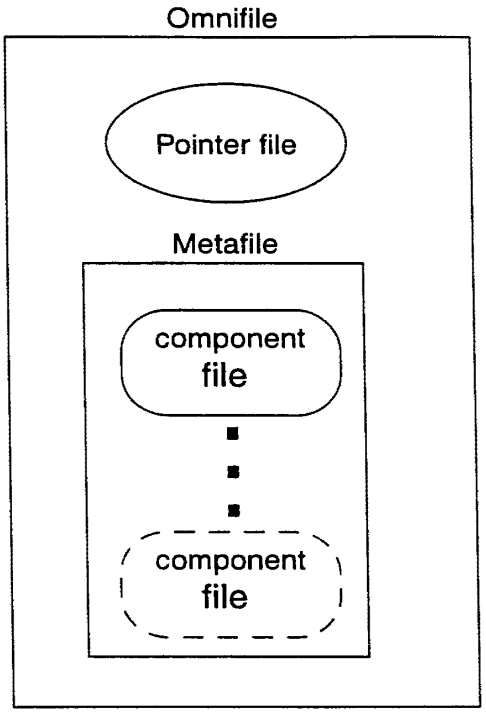

Omnifile
Pointer file
Metafile
component file
component file

Figure 28

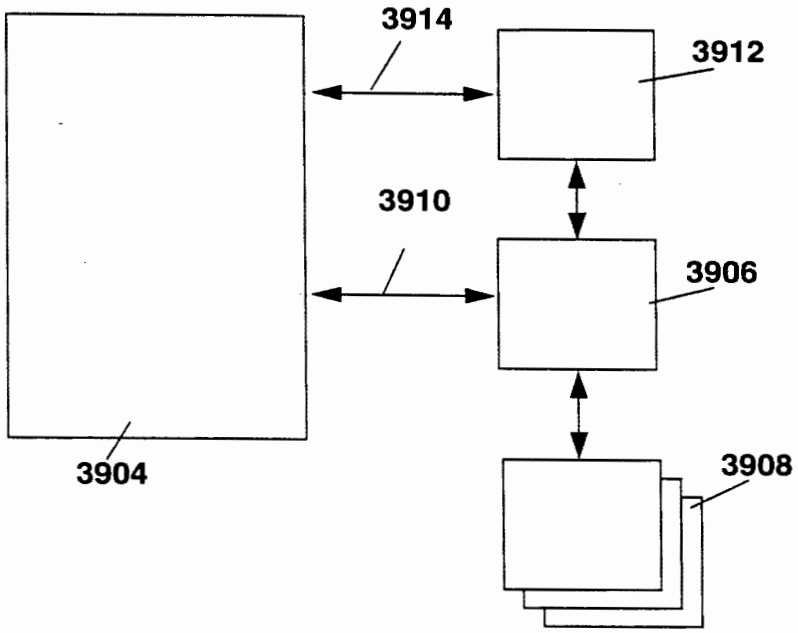


Figure 29

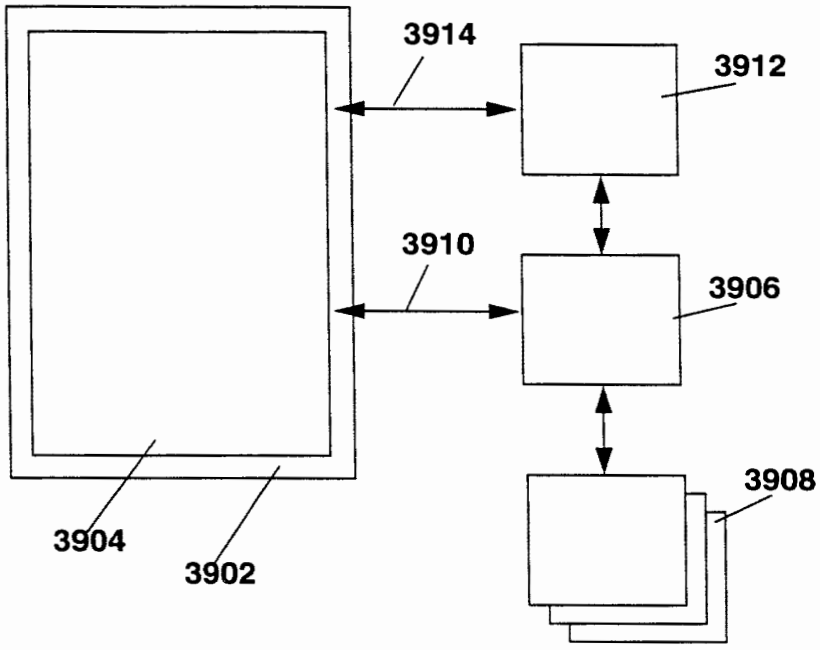
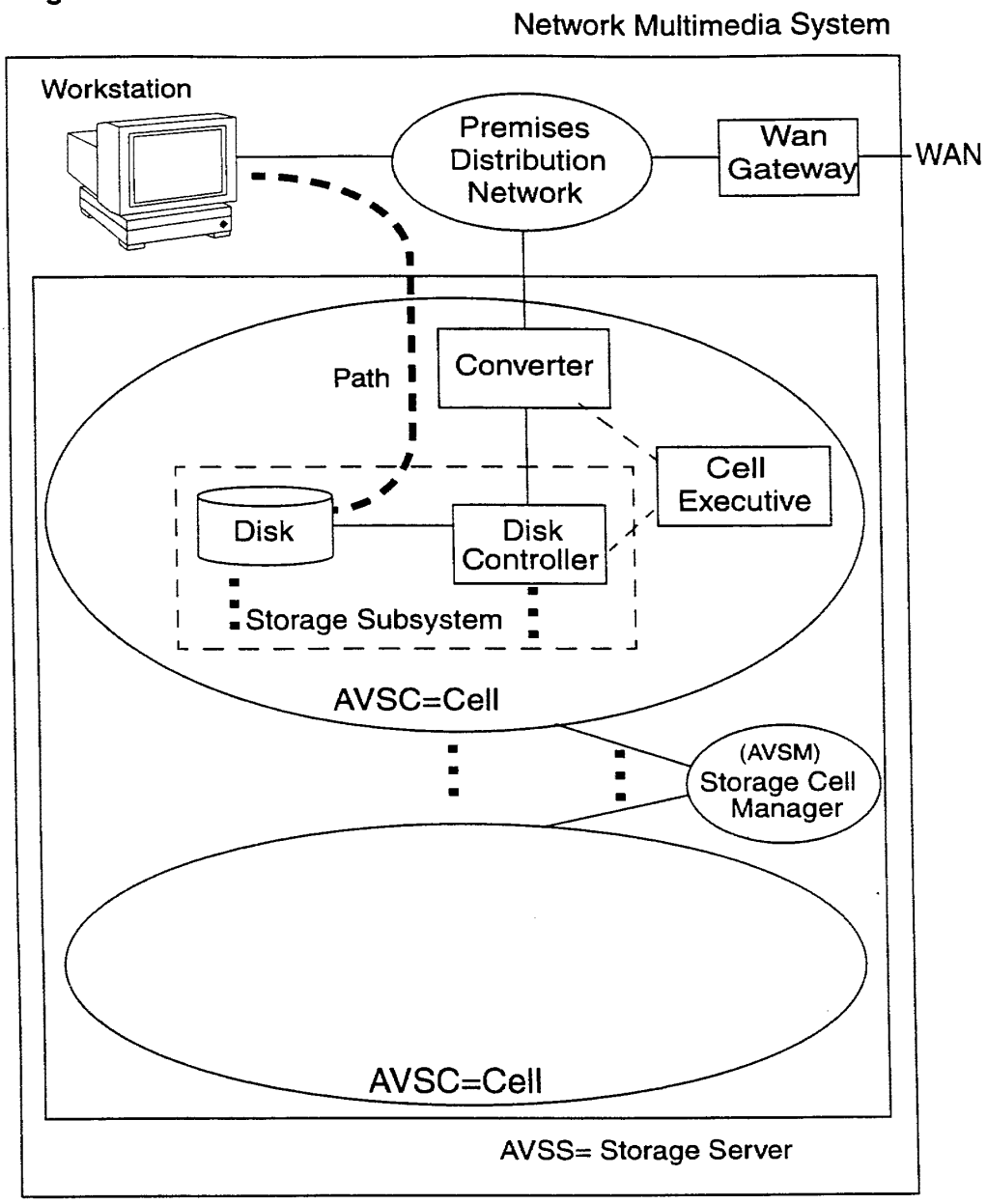
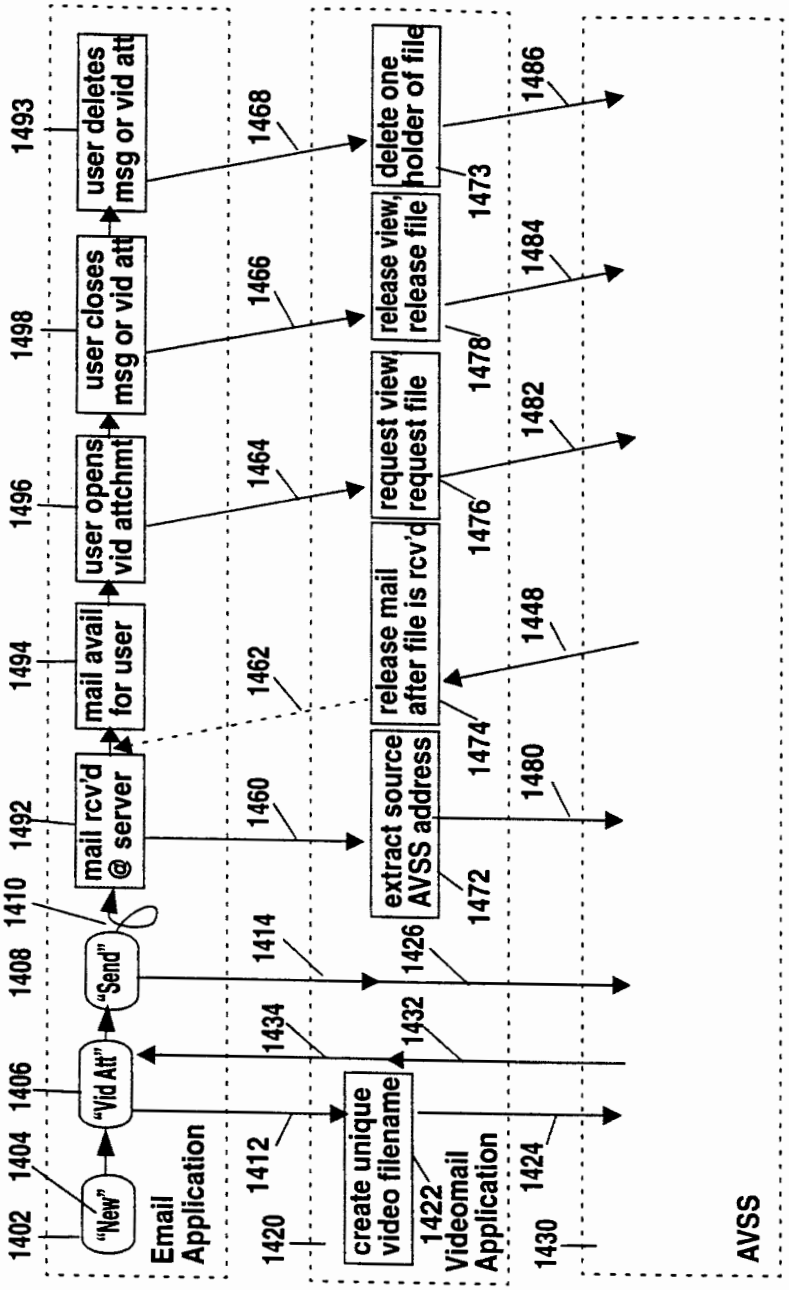


Figure 30



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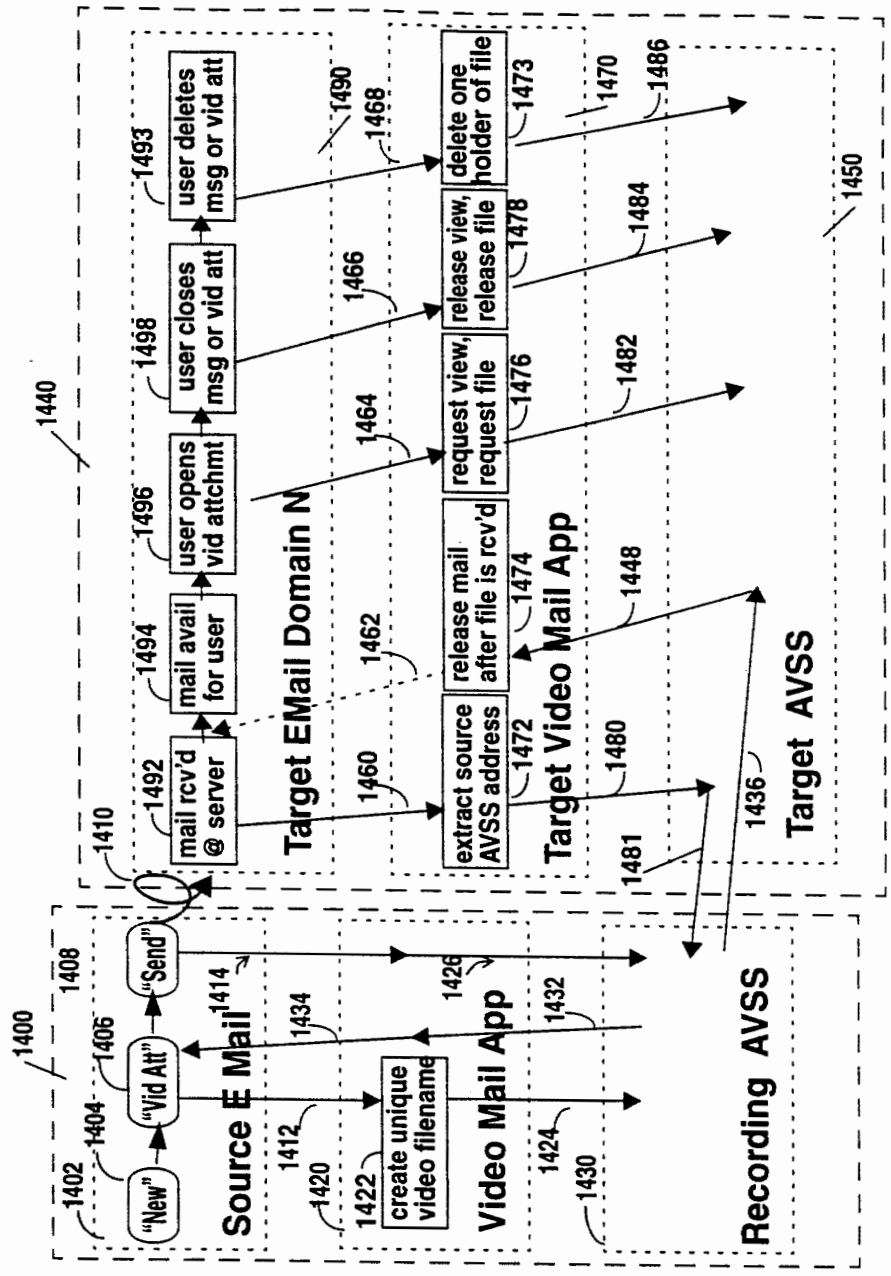
Figure 31



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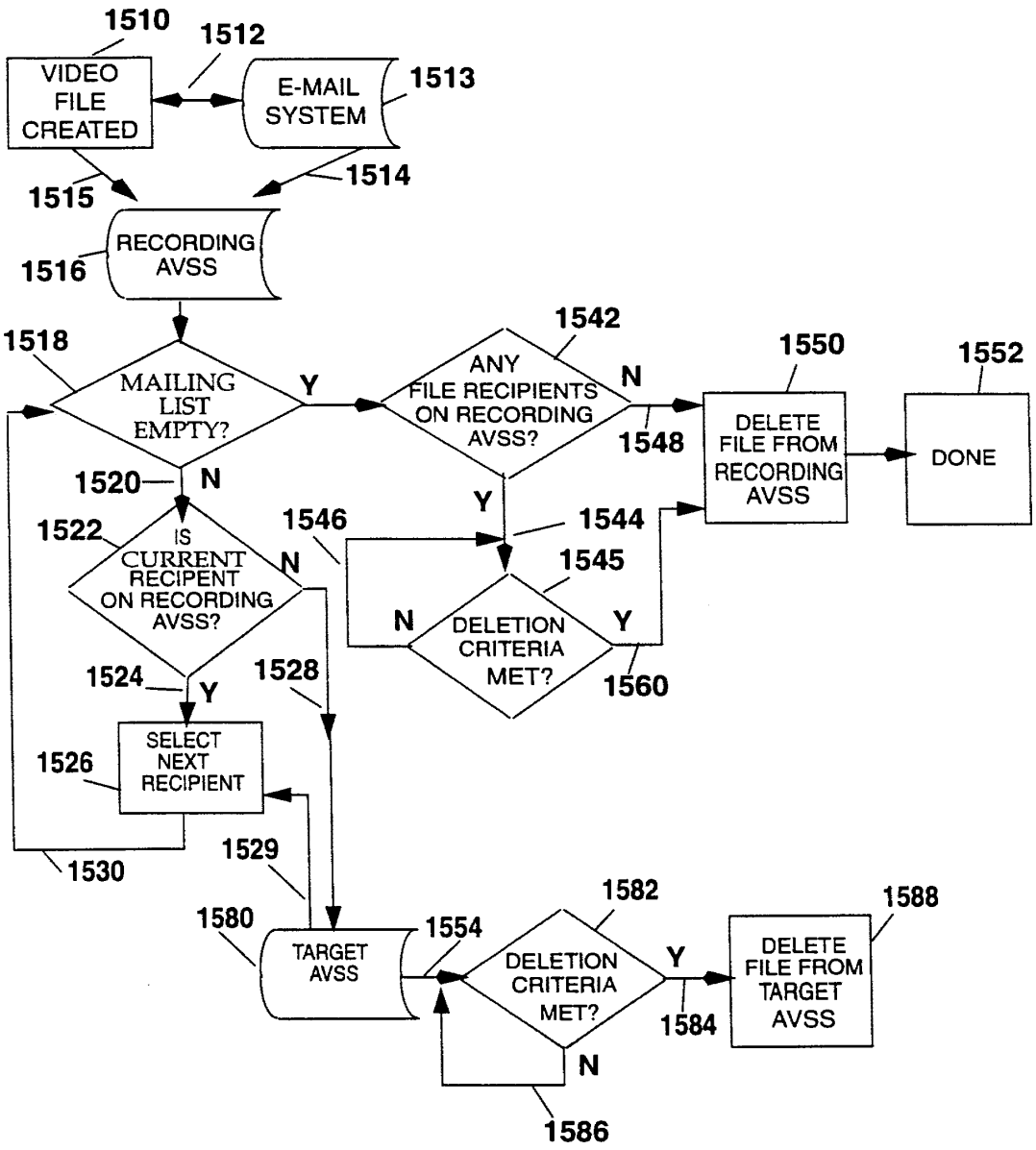
SUBSTITUTE SHEET (RULE 26)

Figure 32



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Figure 33



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SUBSTITUTE SHEET (RULE 26)

Figure 34

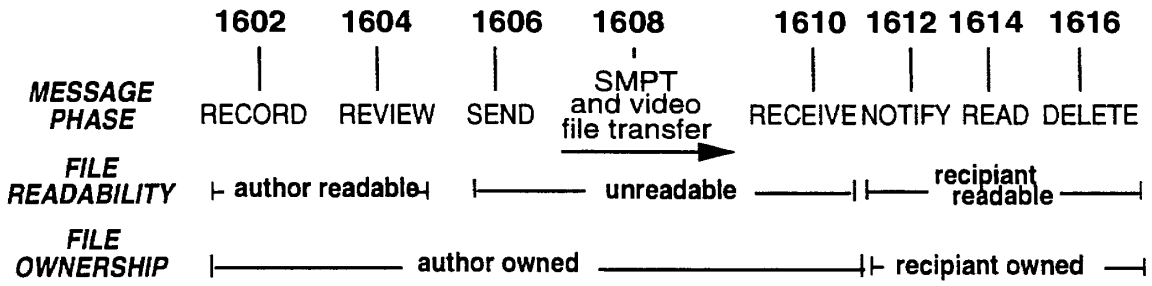

1602
1604
1606
1608
1610
1612
1614
1616
MESSAGE PHASE
RECORD
REVIEW
SEND
SMPT and video file transfer
RECEIVE
NOTIFY
READ
DELETE
FILE READABILITY
author readable
unreadable
recipiant readable
FILE OWNERSHIP
author owned
recipiant owned

Figure 35

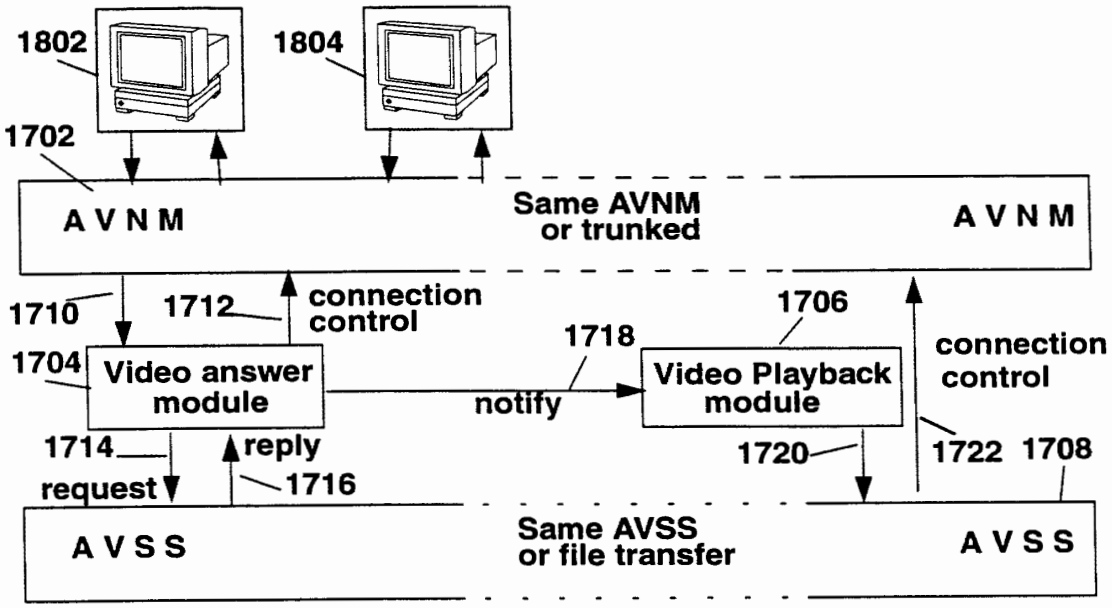
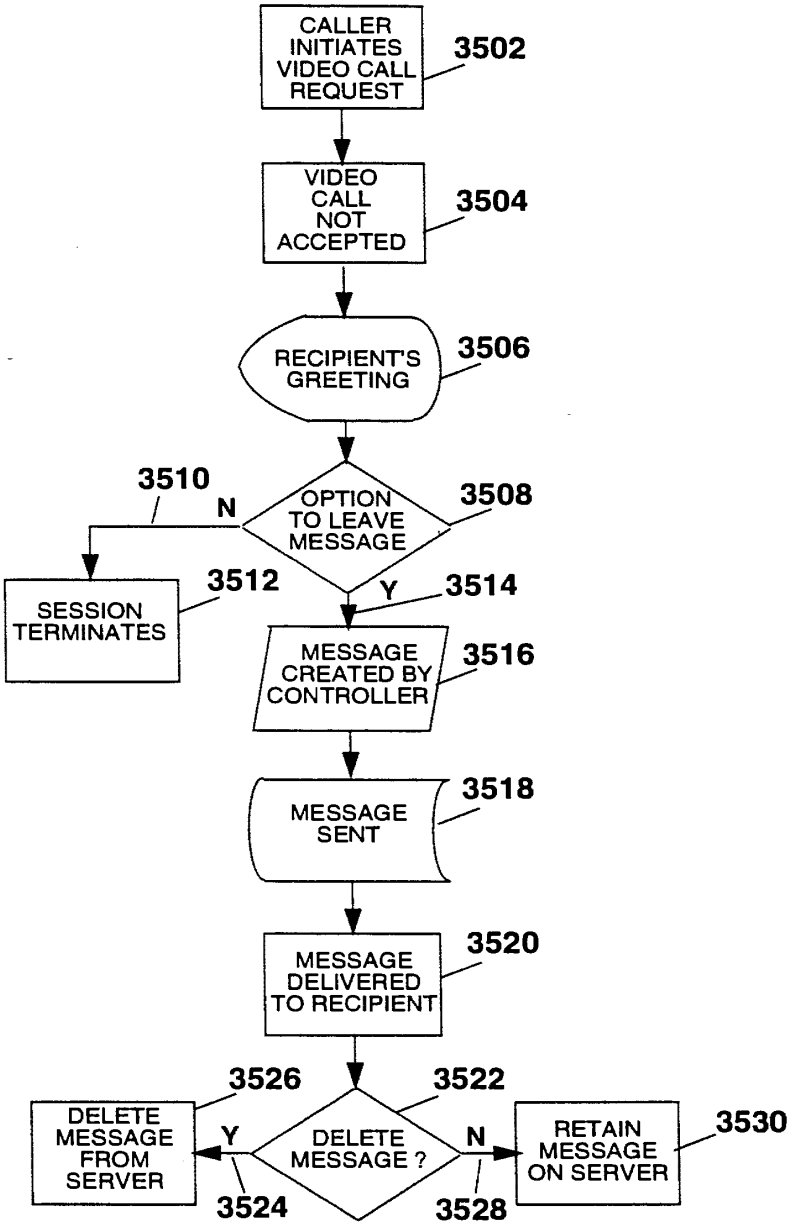

1802
1804
1702
A V N M
Same AVNM
or trunked
A V N M
1710
1712
connection
control
1706
1718
1704
Video answer
module
notify
Video Playback
module
connection
control
1714
reply
1720
1722
1708
request
1716
A V S S
Same AVSS
or file transfer
A V S S

Figure 36



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Figure 37

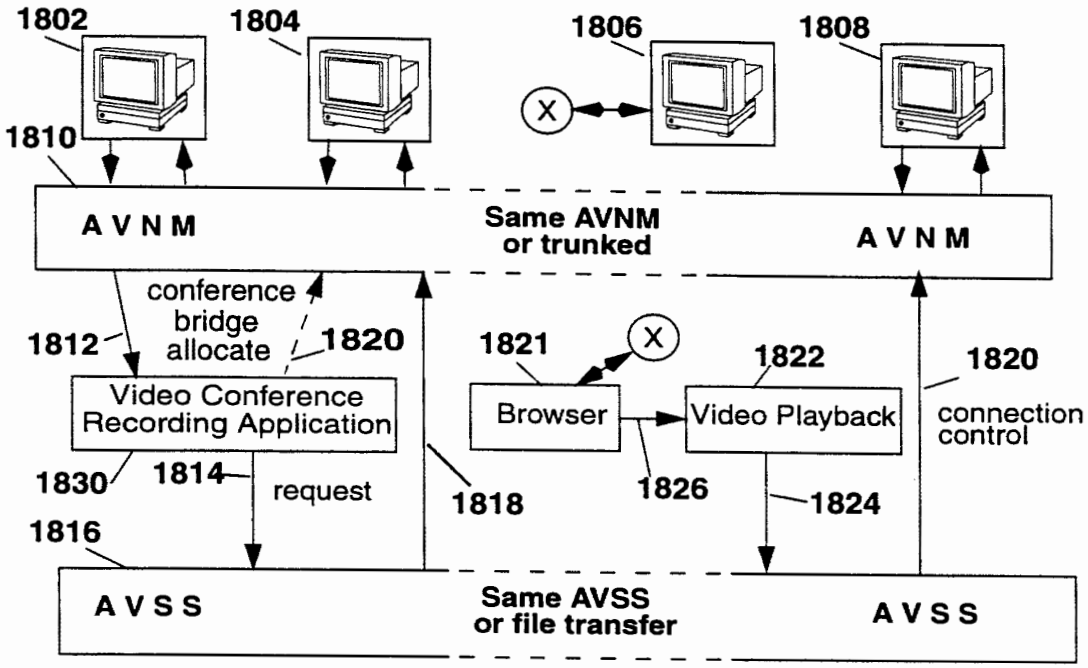
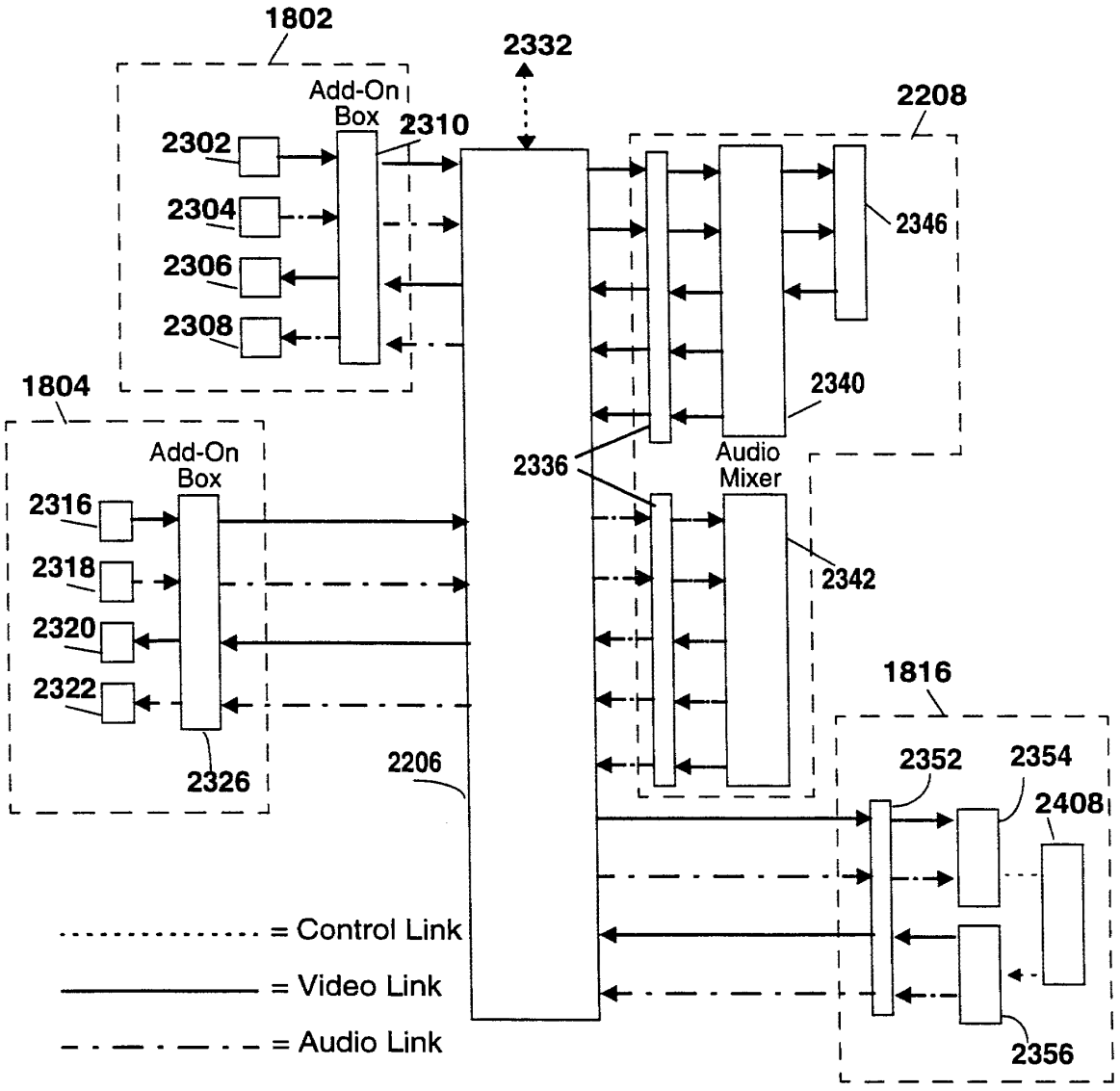

1802
1804
1806
1808
1810
A V N M
Same AVNM
or trunked
A V N M
conference
bridge
allocate
1812
1820
1821
1822
1820
Video Conference
Recording Application
Browser
Video Playback
connection
control
1830
1814
request
1818
1826
1824
1816
A V S S
Same AVSS
or file transfer
A V S S

Figure 38



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Figure 39

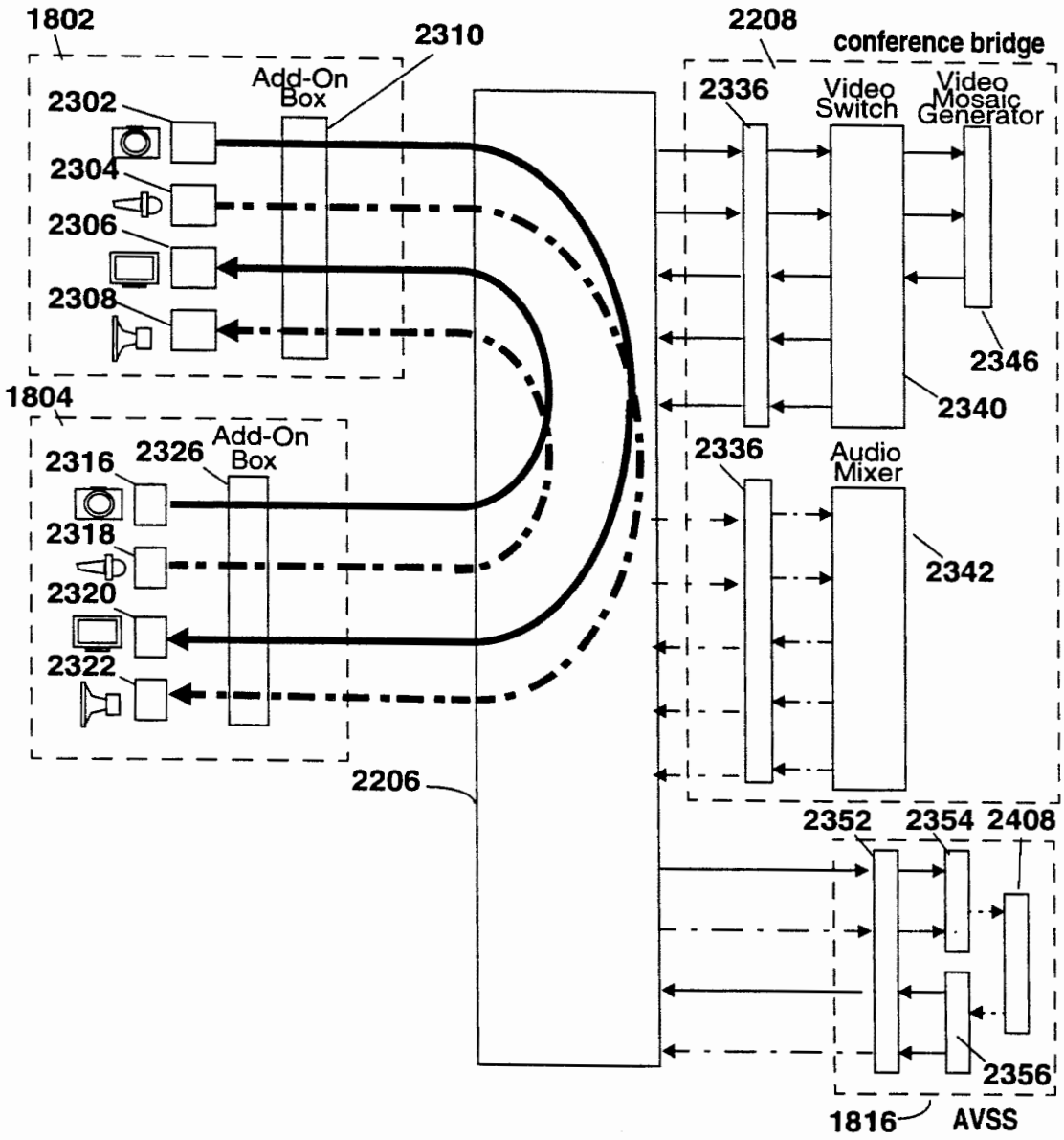
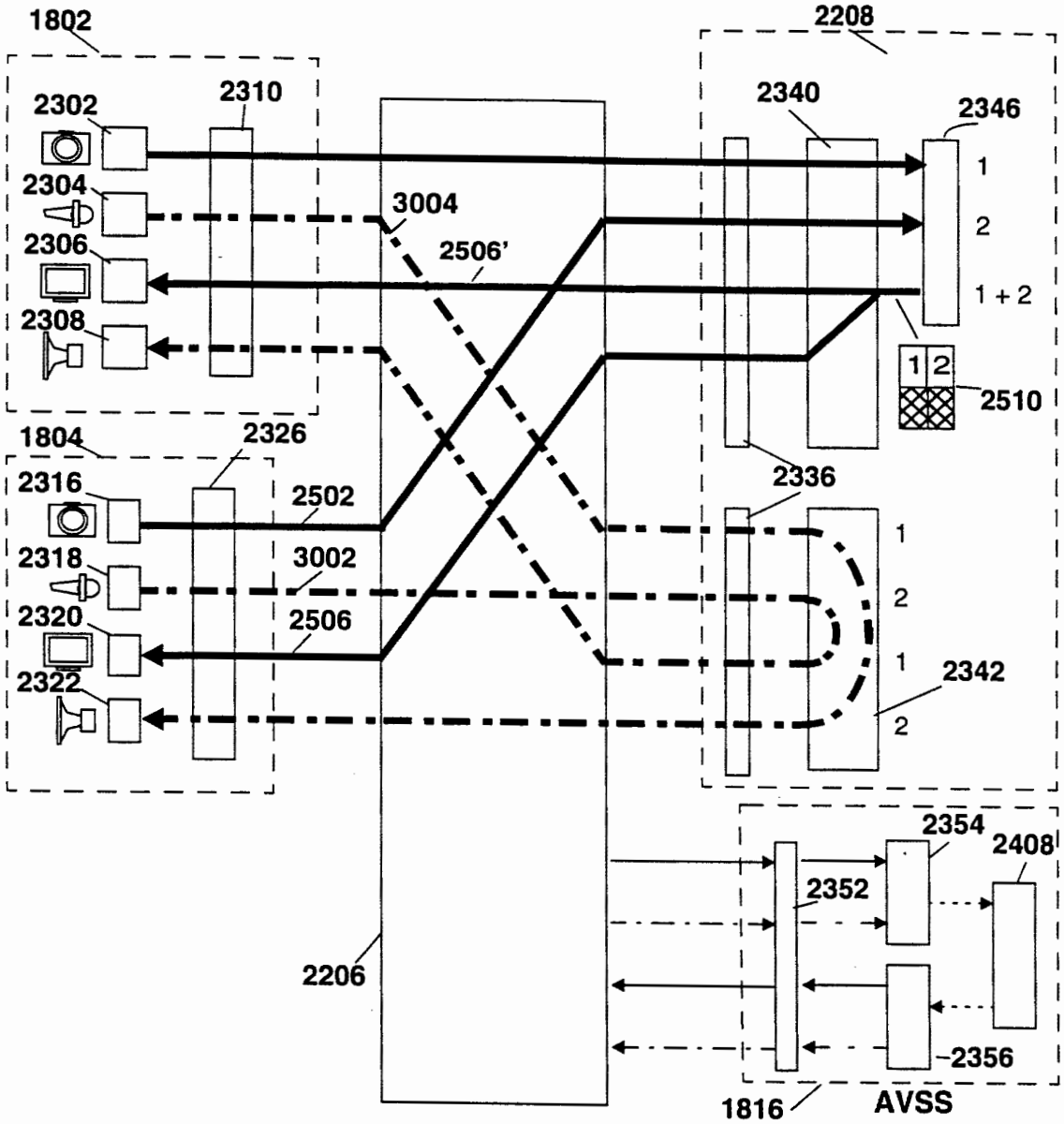
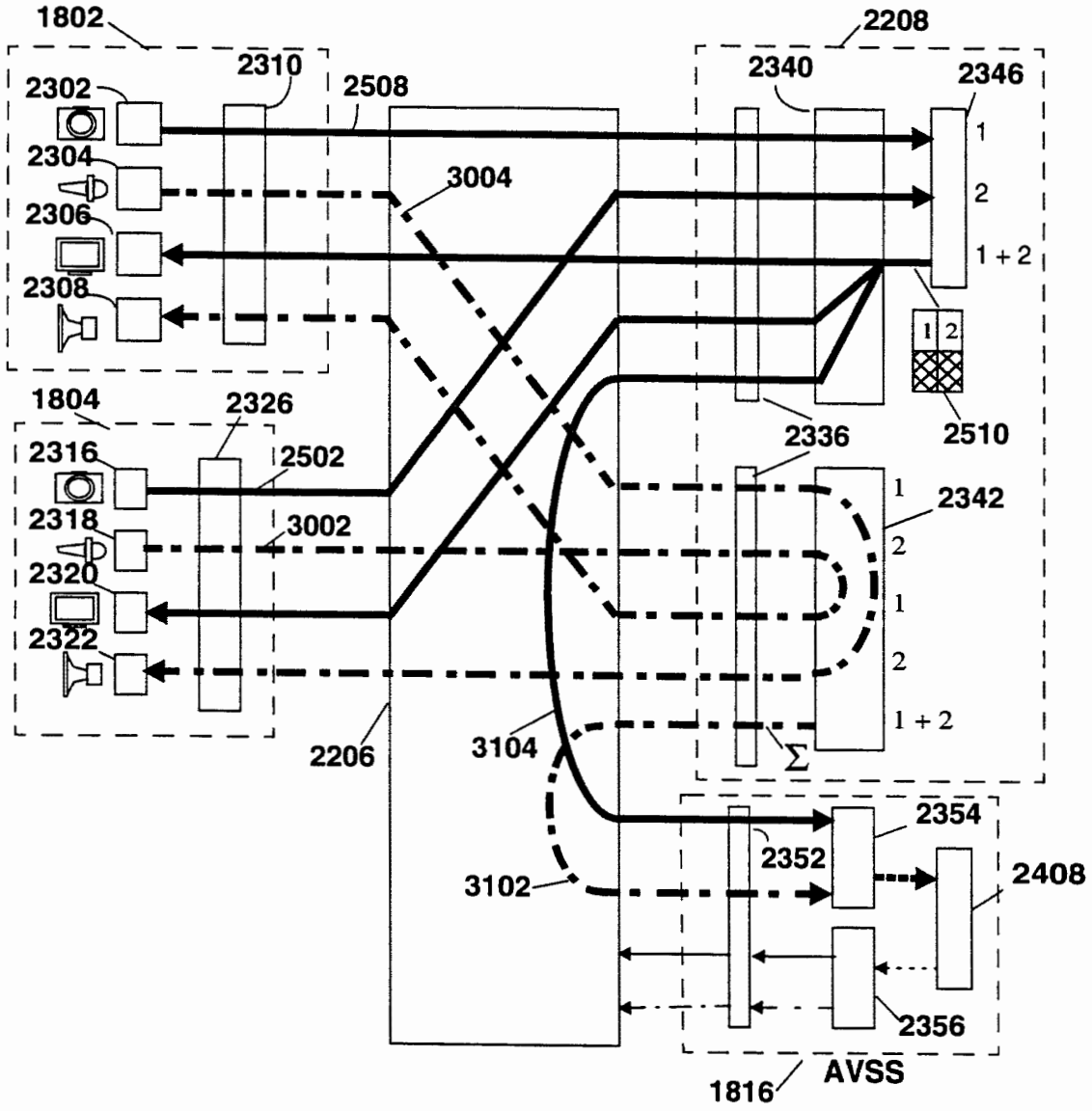

1802
2310
2208
conference bridge
Add-On Box
2302
2304
2306
2308
2336
Video Switch
Video Mosaic Generator
2346
2340
1804
Add-On Box
2326
2316
2318
2320
2322
2336
Audio Mixer
2342
2206
2352
2354
2408
2356
1816
AVSS

Figure 40



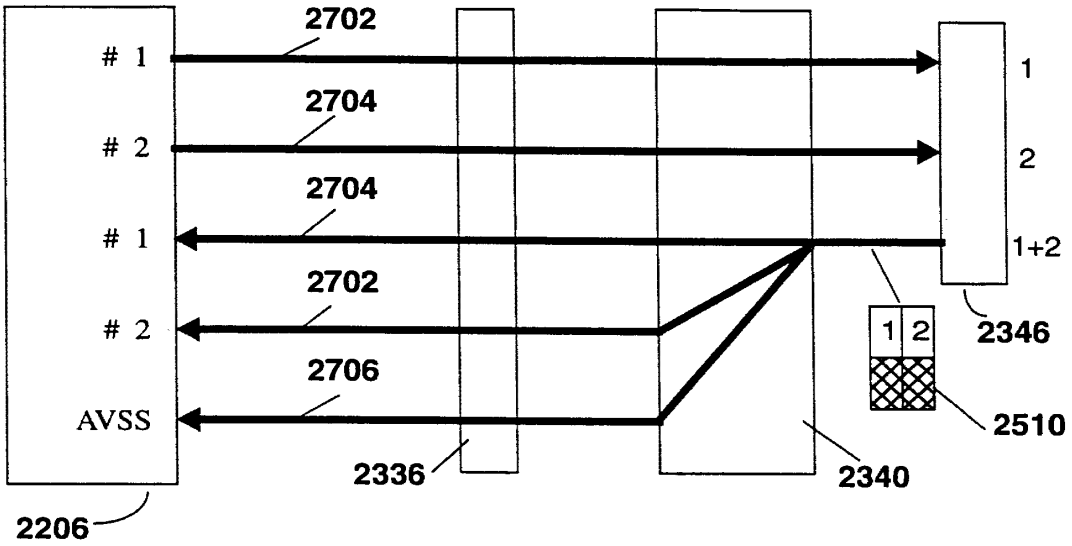
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Figure 41



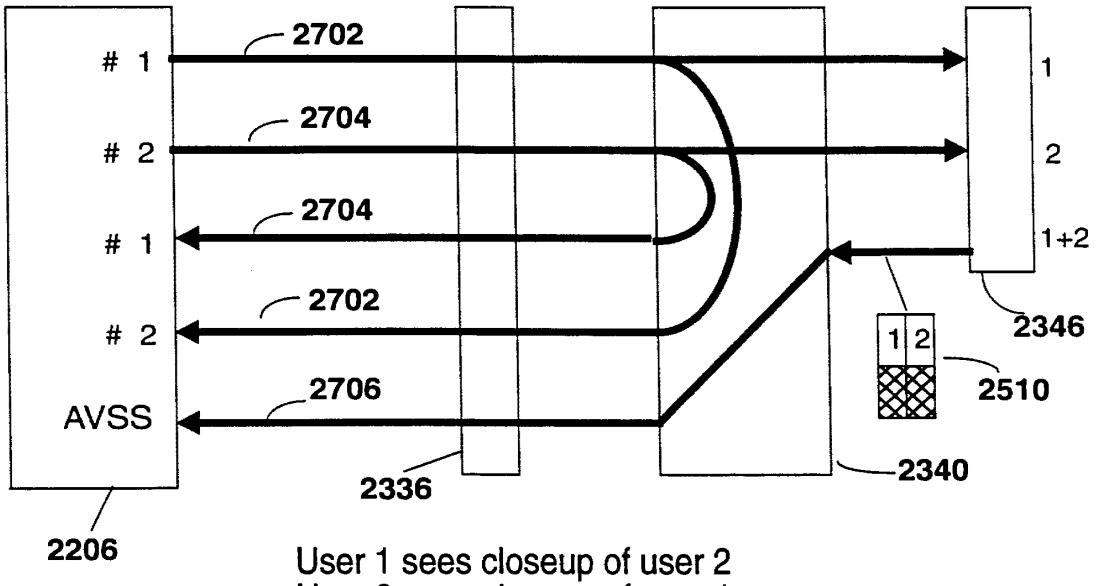
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Figure 42



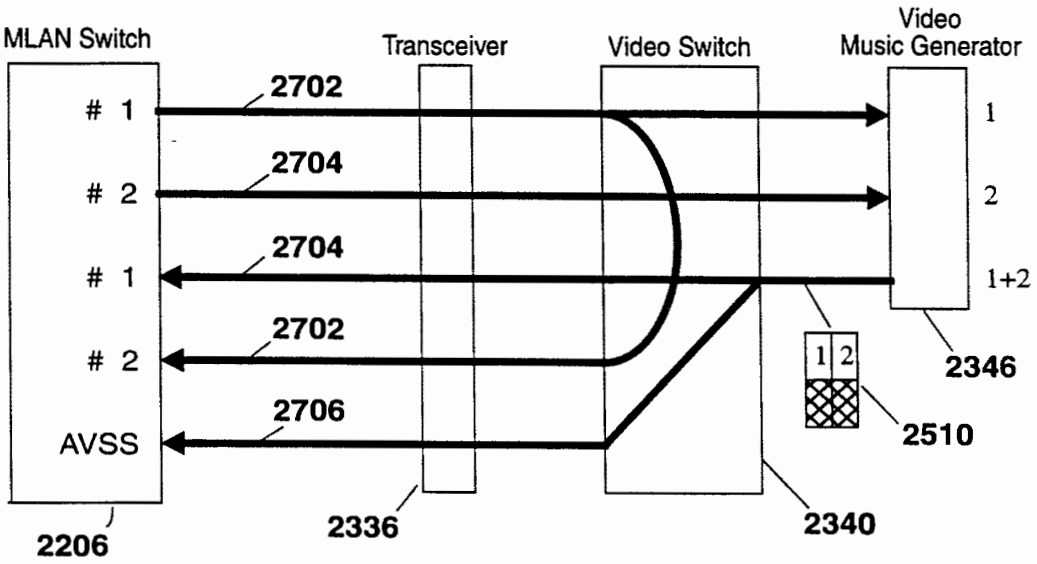
User 1 sees mosaic of users 1 and 2
User 2 sees mosaic of users 1 and 2
AVSS receives mosaic of users 1 and 2

Figure 43



User 1 sees closeup of user 2
User 2 sees closeup of user 1
AVSS receives mosaic of users 1 and 2

Figure 44



User 1 sees mosaic of users 1 and 2
User 2 sees closeup of user 1
AVSS receives mosaic of users 1 and 2

Figure 45

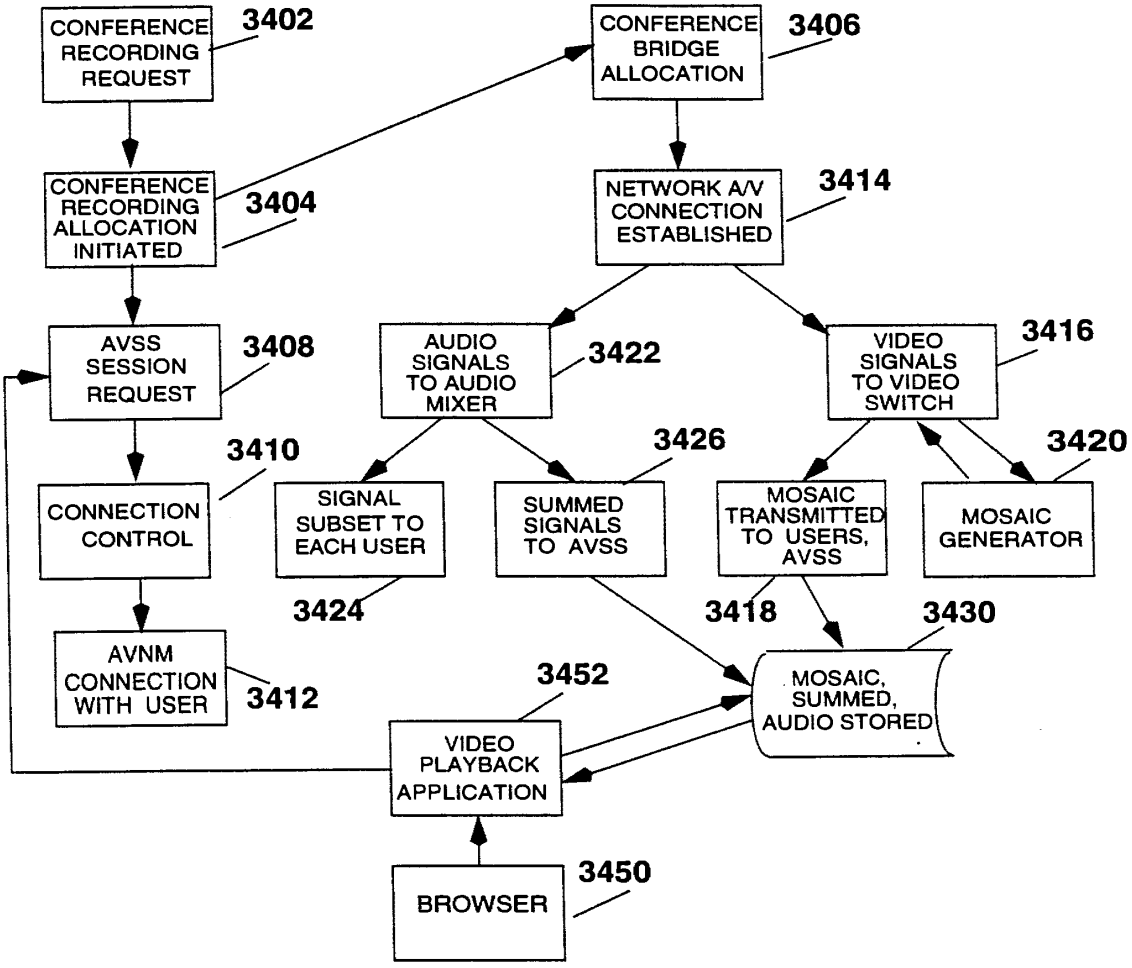
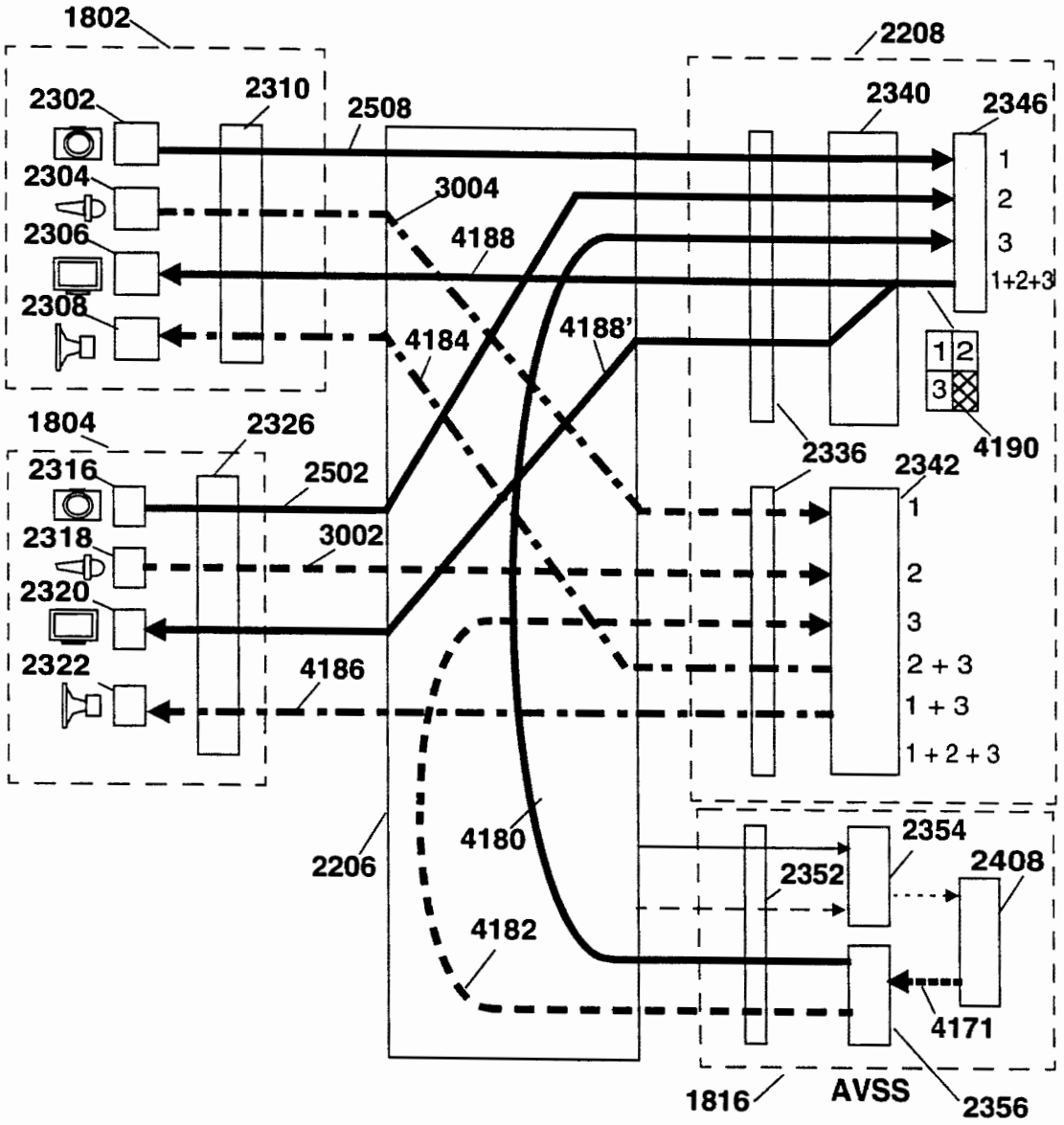

CONFERENCE RECORDING REQUEST
3402
CONFERENCE BRIDGE ALLOCATION
3406
CONFERENCE RECORDING ALLOCATION INITIATED
3404
NETWORK A/V CONNECTION ESTABLISHED
3414
AVSS SESSION REQUEST
3408
AUDIO SIGNALS TO AUDIO MIXER
3422
VIDEO SIGNALS TO VIDEO SWITCH
3416
3410
3426
3420
CONNECTION CONTROL
SIGNAL SUBSET TO EACH USER
SUMMED SIGNALS TO AVSS
MOSAIC TRANSMITTED TO USERS, AVSS
MOSAIC GENERATOR
3424
3418
3430
AVNM CONNECTION WITH USER
3412
3452
MOSAIC, SUMMED, AUDIO STORED
VIDEO PLAYBACK APPLICATION
BROWSER
3450

Figure 46



46/46

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US98/23596

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 9/46; H04L 12/28, 12/56, 12/40
US CL : 370/432, 440; 395/200.02, 200.49, 800

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 370/432, 440; 395/200.02, 200.49, 800

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US 5,740,176 A (GUPTA et al) 14 April 1998, abstract.	1-75
Y	US 5,673,265 A (GUPTA et al) 30 September 1997, abstract	1-75
Y	US 5,617,539 A (LUDWIG et al) 01 April 1997, abstract	1-75
Y	US 5,574,934 A (MIRASHRAFT et al) 12 November 1996, see entire document	1-75
A	US 5712976 A (FALCON, JR et al) 27 January 1998 , abstract	1-75

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"P"	document published prior to the international filing date but later than the priority date claimed		

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(71) Applicant *(for all designated States except US)*: **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **MACOURS, Christophe, M.** [BE/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agents: **GROENENDAAL, Antonius, W., M.** et al.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

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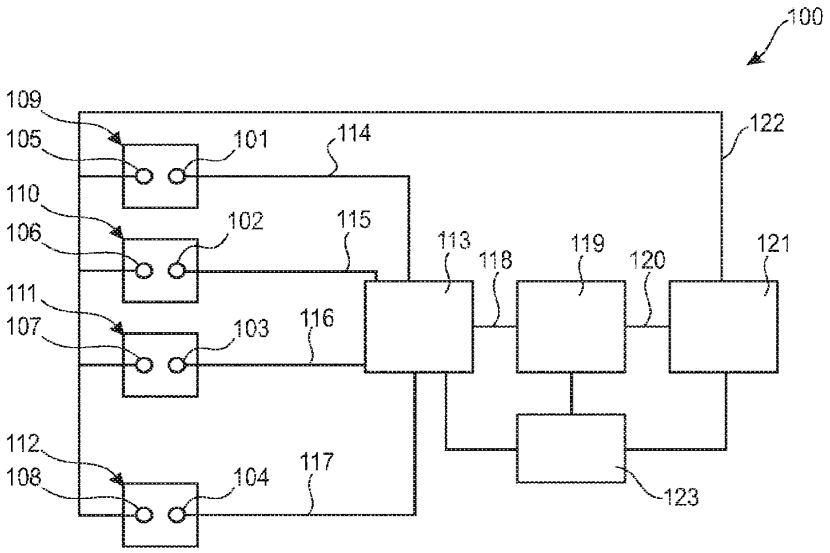
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(54) **Title:** A DEVICE FOR AND A METHOD OF PROCESSING AUDIO DATA



(57) **Abstract:** A device (100) for processing audio data, wherein the device (100) comprises a plurality of microphones (101 to 104) each adapted to detect audio data (114 to 117), a plurality of speakers (105 to 108) each adapted to emit acoustic waves and each equipped with an assigned one of the plurality of microphones (101 to 104), a calculation unit (113) adapted to calculate acoustical transfer functions (118) between the plurality of speakers (105 to 108) based on the audio data (114 to 117) detected by the plurality of microphones (101 to 104), and a determining unit (119) adapted to determine orientation information (120) indicative of the relative orientation of the plurality of speakers (105 to 108) based on the calculated acoustical transfer functions (120).

WO 2007/135581 A2

A device for and a method of processing audio data

FIELD OF THE INVENTION

The invention relates to a device for processing audio data.

Beyond this, the invention relates to a method of processing audio data.

Moreover, the invention relates to a program element.

Furthermore, the invention relates to a computer-readable medium.

BACKGROUND OF THE INVENTION

Audio playback devices become more and more important. Particularly, an increasing number of users buy audio surround systems comprising multiple loudspeakers.

US 2005/0254662 A1 discloses automatic calibration of an acoustic system. The acoustic system may include a source A/V device, calibration computing device, and multiple rendering devices. The calibration system may include a calibration component attached to each rendering device and a source calibration module. The calibration component on each rendering device includes a microphone. The source calibration module includes distance and optional angle calculation tools for automatically determining a distance between the rendering device and a specified reference point upon return of the test signal from the calibration component.

WO 2005/076912 A2 discloses a network including an audio signal producing device, a content distributor communicatively coupled to the audio signal producing device, a router, a network communication medium communicatively coupling the content distributor and the router, and a plurality of addressable loudspeakers communicatively coupled to the network communication medium, wherein each of the addressable loudspeakers are configured to function as a network peripheral in the home network.

However, conventional audio systems comprising multiple loudspeakers may be difficult to install, since many consumers are not familiar with the mounting of complex audio systems.

OBJECT AND SUMMARY OF THE INVENTION

It is an object of the invention to provide a user-friendly audio system.

In order to achieve the object defined above, a device for processing audio data, a method of processing audio data, a program element and a computer-readable medium according to the independent claims are provided.

According to an exemplary embodiment of the invention, a device for processing audio data is provided, wherein the device comprises at least one microphone (particularly a plurality of microphones) each adapted to detect audio data, a plurality of speakers each adapted to emit acoustic waves, wherein at least a part of (for instance each of) the plurality of speakers is provided (particularly equipped) with an assigned one of the at least one microphone, a calculation unit adapted to calculate acoustical transfer functions between the plurality of speakers based on the audio data detected by the at least one microphone, and a determining unit adapted to determine orientation information indicative of the relative orientation of the plurality of speakers based on the calculated acoustical transfer functions.

According to another exemplary embodiment of the invention, a method of processing audio data is provided, wherein the method comprises detecting audio data using at least one microphone (particularly a plurality of microphones), emitting acoustic waves using a plurality of speakers, wherein at least a part of (for instance each of) the plurality of speakers is provided (particularly equipped with an assigned one of the at least one microphone, calculating acoustical transfer functions between the plurality of speakers based on the audio data detected by the at least one microphone, and determining orientation information indicative of the relative orientation of the plurality of speakers based on the calculated acoustical transfer functions.

According to yet another exemplary embodiment of the invention, a computer-readable medium is provided, in which a computer program of processing audio data is stored which, when being executed by a processor, is adapted to control or carry out a method having the above mentioned features.

According to still another exemplary embodiment of the invention, a program element of processing audio data is provided, which program element, when being executed by a processor, is adapted to control or carry out a method having the above mentioned features.

Data processing for orientation estimation purposes which may be performed according to embodiments of the invention can be realized by a computer program, that is by software, or by using one or more special electronic optimization circuits, that is in hardware, or in hybrid form, that is by means of software components and hardware components.

According to an exemplary embodiment of the invention, an audio processing and/or playback system may be provided in which a configuration of a plurality of speakers (for instance loudspeakers or other reproduction apparatuses) may be determined automatically based on an evaluation of the audio emission and audio absorption properties of the speakers and assigned microphones. If necessary, the configuration of the speakers may be adjusted (for instance electronically and/or mechanically) so as to improve the audio playback performance of the multi-speaker apparatus.

In a system like an audio surround system in which a plurality of loudspeakers have to be mounted and adjusted, it may be difficult for a user to configure this system in an optimum manner with regard to loudspeaker position and orientation, since a user is in many cases not an expert. In accordance with an exemplary embodiment of the invention, when a user has installed such a system, each loudspeaker may emit (sequentially or simultaneously with the other loudspeakers) an audio signal (for instance a normal useful audio data signal or a signal specifically adapted for configuring) which may be detected by the microphones assigned (particularly located directly next to) to the other loudspeakers. By taking this measure, the acoustical transfer functions of the loudspeaker/microphone systems may be detected in a pair wise manner.

By evaluating this information, it is possible to calculate back the relative orientations and/or relative positions of the loudspeakers. With this information, the system may then adjust the playback characteristics of the speakers so as to improve the audio performance. This may include adjusting parameters like audio amplitude, frequency distribution, filter characteristics, addition of special effects like reverberation, etc. It may also include modifying the geometrical arrangement of the loudspeakers, for instance changing the spatial orientation of the loudspeakers (for instance using an electromotor installed in each of the loudspeakers). By taking these measures, the audio playback quality may be improved particularly at a special spatial area or point (which may be user-defined or which may be the position at which a listener is currently located or which can be a center of gravity of the loudspeakers). Thus, a user-friendly system may be provided which allows to automatically configuring the loudspeaker system in an appropriate manner even in a scenario in which a user has installed the loudspeakers in an incorrect manner.

Embodiments of the invention may take into account orientation properties of loudspeakers (having, in reality, directivity instead of being purely omni-directional). Thus, improper orientation may be compensated and it may thus be ensured that the loudspeaker points into the direction of a listener. Particularly, by considering transfer functions of an

audio system, a frequency-amplitude characteristic may be taken into account for correcting the audio system properties.

It is possible to equip each of the speakers with an assigned microphone. Alternatively, it is possible to equip only a part of the speakers (for instance a single one or a group of the speakers) with an assigned microphone.

According to an exemplary embodiment, automatic loudspeaker orientation correction may be provided. In such an embodiment, a surround sound system may be provided comprising at least two loudspeakers, each equipped with a (closely positioned) microphone. The surround sound system may further comprise a unit for measuring acoustical transfer functions between all speakers. A unit for determining the orientation of the speakers based on the transfer functions may be foreseen. According to an exemplary embodiment, an audio signal to be rendered by the speakers may be corrected based on the orientation information.

Thus, exemplary embodiments of the invention may not only have the capability that loudspeakers equipped with a microphone can automatically provide loudspeaker and/or room acoustics correction, but also the orientation of the loudspeakers may be taken into account. In other words, exemplary embodiments of the invention do not have to assume the loudspeaker to be omni-directional and may provide specific means to correct its (possibly) wrong orientation with respect to a listening position. According to an exemplary embodiment, automatic acoustic compensation in surround sound systems may be made possible.

According to an exemplary embodiment, a method for automatically correcting a wrong orientation of the loudspeakers in a home theatre (for instance in a 5.1 system, denoting a stereo format utilizing three primary channels (left, center, right), two surround channels (left surround, right surround) and an LFE channel, which is the ".1" channel because it uses approximately one-tenth of the bandwidth of a full-frequency channel) system based on the normalization of high frequency energy level contained in cross loudspeaker transfer functions may be made possible.

One aspect of home theatre systems is the loudspeaker setup and its calibration to the listener position. Quite often, it may happen that some loudspeakers are not properly connected (for instance polarity inversion, left/right inversion, etc.), and sometimes even not unpacked at all. According to an exemplary embodiment of the invention, an automated home theatre calibration system may be provided to improve a configuration of a loudspeaker setup, particularly with regard to orientation.

It may be advantageous that automatic home theatre calibration systems have a room correction feature. An issue is to compensate the acoustics of the loudspeakers in the listening room in order to get an improved or optimal ("flat") response at the listening position. To achieve this, it is conventionally possible to place a microphone at the listener position. Possible corrections with a microphone at the listener positions are:

level correction: compensation of the level (amplitude) differences between the different loudspeakers

delay correction: ensures all loudspeaker signals arrive simultaneously at the listener position

low frequency room acoustics correction: compensation of low frequency loudspeaker response and of the room (anti-)resonances and modes

high frequency room acoustics correction: compensation of the high frequency loudspeaker response, of the room response and of the wrong orientation of the loudspeaker boxes.

However, from a user perspective, merely placing a specific accessory (for instance a microphone) at the listener position during the calibration procedure is not user-friendly, particularly in terms of "Sense and Simplicity".

Therefore, exemplary embodiments of the invention are based on the recognition that the following reasoning holds: what parts of the possible improvements listed above would be possible if each loudspeaker box would be equipped with one microphone, without having a microphone at the listener position. Actually, it is not only possible to compute the geometrical configuration of the loudspeakers (by means of delay calculations). But it is also desirable to compensate for the wrong orientation of the loudspeaker boxes and simultaneously perform a high frequency room acoustics correction.

According to an exemplary embodiment of the invention, a system for automatically correcting a possibly wrong orientation of two, three, four, five, six, seven or more loudspeakers in a home theatre (for instance in a 5.1) system may be made possible by normalizing particularly high frequency energy level contained in the loudspeaker transfer functions. The transfer function having the most energy at high frequencies may be considered as a reference.

The term "transfer function" may describe the transfer characteristics of a system or equipment. It may relate to the relationship between an input and an output of the system or equipment in terms of the transfer characteristics. The term "acoustical transfer function" between loudspeakers/microphones may relate to properties of an acoustical

transfer in an acoustic field between the loudspeakers (including the microphones connected thereto), determinable on the basis of electric signals derived from the detection of acoustical audio signals. The transfer function may relate to the process by which an audio source wave passes through the space and is detected elsewhere. More particularly, a transfer function may be indicative of the transformation encountered by sound when passing from a source (like a loudspeaker) to a destination (like a microphone or a listener). The transfer function may be amplitude versus frequency curve indicative of the sound characteristic of the audio system. For instance, when a "white" audio signal is emitted by a loudspeaker and detected by a microphone, the characteristic of the loudspeaker-microphone system may transfer the white audio signal into a frequency-amplitude curve. In an audio system comprising two microphones ands two loudspeakers, four transfer functions may be measured (microphone 1-loudspeaker 1, microphone 1-loudspeaker 2, microphone 2-loudspeaker 1, microphone 2-loudspeaker 2).

In the following, some aspects concerning loudspeaker directivity of exemplary embodiments of the invention will be explained.

A loudspeaker box has a frequency dependent directivity characteristic. At low frequencies, a loudspeaker driver may act as a pure piston and the radiated sound field may be omni-directional. At high frequencies, the loudspeaker becomes more directive because the loudspeaker driver diameter becomes large relative to the wavelength. Therefore, a bad loudspeaker orientation can strongly effect the reproduction particularly of high frequencies.

Moreover, another aspect of bad loudspeaker orientation in a listening room is that if a loudspeaker box is pointing towards the wall, the wall may reflect a significant amount of energy back to the listening area. Because walls have a rather absorbent behavior, these reflected waves will also experience a low pass filtering that will also affect the overall frequency balance.

Exemplary fields of application of the embodiments of the invention are sound reproduction systems equipped with multiple (for instance at least two) loudspeakers, such as stereo (for instance portable) systems, and home theatre systems (for instance 5.1, 7.1, etc.).

Next, further exemplary embodiments of the invention will be explained. In the following, further exemplary embodiments of the device for processing audio data will be explained. However, these embodiments also apply for the method, for the computer-readable medium and for the program element.

The calculation unit may be adapted to calculate acoustical transfer functions between each pair of the plurality of speakers based on the audio data detected by the

plurality of microphones. In such a scenario, at one time, one of the loudspeakers may emit an acoustical (test) signal, which acoustical (test) signal may be detected by all microphones assigned to the other loudspeakers. Transfer functions may be derived from this information. After this, the next loudspeaker may emit an audio signal and the microphones assigned to the remaining loudspeakers detect the corresponding audio signals. By taking this measure, all loudspeakers serve sequentially as an audio source and the microphones detect the corresponding audio signals as a basis for deriving the acoustical transfer functions. This procedure allows deriving all information necessary to analyze the systems. If desired, correction instructions may be provided so as to correct the orientation or acoustical emission properties of the loudspeakers.

The determining unit may be adapted to determine the orientation information indicative of the spatial positions and/or of the audio emission direction of the plurality of speakers. From the calculated acoustical transfer functions, applying basic mathematical procedures, the orientations and positions of the loudspeakers may be determined (for instance by evaluating intensities, applying damping models, analyzing delays, analyzing correlations between different signals, evaluating frequency information, considering directivity characteristics, evaluating propagation times in combination with propagation velocities, etc.). This orientation and position information may serve as a basis for correcting the setup of the speakers.

At least a part of the plurality of speakers and the assigned one of the plurality of the microphones may be accommodated in a separate casing. In other words, a plurality of modules or separate entities may be provided, wherein each microphone and the corresponding loudspeaker may be provided in a separate housing. This may allow for a spatially distributed audio configuration and therefore a high quality audio performance.

A correction unit may be provided and may be adapted to correct an audio playback characteristic of at least a part of the plurality of speakers based on the determined orientation information. Therefore, after having analyzed the proper audio emission properties of the speakers, the correction unit may adjust the audio playback characteristics of the speakers so as to improve the audio performance. For instance, the audio playback characteristics may be improved or even optimized for a predetermined listening position. This listening position may be a user-defined position (for instance defined by a user of the sound system via an user interface), a geometrical center of the plurality of speakers (which may be calculated based on the knowledge at which positions the loudspeakers are positioned), or a position defined with respect to a given component of an audio system (for

instance improving the sound quality in front of a television where a user is usually sitting when using the sound system).

The adjusted audio playback characteristic may comprise an amplitude of the audio playback of an individual one of the speakers, of a part of the speakers or of all speakers, a frequency filtering characteristics (for instance the definition of cut-off frequencies or frequency bands), and an equalizer characteristic. These are only examples and may be substituted by or combined with any other audio playback characteristics.

The device may further comprise a correction unit that is adapted to correct the orientation of at least a part of the plurality of speakers based on the determined orientation information. In other words, the speakers may also be provided to be movable (for instance adapted for a translational movement and/or for a rotational movement). For this purpose, an electric motor may be provided, or the devices may simply be foreseen to be movable by a user. In the latter case, the user may be provided or guided by the device with an instruction as to how to modify a position and/or an orientation of one of the speakers to improve playback quality.

The calculation unit may be adapted to calculate the acoustical transfer functions between the plurality of speakers based on components of the audio data which components exceed a predetermined frequency threshold (of, for instance, several kHz). For instance, high frequencies may be particularly suitable to be analyzed in accordance with exemplary embodiments of the invention, since directivity of a loudspeaker is usually higher at high frequencies than at low frequencies. In other words, a loudspeaker is essentially omni-directional at low frequencies and shows directional behavior at high frequencies. Therefore, an evaluation in the high frequency domain may derive more meaningful results with regard to orientation. Such a frequency threshold or transition frequency may be in the range of 500 Hz to 20 kHz, particularly in the range of 1 kHz to 5 kHz, more particularly in the range of 2 kHz to 4 kHz. Thus, specifically such a high frequency range may be subject of the investigations. Although the given exemplary numbers for the transition frequency may be valid for many loudspeakers, it should be kept in mind that this frequency value, at which a transition between an omni-directional behavior and a directive behavior occurs, is usually smaller, the larger the loudspeaker is. More generally, the value may be dependent on the size of the loudspeaker and consequently dependent on the size of an acoustical cone emitted by the loudspeaker.

In the following, the technical definition of the so-called "piston range of a cone loudspeaker" will be given. The piston range, where a loudspeaker cone is considered as being omni-directional, is technically defined by:

$$k\,a < 1$$

where "k" is the wave number and "a" the loudspeaker cone radium in meters. For $k\,a > 1$, the loudspeaker cone starts to be more and more directional as frequency increases.

Furthermore, the way the loudspeaker is mounted may have an influence on the frequency value.

At least a part of the plurality of microphones may be omni-directional microphones. The term omni-directional may relate to a not directional component. It may denote receiving sound waves in or from any direction, particularly so-called 360° receiving capability.

The device for processing audio data may be realized as at least one of the group consisting of an audio surround system, a stereo audio system, a mobile phone, a headset, a hearing aid, a hands free system, a television device, a video recorder, a monitor, a gaming device, a laptop, an audio player, a DVD player, a CD player, a hard disk-based media player, an internet radio device, a public entertainment device, a portable audio player, an MP3 player, a hi-fi system, a vehicle entertainment device, a car entertainment device, a medical communication system, a body-worn device, a speech communication device, a home cinema system, and a music hall system.

However, although the system according to an embodiment of the invention primarily intends to improve the quality of sound or audio data, it is also possible to apply the system for a combination of audio data and visual data. For instance, an embodiment of the invention may be implemented in audiovisual applications like a portable video player in which multiple speakers are used.

It is further possible to use, instead of a single microphone assigned to each speaker, a plurality of microphones assigned to a particular speaker. By averaging the signals captured by the plurality of microphones assigned to a particular speaker, it is possible, with improved accuracy, to derive information to compensate for inaccurate speaker orientation. The aspects defined above and further aspects of the invention are apparent from the examples of embodiment to be described hereinafter and are explained with reference to these examples of embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in more detail hereinafter with reference to examples of embodiment but to which the invention is not limited.

Fig. 1 shows an audio processing system according to an exemplary embodiment of the invention.

Figs. 2A and 2B shows an audio playback system in two different configurations according to exemplary embodiments of the invention.

Figs. 3A and 3B illustrates a method of calibrating an audio processing system according to an exemplary embodiment of the invention.

Fig. 4 shows a flow diagram illustrating a method of processing audio data according to an exemplary embodiment of the invention.

DESCRIPTION OF EMBODIMENTS

The illustration in the drawing is schematically. In different drawings, similar or identical elements are provided with the same reference signs.

In the following, referring to Fig. 1, an audio processing system 100 according to an exemplary embodiment of the invention will be explained.

The audio processing system 100 comprises a first microphone 101, a second microphone 102, a third microphone 103 and a fourth microphone 104. The number of microphones may be larger or smaller than four, particularly may be larger than or equal to two. Each of the microphones 101 to 104 is adapted to detect audio data emitted by anyone of a plurality of loudspeakers, namely a first loudspeaker 105, a second loudspeaker 106, a third loudspeaker 107 and a fourth loudspeaker 108.

As can be taken from Fig. 1, a first housing 109 is provided in which the first microphone 101 and the first loudspeaker 105 are accommodated or integrated. The second microphone 102 and the second loudspeaker 106 are embedded in a second housing 110. The third microphone 103 and the third loudspeaker 107 are provided within a third housing 111. A fourth housing 112 accommodates the fourth microphone 104 and the fourth speaker 108. Therefore, each of the microphones 101 to 104 has an assigned speaker 105 to 108, and these pairs are located directly neighbored or adjacent to one another. The loudspeakers 105 to 108 are each adapted to emit acoustic waves and are each equipped with the corresponding microphone 101 to 104.

In normal use, the audio system 100 is used for reproducing audio content and may serve as an audio surround system. However, the system 100 also has an automatic loudspeaker orientation configuration feature that will be explained in the following in more detail. With respect to the actual audio playback functionality of a surround system, no further details will be explained in the following.

As can be taken from Fig. 1, each of the microphones 101 to 104 is electrically coupled to a calculation unit 113 so as to provide detected audio data 114 to 117 to the calculation unit 113. The calculation unit 113 is adapted to calculate acoustical transfer functions between the plurality of speakers 105 to 108 based on the audio data 114 to 117 detected by the plurality of microphones 101 to 104.

For example, in a first operation state, only the first loudspeaker 105 emits audio data and the microphones 102 to 104 detect the corresponding audio signals 115 to 117. Then, the second speaker 106 emits an audio signal which is detected by the microphones 101, 103, 104, and so on. From the corresponding data that are detected by the microphones 101 to 104, the calculation unit 113 may calculate all acoustical transfer functions indicative of the acoustical properties of the system and indicative of the present orientation of the speakers 105 to 108 with respect to one another.

The determined acoustical transfer functions 118 are supplied to a determining unit 119 adapted to determine orientation information indicative of the relative orientation of the plurality of speakers 105 to 108 based on the calculated acoustical transfer functions 118. Therefore, the determining unit 119 determines the orientation (that is to say the spatial positions and/or the directions) of the speakers 105 to 108 so as to determine whether there is a need to modify the configuration of the loudspeakers arrangement to improve playback quality.

Corresponding orientation information 120 may be supplied to a correction unit 121 adapted to correct an audio playback characteristic of one or more of the loudspeakers 105 to 108 based on the determined orientation information 120. For this purpose, control signals 122 can, if needed, be provided to the corresponding loudspeakers 105 to 108 to improve the audio performance.

Particularly, the correction unit 121 may calculate the control parameters 122 in such a manner that an audio quality is improved at a predetermined listening position (for instance a position at which a listener is presently or usually located). A user may input such a position to the system 100 via a user interface device 123. Such an I/O device may include a graphical user interface (GUI) having an LCD, a plasma device, or a cathode ray tube.

Furthermore, input elements can be provided at the user interface 123 like a keypad, a joystick, buttons, a trackball, or even a microphone of a voice recognition system.

The control parameters 122 may alter amplitude of any signal to be reproduced by one of the loudspeakers 105 to 108, or may alter a frequency behavior, or may alter equalizer characteristics, or a spatial position of the microphones 105 to 108. Therefore, if needed, one or more of the loudspeakers 105 to 108 may be mechanically turned or shifted.

In the following, referring to Fig. 2 and Fig. 3, further aspects of an exemplary embodiment of the invention will be explained.

Fig. 2 shows a typical home theatre system setup in an ideal configuration 200 and in a non-ideal configuration 250.

Loudspeakers 105 to 108 are shown which are distributed around a human listener 201. Furthermore, a television 202 is shown which may also comprise one or more loudspeakers, wherein such a "center speaker" is assumed to be at the same position as the TV 202.

In the "ideal" configuration 200 as shown in Fig. 2A, all loudspeaker boxes 105 to 108 point towards the listener 201. But in many cases, as for instance shown in Fig. 2B for non-ideal configuration 250, the loudspeaker boxes 105 to 108 do not have an optimum orientation and will be pointing outside a listening area 203.

In the present embodiment, all loudspeakers 105 to 108, 202 are equipped with one omni-directional microphone (101 to 104, 204). This enables the measurement of the acoustical transfer functions between all loudspeakers 105 to 108, 202, the so-called "cross loudspeaker transfer functions". It is possible to make use of these transfer functions to get an idea of the orientation of the loudspeaker boxes 105 to 108, 202 with respect to the listener 201 and to provide the necessary corrections.

Fig. 3 shows two examples of cross loudspeaker transfer function measurements.

In a first scenario 300, the loudspeaker box 1 is properly oriented. In a second scenario 350, the loudspeaker 4 is wrongly oriented.

In the first scenario 300 as shown in Fig. 3A, the transfer functions between loudspeaker 1 and the others are measured. This may give an idea on the directivity of loudspeaker box 1. Because the directivity of a loudspeaker driver increases with frequency, a comparison of the high frequency content of the transfer functions can provide an idea of orientation of loudspeaker 1. Because the positions of the loudspeaker boxes can be

computed, it can be possible, by interpolation, to estimate the high frequency energy level reaching the center of the listening area 203, where the listener 201 is assumed to be sitting. In the second scenario 350 as shown in Fig. 3B, it is the directivity of loudspeaker 4 that is measured. In this case, the other loudspeakers will get much less high frequency energy than in the first scenario 300, which indicates that loudspeaker 4 is most likely wrongly oriented. By computing the level of high frequencies reaching the middle of the listening area 203 for the second scenario 350 and by comparing it with its level for the first scenario 300, a high frequency boost filter to be applied to loudspeaker 4 can be derived.

In the following, referring to Fig. 4, a block diagram 400 will be explained illustrating a method of processing audio data according to an exemplary embodiment of the invention. Such a method may work according to the following process:

All cross loudspeaker transfer functions are measured, see block 410.

The loudspeaker positions are computed (for instance by evaluating intensities, applying damping models, analyzing delays, analyzing correlations between different signals, evaluating frequency information, considering directivity characteristics, evaluating propagation times in combination with propagation velocities, etc.), see block 420.

The listening position is user-defined or assumed to be the geometrical center of the area enclosed by the loudspeakers, or assumed to be in front of the TV set, see block 430.

For each loudspeaker, the high frequency energy level radiated in the direction of the listening position is computed by interpolating the high frequency content of the different cross loudspeaker measurements. Because of the oval shape of the loudspeaker directivity, the interpolation may be non-linear, see block 440.

The high frequency energy levels of all loudspeakers are normalized to the highest one. In other words, the high frequency energy radiated towards the listening position is made equal for all loudspeakers, and preferably equal to the highest high frequency energy level value, see block 450.

It should be noted that the term "comprising" does not exclude other elements or features and the "a" or "an" does not exclude a plurality. Also elements described in association with different embodiments may be combined.

It should also be noted that reference signs in the claims shall not be construed as limiting the scope of the claims.

CLAIMS:

1. A device (100) for processing audio data, wherein the device (100) comprises at least one microphone (101 to 104) each adapted to detect audio data (114 to 117);

a plurality of speakers (105 to 108) each adapted to emit acoustic waves, wherein at least a part of the plurality of speakers (105 to 108) is provided with an assigned one of the at least one microphone (101 to 104);

a calculation unit (113) adapted to calculate acoustical transfer functions (118) between the plurality of speakers (105 to 108) based on the audio data (114 to 117) detected by the at least one microphone (101 to 104);

a determining unit (119) adapted to determine orientation information (120) indicative of the relative orientation of the plurality of speakers (105 to 108) based on the calculated acoustical transfer functions (120).

2. The device (100) according to claim 1,

wherein the calculation unit (113) is adapted to calculate the acoustical transfer functions (118) for each pair of the plurality of speakers (105 to 108) based on the audio data (114 to 117) detected by the at least one microphone (101 to 104).

3. The device (100) according to claim 1,

wherein the determining unit (119) is adapted to determine the orientation information (120) indicative of a spatial position and/or of an audio emission direction of the plurality of speakers (105 to 108).

4. The device (100) according to claim 1,

wherein, for at least a part of the plurality of speakers (105 to 108), a respective one of the plurality of speakers (105 to 108) and the assigned one of the at least one microphone (101 to 104) are accommodated in a separate casing (109 to 112).

5. The device (100) according to claim 1,

comprising a correction unit (121) adapted to correct an audio playback characteristic of at least a part of the plurality of speakers (105 to 108) based on the determined orientation information (121).

6. The device (100) according to claim 1,

comprising a correction unit (121) adapted to correct the orientation of at least a part of the plurality of speakers (105 to 108) based on the determined orientation information (120).

7. The device (100) according to claim 5 or 6,

wherein the correction unit (121) is adapted to correct the audio playback characteristic so as to improve an audio quality at a predetermined listening position.

8. The device (100) according to claim 5 or 6,

wherein the predetermined listening position is one of the group consisting of a user-defined position, a geometrical center of the plurality of speakers (105 to 108), and a position defined with respect to a defined component (202) of an audio playback system comprising the device (100).

9. The device (100) according to claim 5,

wherein the audio playback characteristic comprises at least one of an amplitude, a frequency filtering characteristic, and an equalizer characteristic.

10. The device (100) according to claim 1,

wherein the calculation unit (119) is adapted to calculate the acoustical transfer functions (120) between the plurality of speakers (105 to 108) selectively based on components of the audio data (114 to 117) which components exceed a predetermined frequency threshold value.

11. The device (100) according to claim 10,

wherein the predetermined frequency threshold value is in the range between essentially 1 kHz and essentially 5 kHz.

12. The device (100) according to claim 1,

wherein at least one of the at least one microphone (101 to 104) is an omni-directional microphone.

13. The device (100) according to claim 1,

realized as at least one of the group consisting of an audio surround system, a stereo audio system, a mobile phone, a headset, a hearing aid, a hands free system, a television device, a video recorder, a monitor, a gaming device, a laptop, an audio player, a DVD player, a CD player, a hard disk-based media player, an internet radio device, a public entertainment device, a portable audio player, an MP3 player, a hi-fi system, a vehicle entertainment device, a car entertainment device, a medical communication system, a body-worn device, a speech communication device, a home cinema system, and a music hall system.

14. A method of processing audio data (114 to 117), wherein the method comprises

detecting audio data (114 to 117) using at least one microphone (101 to 104);

emitting acoustic waves using a plurality of speakers (105 to 108), wherein at least a part of the plurality of speakers (105 to 108) is provided with an assigned one of the at least one microphone (101 to 104);

calculating acoustical transfer functions (118) between the plurality of speakers (105 to 108) based on the audio data (114 to 117) detected by the at least one microphone (101 to 104);

determining orientation information (120) indicative of the relative orientation of the plurality of speakers (105 to 108) based on the calculated acoustical transfer functions (118).

15. A computer-readable medium, in which a computer program of processing audio data (114 to 117) is stored, which computer program, when being executed by a processor (113, 119), is adapted to carry out or control a method according to claim 14.

16. A program element of processing audio data (114 to 117), which program element, when being executed by a processor (113, 119), is adapted to carry out or control a method according to claim 14.

1/2

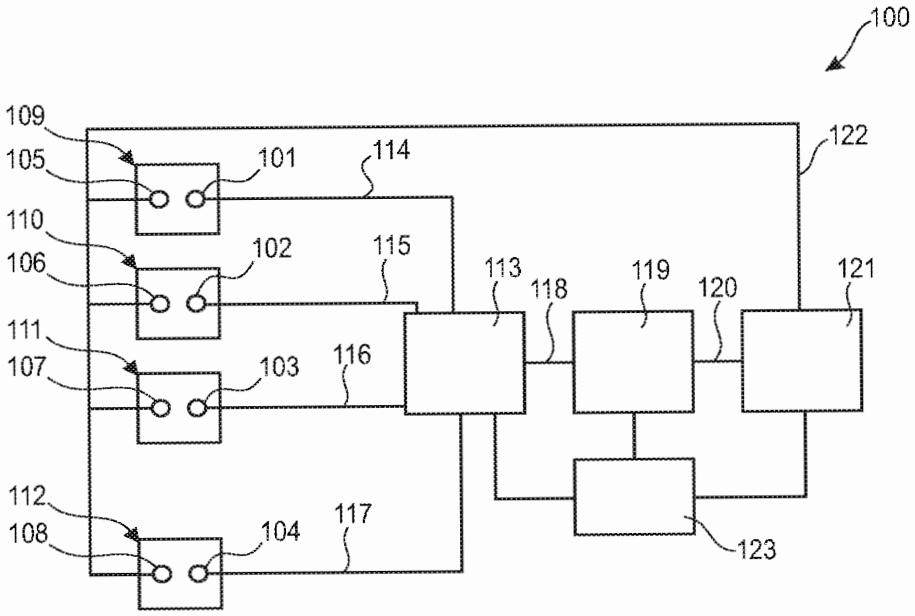


FIG 1

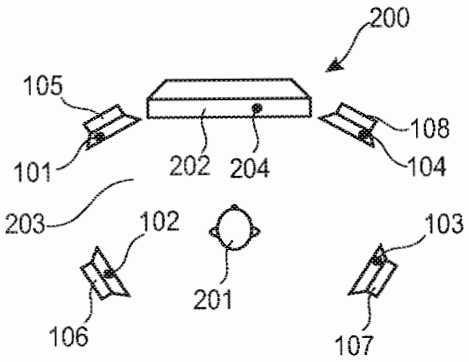


FIG 2A

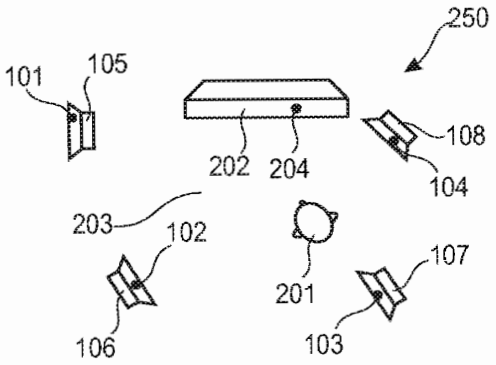


FIG 2B

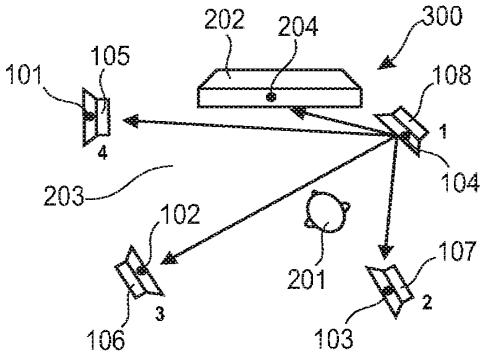


FIG 3A

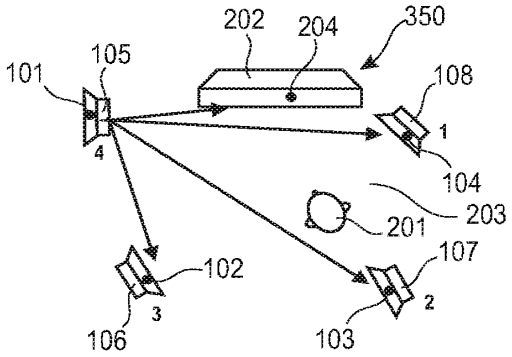


FIG 3B

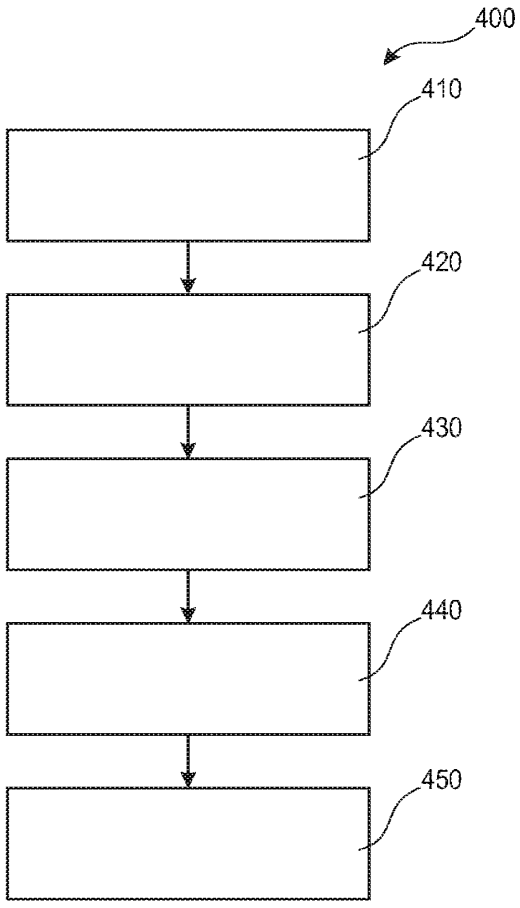


FIG 4

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(71) Applicant *(for all designated States except US)*: **SCANIA CV AB (publ)** [SE/SE]; S-151 87 Södertälje (SE).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **LUNDMARK, Johan** [SE/SE]; Koldinggatan 6, S-164 46 Kista (SE). **NORDEMAN, Fredrik** [SE/SE]; Sjömansvägen 26, S-151 38 Södertälje (SE).

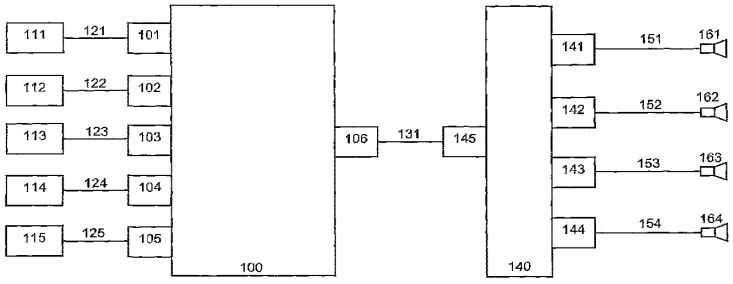
(74) Agent: **SJÖGREN PAULSSON, Stina**; SCANIA CV AB, UTY/Patents, S-151 87 Södertälje (SE).

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(54) **Title:** DEVICE AND METHOD FOR PRIORITIZING AUDIO IN A VEHICLE



(57) **Abstract:** An improved device and method for prioritizing audio in a vehicle is disclosed. According to the invention, an audio priority device for use in a vehicle, includes a plurality of audio source input connectors, at least one output connector connectable to a sound emitting system, and a selecting means arranged to select the audio signal with highest priority level received at the input connectors and further arranged to output the selected audio signal to the at least one output connector. Each input connector is arranged assigned with a specific fixed priority level, whereby a present audio signal from an audio source that is connected to one of the input connectors is assigned the priority level of that input connector.

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DEVICE AND METHOD FOR PRIORITIZING AUDIO IN A VEHICLE

Field of the invention

The present invention relates to an audio priority device for use in a vehicle including a selecting means arranged to select an audio signal. The present invention also relates to a vehicle including such an audio priority device and to a method for prioritizing audio in a vehicle.

Related art and background of the invention

Audio management systems managing signals from a number of audio sources are previously known in the background art. These systems include a plurality of audio sources and a selecting means arranged to select one of the audio signals and to output the selected audio signal to a sound emitting system, as one single sound emitting system handles signals from a plurality of audio sources. Such audio management systems are known from documents EP 0 531 094, EP 1 056 216 and US 6 052 471.

EP 0 531 094 shows a system for integrated cellular telephone and vehicular audio. In this system, an interface selects which one of the cellular telephone signal and the audio system signal to present to a driver of the vehicular. Control signals are sent on a control bus from the cellular telephone and the audio system to the interface, informing the interface whether the cellular phone and the audio system are active or in use. The interface controls, based on these control signals, which audio source to apply to the loud speakers of the system.

EP 1 056 216 shows an audio component system. In this system, a number of audio devices are connected to an amplifier unit. The amplifier unit controls, by the use of a control unit and a control bus connected to each of the audio devices, which device that is to be delivered to the loud speakers of the system.

US 6 052 471 shows an audio receiver that automatically selects an input audio source. The receiver detects which input signals that are present and then a priority

logic block selects, using a priority table, which audio source to provide to the amplifiers. The priority table contains the priorities of the different types of audio sources present and sets the rules for how to select an audio source to be amplified for different scenarios of audio sources present. The priority logic block then, by the use of control signals, controls switches in the receiver such that the chosen audio source is passed through to amplification. The priority of different types of audio sources can for instance be set such that a CD player has a higher priority than a radio, resulting in that the receiver selects the CD player when they both are active. The priority can also be set such that the type of audio source that is most recently turned into an active mode is given the highest priority. That is if a TV is most recently turned on it will be given highest priority and will thus be selected regardless of which other audio sources are being present.

The background art solutions for audio management are all fairly complicated. The background art systems include control circuits and control buses for managing the audio sources and/or complex priority setting and selecting processes.

When installing audio management systems in vehicles, such as trucks, cars, buses and tractors, there arises a problem regarding installation space. The amount of space behind a dashboard available for fitting in audio management systems and cables accompanying these systems is very limited. According to the solutions in background art documents EP 0 531 094 and EP 1 056 216 mentioned above, a control bus is used for controlling which audio source to be selected. This control bus constitutes a problem because of the limited installation space in the vehicle, especially since these audio management systems often are installed after the vehicle has been assembled in a factory.

Weight of the cables can be another problem in solutions involving a large amount of cabling. Troubleshooting can also be very difficult and time consuming when a problem arises in such a system.

Audio management systems that rely on control signals to or from each of the audio source components of the system for handling the selection of audio sources to

output to a sound emitting system, such as a number of loud speakers, will also encounter difficulties relating to the different types of control signaling used by the different audio sources. The different audio sources are often provided by different suppliers and these different audio sources may then have differing control signaling. For instance, the signaling format, such as levels and shapes of the signals, can differ from one audio source to another. The different control signaling can result in difficulties for the audio management system to communicate with all audio source components in the system.

There is further a problem related to complex priority setting and selecting processes of background art solutions, such as the one mentioned in US 6 052 471 above, regarding their capabilities of being able to easily alter priorities of already present audio sources as well as easily assigning priorities to audio sources that are not known by the system at the time of installation of the system, but can be added to the system thereafter. Background art systems need to be reprogrammed when priorities are to be changed or when new audio sources are to be added to the system. Reprogramming is time consuming and expensive for the vehicle owner.

Aim and most important features of the invention

It is an object of the present invention to provide an audio priority device that solves the above stated problems.

The present invention aims to provide a future compatible, more simple, less space consuming, lighter and less costly audio priority device than the devices known from audio management system in the background art.

The object is achieved by the above mentioned audio priority device according to the characterizing portion of claim 1, i.e. that each input connector is arranged invariably assigned with a specific fixed priority level, whereby a present audio signal from an audio source that is connected to one of said input connectors is assigned the specific priority level of that input connector to which the audio source is connected.

One embodiment of the audio priority device according to the present invention comprises that the specific priority level of each input connector is assigned in the selecting means.

Another embodiment of the audio priority device according to the present invention comprises that the input connectors are arranged assigned with mutually different priority levels.

The object is also achieved by the above mentioned vehicle according to the characterizing portion of claim 11.

The object is also achieved by the above mentioned method according to the characterizing portion of claim 12, i.e. that a present audio signal from an audio source connected to an input connector is assigned a priority level corresponding to a specific priority level invariably assigned for that input connector at which the audio source is present, and that all of the audio source input connectors are assigned with mutually different priority levels.

The general idea of the present invention is to assign a priority level to an audio source signal in correspondence to the audio source connector through which the audio source is connected to the audio priority device. The priorities for the audio sources are thus set by the operation of connecting the audio source cables to a suitable audio source input connector, which simplifies changes of the priority order of the audio source signals, since no reprogramming of the device is needed when priorities need to be changed or when new audio sources are added to the system. Further, no control cables between the audio sources and the audio priority device are needed in the audio management system according to the present invention, which makes the system less space consuming, lighter, less costly and easier to troubleshoot.

In different embodiments of the present invention, the amplification of the audio signals is performed in different locations of the system. The amplification circuits may be integrated with the audio sources, with the audio priority device or with a

radio subsequent to the audio priority device. The amplification circuits may also be located in an external amplification stage subsequent of the audio priority device. These different locations of the amplifying circuitry have different advantages. Amplification within the audio sources has the advantage that amplifying circuitry already existing in the audio sources may be used. Amplification within or subsequent to the audio priority device has the advantage that low level signal cables may be used from the audio sources to the location where the amplification takes place, which makes use of more simple, smaller and less costly cables possible. Amplification within, for instance, a radio in a stage subsequent to the audio priority device has the advantage that RDS (Radio Data System) interruptions are very easily achieved.

Detailed exemplary embodiments and advantages of the device and method for prioritizing audio according to the invention will now be described with reference to the appended drawings illustrating some preferred embodiments.

Brief description of the drawings

Fig. 1 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 2 shows a schematic view of an audio priority device according to the present invention.

Fig. 3 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 4 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 5 shows an audio management system including an audio priority device according to an embodiment of the present invention.

Fig. 6 shows a flowchart corresponding to a method of an embodiment of the present invention.

Detailed description of preferred embodiments

Fig. 1 shows an audio management system including an audio priority device 100 according to an embodiment of the present invention. In the audio management system, a number of audio sources 111-115, provide audio signals to an audio priority device 100. These audio sources may include music creating systems, such as radios, CD players, mp3 players or the like; communication equipment, such as mobile telephones, communication radios or the like; multimedia equipment, such as DVD players or the like; navigation systems, such as Global Positioning Systems (GPS) or the like; and safety systems, such as Lane Departure Warning (LDW) systems or the like. In an audio management system according to the present invention, any present or future audio source may be incorporated in the system, since this is easily achieved.

Audio signals provided by the audio sources are sent to the audio priority device over audio source cables 121-125. The audio source cables are connected to audio source input connectors 101-105 of the audio priority device 100. The audio priority device 100, e.g. through a selecting means (not shown), chooses or selects which of the audio sources that should be forwarded to a sound emitting system and outputs the signal corresponding to the selected audio source on the output connector 106. The selected signal is sent to an amplifier 140 over an output cable 131 and is received at the amplifier 140 in an amplifier input connector 145. The amplifier 140 amplifies the selected signals and provides them via amplifier output connectors 141-144 and speaker cables 151-154 to speakers 161-164.

According to the present invention, the selection of audio sources to be forwarded to the sound emitting system is related to which one of the audio source input connectors 101-105 the audio source is connected to. Each one of the audio source input connectors 101-105 is assigned a specific priority level. This priority level is invariably assigned and preferably mutually different for each of the audio source input connectors 101-105, so that every audio source signal, regardless of which type

of signal, present at one of these audio source input connectors 101-105 is assigned the corresponding specific priority level as that assigned to the audio source input connector at which it is present.

The priority level assigned to an audio source signal is, according to the present invention, thus not related to the type of audio source from which it originates, as was the case in background art solutions. The priority level assigned to an audio source signal is instead only related to the specific audio source input connector 101-105 to which the audio source is connected. This means that the priorities for the audio sources are set by the operation of connecting the audio source cables 121-125 to a suitable audio source input connector 101-105. To change the priority order of the audio source signals, a simple operation of switching the corresponding audio source cable to another audio source input connectors has to be performed.

This is an improvement compared to background art solutions, since no reprogramming of the device is needed when priorities need to be changed or when new audio sources are added to the system. In background art solutions, a complex priority decision table or the like is used for deciding which audio source to select. If a new audio source is added to the background art systems or if priorities are to be changed, this priority decision table need to be altered, which means that the circuits or processors need to be reprogrammed or otherwise adjusted by a skilled person. This can be troublesome, time consuming and costly for the vehicle owner. In an audio management system according to the present invention, an unskilled person can easily switch audio source input connectors used, when priorities for the audio sources are to be changed. He may also easily connect a new audio source to a suitable audio source connector and thereby assigning the new audio source a suitable priority level.

Further, no control cables between the audio sources 111-115 and the audio priority device 100 are needed in the audio management system according to the present invention. Less cabling is an advantage, since cables are space consuming, heavy and expensive. Troubleshooting is further difficult in systems having excessive cabling.

The number of audio sources, audio source cables, audio source input connectors, audio source output connectors, output cables, amplifier input connectors, amplifier output connectors, speaker cables and speakers in the audio management system may vary. The system according to the present invention can easily be modified to any number of audio sources. The number of speakers is set by the amplifier 140 and can thus be varied in a large number of ways. The audio source cables 121-125 and output cable 131 can in this embodiment of the invention include a number of different types of cables. Single cables as well as data buses, such as CAN (Controller Area Network), MOST (Media Oriented Systems Transport), Byteflight, TTCAN (Time Triggered Controller Area Network), Flexray, LIN (Local Interconnected Network) or the like, can be used for these cables.

Further, according to this embodiment of the present invention, the amplifier 140 is common to all the audio sources. All audio sources 121-125 therefore provide low level signals. This has the advantage that the audio source cables 121-125 and the output cable 131 can be implemented using low level signal cables that are less costly, less heavy and smaller in size than high level signal cables. The solution having one common amplifier also has the advantage that a separate amplifier in each of the audio sources can be omitted, since the single amplifier handles amplification of signals from all audio sources. The common amplifier solution according to the present invention thus lowers the overall cost of the audio system.

Fig. 2 shows a schematic view of a possible implementation of an audio priority device 200. The audio priority device 200 has a number of audio source input connectors 201-205 and an output connector 206. Cables conveying audio signals from the audio sources are connected to the connectors 201-205 and are provided to a selecting means 270 on signal lines 271-275. A selection switch 276 within the selecting means 270 is then switched into a position that lets the chosen signal through to the output connector 206. The audio source input connectors 201-205 all have a fix specific priority level assigned to them. For example, the audio source input connector 201 may have been assigned the highest priority level and the audio source input connectors 202-205 may have decreasing priority levels compared to

the audio source input connector 201, such that connector 202 has a lower assigned priority level than connector 201, connector 203 has a lower assigned priority level than connector 202 and so forth.

For example, if there are signals present at both the audio source input connectors 201 and 202 then the signal present at audio source input connector 201 will be selected since the selection switch will select the signal present on the input connector having, i.e. being assigned with, the highest priority level. On the other hand, if there is no signal present at audio source input connector 201 but at audio source input connectors 202 and 203 then the signal present at audio source input connector 202 will be selected.

The schematic view of audio priority device 200 shown in fig. 2 is not meant to show all details of the audio priority device, but is more meant to illustrate a general selection process of the device. A more detailed view of the audio priority device 200 may further include signal detection circuits for detection of whether there are signals present at the audio source connectors 201-205, a control circuit for controlling the selection switch 276 and wiring carrying control signals. There are, as is clear to a skilled person, a number of ways to implement the details within the selecting means 200. The implementation may be a hardware implementation, a software implementation or any combination of the both.

Fig. 3 shows an audio management system including an audio priority device according to another embodiment of the present invention. According to this embodiment of the audio priority device, an amplifier 340 is included within the audio priority device casing 300. Otherwise, the audio priority device 300, audio sources 311-315, audio source cables 321-325, audio source input connectors 301-305, amplifier output connectors 342-345, speaker cables 351-354 and speakers 361-364 correspond to the parts in the audio management system shown in fig. 1.

According to the embodiment of the invention shown in fig. 3, the amplifier circuit 340 used for amplifying all audio signals in the audio management system is integrated with the audio priority device 300. This means that no amplification is needed within

the audio sources 311-315, which results in less costly audio resources, and that low level signal cables can be used for the audio source cables 321-325, which results in use of lighter, less costly and less space consuming audio source cables.

Fig. 4 shows an audio management system including an audio priority device according to another embodiment of the present invention. According to this embodiment of the audio priority device, amplifiers 471-475 are included within the casing of the audio sources 411-415. According to this embodiment, the audio priority device 400, audio source cables 421-425 and audio source input connectors 401-405 are designed for coping with high level audio signals being outputted from the amplifiers 471-475. The amplifier output connectors 442-445, speaker cables 451-454 and speakers 461-464 correspond to the parts in the audio management system shown in fig. 1.

This embodiment has the advantage that it uses amplifiers circuits 471-475 already present in the audio sources 411-415. The audio sources 411-415 may have amplifying circuits installed by the producer of the audio sources. If it is desirable to use these built in amplifiers, this embodiment is suitable to use.

Fig. 5 shows an audio management system including an audio priority device according to another embodiment of the present invention. According to this embodiment, it is also possible to have an audio source 546, such as a radio, with an integrated amplifier coupled after the audio priority device 500, between the audio priority device 500 and the speakers 561-564 or some of the speakers. According to this embodiment of the audio priority device, an amplifier 540 is included in the audio source 546. The audio priority device 500, audio source cables 521-525, audio source input connectors 501-505, the output connector 506, the output cable 531, the amplifier input connector 541, the amplifier output connectors 542-545, speaker cables 551-554 and speakers 561-564 correspond to the parts in the audio management system shown in fig. 1. This embodiment has the advantage that if the audio source 546 itself creates a high priority signal, it can easily output this signal. For instance, if the audio source 546 is a radio having RDS (Radio Data System) then the RDS interruptions may be easily achieved and outputted to the speakers.

As a skilled person realises, combinations of the different solutions in figs. 1, 3, 4 and 5 may be used in a combination audio management system. That is, different locations of the amplifying circuits may be advantageous for different audio sources. Some audio sources may have integrated amplifiers and for some audio sources it is more advantageous to have the amplifying circuits in a separate amplifying stage, in a subsequent radio or integrated in the audio priority device.

Fig. 6 shows a flowchart corresponding to a method of an embodiment of the present invention. In a first step of the method, an audio priority device receives signals from one or more audio sources being connected to input connectors of the audio priority device. In a second step of the method, the audio signal having the highest priority level received at said input connectors is selected. The priority level of each audio signal is set by a fix priority level specific for the input connector to which it is connected. In a third step of the method, the selected audio signal is outputted to at least one output connector of the audio priority device.

The device and method for prioritizing audio according to the invention may be modified by those skilled in the art, as compared to the exemplary embodiments described above.

As is obvious for a skilled person, a number of other implementations, modifications, variations and/or additions can be made to the above described exemplary embodiments. It is to be understood that the invention includes all such other implementations, modifications, variations and/or additions which fall within the scope of the claims.

Claims

1. An audio priority device for use in a vehicle, including
- a plurality of audio source input connectors,
- at least one output connector connectable to a sound emitting system, and
- a selecting means arranged to select the audio signal with the highest priority level provided at said input connectors and further arranged to output the selected audio signal to said at least one output connector,
characterized in that each input connector is arranged invariably assigned with a specific priority level, whereby a present audio signal from an audio source that is connected to one of said input connectors is assigned the specific priority level of that input connector to which the audio source is connected.

2. Audio priority device as claimed in claim 1, wherein said audio priority device is arranged for receiving low level audio signals from said audio sources.

3. Audio priority device as claimed in claim 2, wherein said audio priority device includes an amplifier, located before said at least one output connector, amplifying audio signals outputted from the device.

4. Audio priority device as claimed in claim 2, wherein said at least one output connector is connected to an amplifying stage, external from the audio priority device.

5. Audio priority device as claimed in claim 2, wherein said at least one output connector is connected to a radio including an amplifying stage.

6. Audio priority device as claimed in claim 1, wherein said audio priority device is arranged for receiving high level audio signals from said audio sources.

7. Audio priority device as claimed in claim 1, wherein said sound emitting system is a loud speaker system.

8. Audio priority device as claimed in claim 1, wherein said audio sources include at least one of the following audio sources in the group: radio, CD player, mp3 player, mobile telephone, DVD player, navigation system, Lane Departure Warning (LDW) system.

9. Audio priority device as claimed in claim 1, wherein the specific priority level of each input connector is assigned in said selecting means.

10. Audio priority device as claimed in any one of claims 1-9, wherein said input connectors are arranged assigned with mutually different priority levels.

11. A vehicle **characterized in** that it includes an audio priority device as the one claimed in any one of claims 1-10.

12. Method for prioritizing audio in a vehicle, including the steps of:
- receiving, in an audio priority device, signals from one or more audio sources, said audio sources each being connected to a respective input connector of said audio priority device
- selecting the audio signal with the highest priority level received at said input connectors,
- outputting the selected audio signal to at least one output connector of said audio priority device,
characterized in that an audio signal present at one of said input connectors is assigned a priority level corresponding to a specific priority level invariably assigned to that input connector at which the audio source is present, and that all of said audio source input connectors are assigned with mutually different priority levels.

13. Method as claimed in claim 12, wherein a priority level assigned to an audio source is changed by switching said audio source to another input connector.

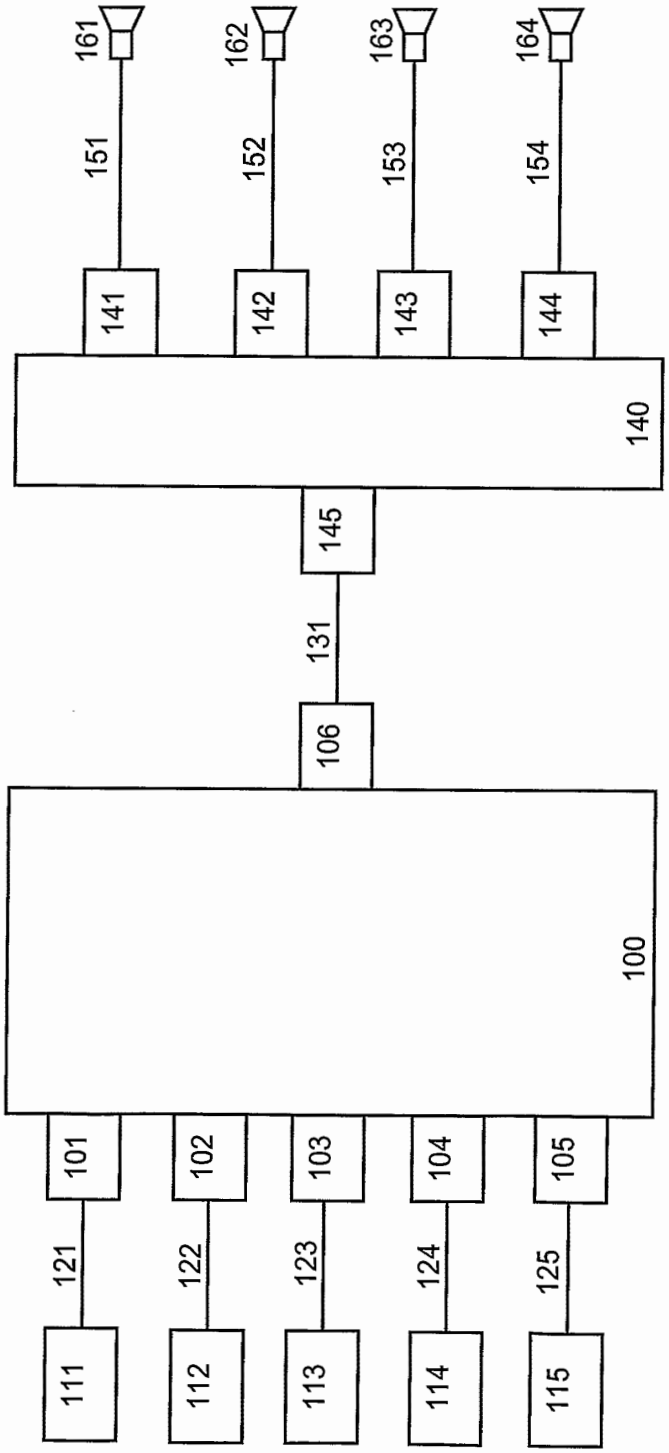

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Fig. 1

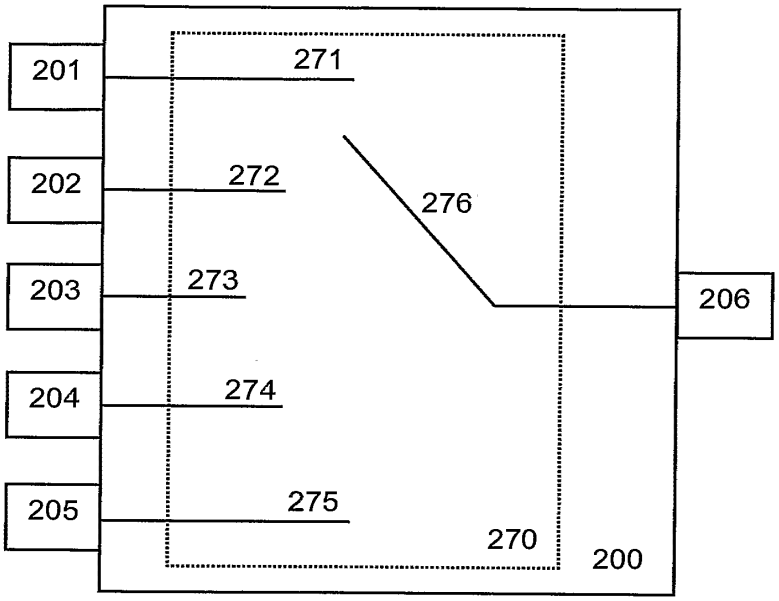


Fig. 2

SUBSTITUTE SHEET (RULE 26)

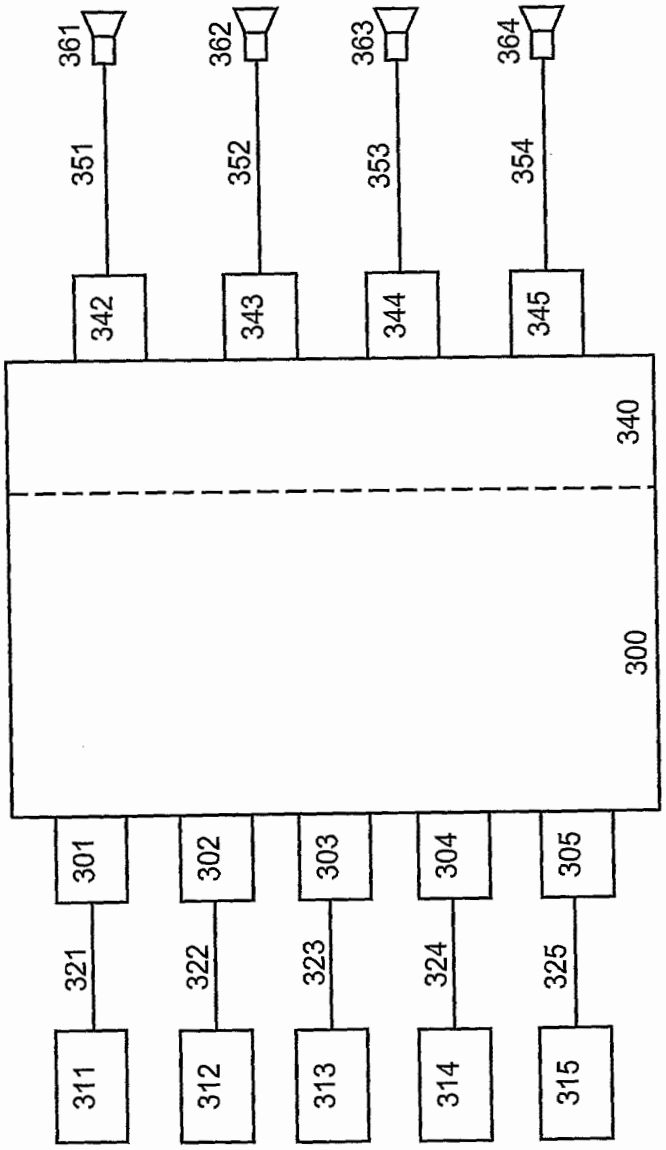

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Fig. 3

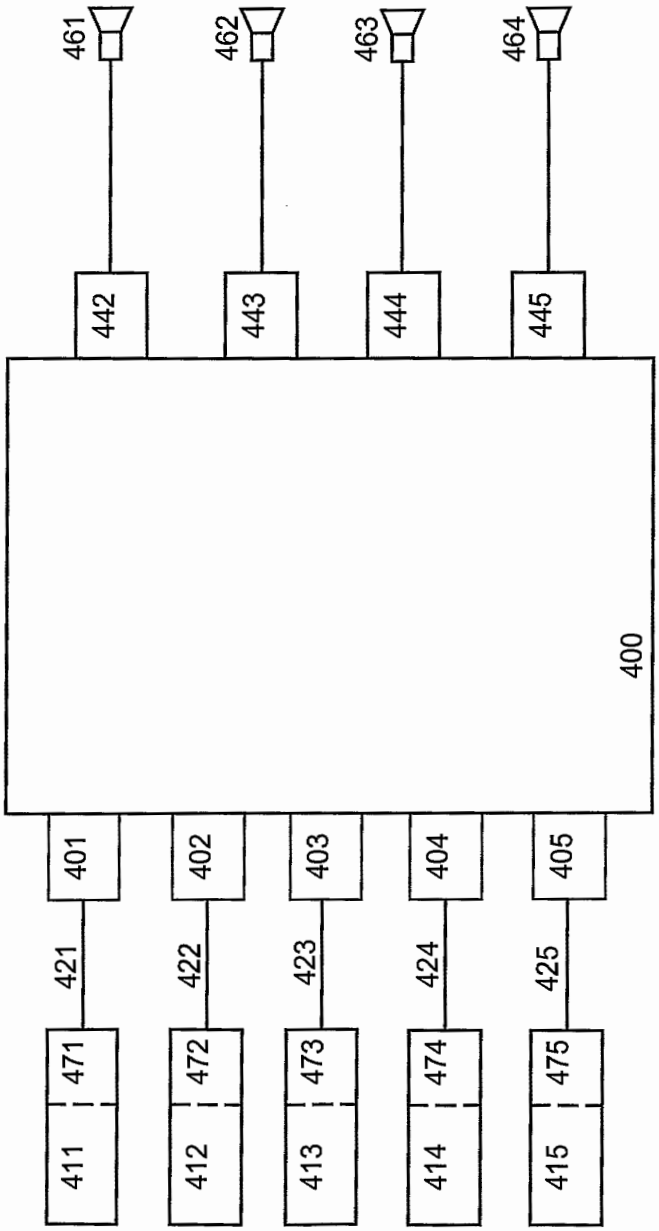

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Fig. 4

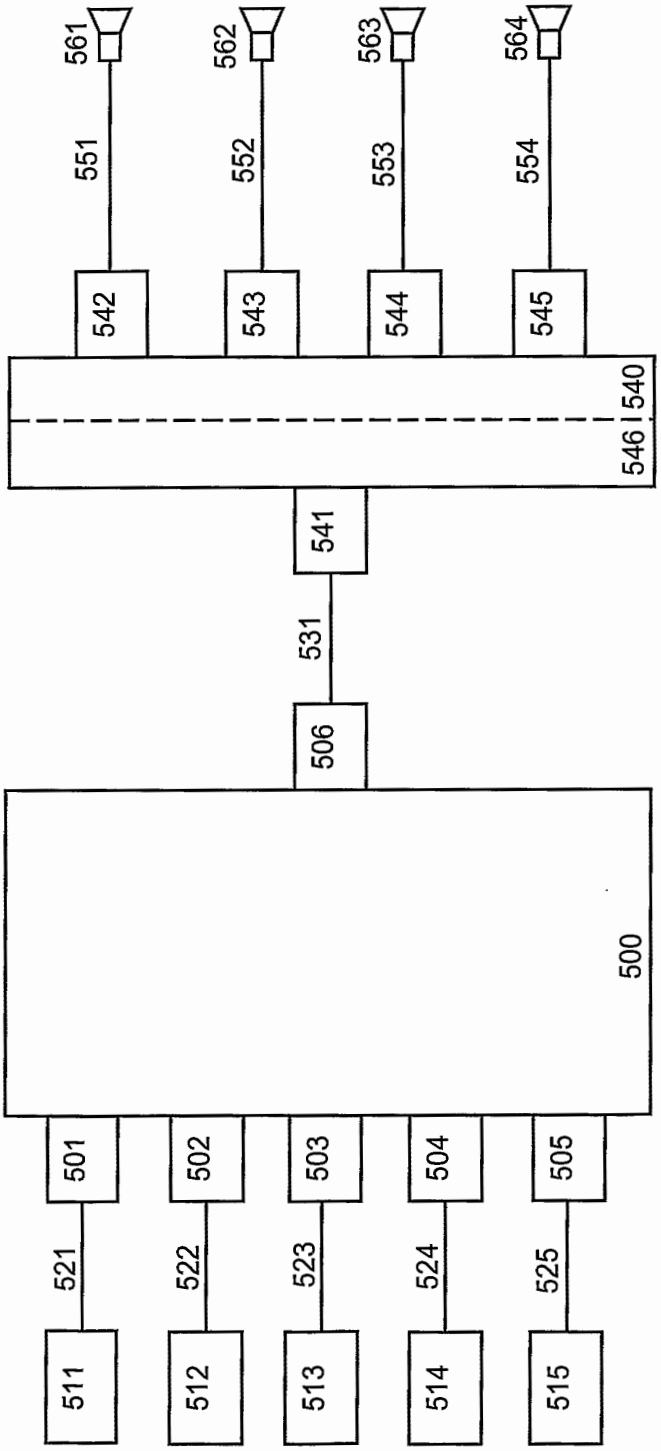

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Fig. 5

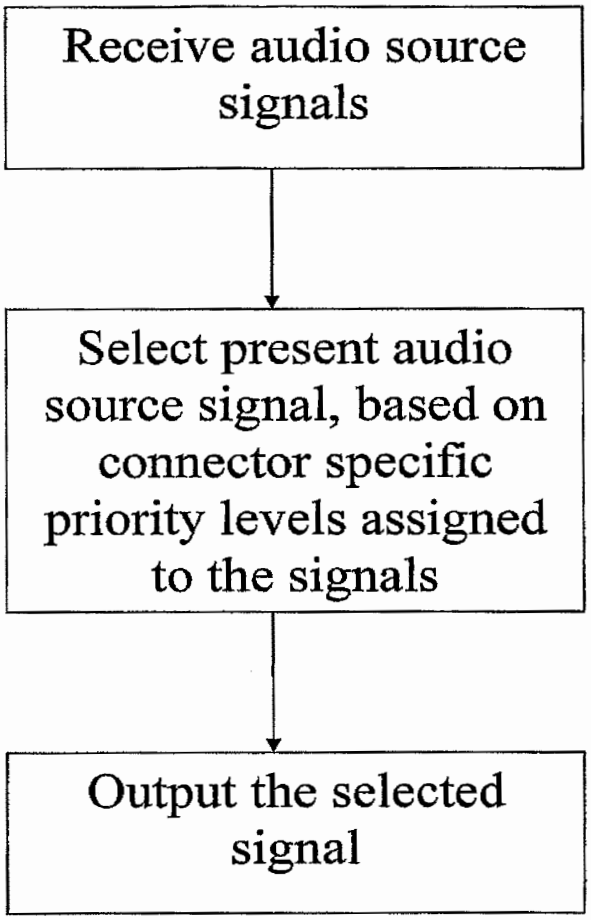

Receive audio source signals
Select present audio source signal, based on connector specific priority levels assigned to the signals
Output the selected signal

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2007/051047

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: B60R, G06F, G08G, H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1460769 A1 (PHONAK COMMUNICATIONS AG), 22 Sept 2004 (22.09.2004), paragraphs [0007]-[0009], [0026], [0036], [0038]	1-13
A	US 5774016 A (KETTERER, E R), 30 June 1998 (30.06.1998), column 3, line 66 - column 4, line 32, claim 3	1-13
A	WO 2005055046 A1 (VOLVO TECHNOLOGY CORPORATION), 16 June 2005 (16.06.2005), the whole document	1-13
A	US 6052471 A (VAN RYZIN, J M), 18 April 2000 (18.04.2000), column 2, line 2 - line 63	1-13

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
1 April 2008	03 -04- 2008
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Bo Gustavsson/CC Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (April 2007)

International patent classification (IPC)
H04B 1/20 (2006.01)
B60R 16/02 (2006.01)

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- In English/Searches and advisory services/Cited documents (service in English) or
- e-tjänster/anförda dokument (service in Swedish).

Use the application number as username.
The password is **OAACCGCPWJ**.

Paper copies can be ordered at a cost of 50 SEK per copy from PRV InterPat (telephone number 08-782 28 85).

Cited literature, if any, will be enclosed in paper form.

EP	1460769	A1	22/09/2004	DE	60312952	D,T	13/12/2007
				US	7062223	B	13/06/2006
				US	20040185773	A	23/09/2004
US	5774016	A	30/06/1998	NONE			
WO	2005055046	A1	16/06/2005	AU	2003283906	A	08/06/2005
				BR	PI0416839	A	13/02/2007
				EP	1706815	A	04/10/2006
				JP	2007511414	T	10/05/2007
				SE	0301833	D	00/00/0000
				US	20060287787	A	21/12/2006
				CN	1882909	A	20/12/2006
				SE	0303122	D	00/00/0000
				WO	2005050522	A	02/06/2005
US	6052471	A	18/04/2000	AU	2662899	A	30/08/1999
				WO	9940907	A	19/08/1999

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/864,249	04/17/2013	Nicholas A. J. Millington	13-0402 (MBHB 15-518-CON)	9806

107361 7590 09/30/2016

McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606

EXAMINER	
SURVILLO, OLEG	

ART UNIT	PAPER NUMBER
2442	

MAIL DATE	DELIVERY MODE
09/30/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 13/864,249	Applicant(s) MILLINGTON, NICHOLAS A. J.	
	Examiner OLEG SURVILLO	Art Unit 2442	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *April 17, 2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *21-40* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *21-40* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *April 17, 2013* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *See Continuation Sheet*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Continuation of Attachment(s) 2). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :05/08/2013; 03/04/2014; 04/15/2014; 05/23/2014; 07/07/2014; 08/14/2014; 12/10/2014; 01/21/2015; 03/20/2015; 04/23/2015; 05/31/2015; 07/10/2015; 08/22/2015; 10/09/2015; 11/23/2015; 12/29/2015; 02/11/2016; 03/18/2016; 05/20/2016; 07/07/2016.

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Response to Preliminary Amendment

1. Claims 21-40 are pending in the application. No claims are currently amended. Claims 1-20 have been canceled. Claims 21-40 are new.

Response to Arguments

2. With regard to Applicant's remarks dated April 17, 2013:

Preliminary amendment has been fully considered and is entered.

Amendment to the specification, abstract, and claims has been fully considered and is entered.

3. With regard to Applicant's remarks dated August 22, 2013:

Preliminary amendment has been fully considered and is entered.

Amendment to the title of the invention has been fully considered and is entered.

4. With regard to Applicant's remarks dated November 1, 2013:

Preliminary amendment has been fully considered and is entered.

Amendment to the specification has been fully considered and is entered.

Claim Objections

5. Claim 33 is objected to because of the following informalities: claim appears to have a typo in claim dependency. Claim states that it depends on claim 9. For the purposes of examination claim 33 is treated as depending on claim 29. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 29-36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As to claim 29, use of the word “system” does not inherently mean that the claim is directed to a machine. A claim that includes terms that imply that the invention is directed to a product, for instance by reciting “a first zone player” and “a second zone player”, but fails to include tangible limitations in accordance with its broadest reasonable interpretation is not limited to a practical application, but rather wholly embraces or encompasses the concept upon which the invention is based. This is impermissible as such claim coverage would extend to every way of applying the abstract idea, law of nature or natural phenomenon (i.e. non-statutory implementations).

In the instant case, only if at least one of the clamed elements of the system is a physical part of the system can the system as claimed be a machine within the meaning of 35 U.S.C. 101. The instant claim fails to identify any of such hardware elements of

the system that would make it a machine within the meaning of 35 U.S.C. 101. In particular, “a zone player” is broad enough to be implemented as software per se.

Claims 30-36 fail to correct the deficiency of claim 29 and thus are rejected for analogous reasons.

Claim Rejections - 35 USC § 103

The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 21-40 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Goldberg et al. (US 2007/0142944 A1) in view of Giaimo et al. (US 2005/0159833 A1).

As to claim 21, Goldberg teaches in a network comprising a plurality of synchrony groups (Fig. 9A, 9B), including at least a first synchrony group [cluster 700] and a second synchrony group [sub-cluster 701], wherein a first zone player [broadcast unit 710] is a member of the first synchrony group and a second zone player is a member of the second synchrony group [broadcast receive unit 770] (par. [0254]-[0257]), a method comprising:

transmitting, by the first zone player while the first zone player is playing a first audio information, the first audio information to the second zone player (par. [0145], [0339]); and

playing, by the second synchrony group, the first audio information while the first synchrony group is playing the first audio information (par. [0188]).

While Goldberg teaches different channels of communication can be established between different synchrony groups (Fig. 33, par. [0263]-[0266]), Goldberg fails to clearly show that a second (different) information is transmitted to the second zone player as comparing to the information that is transmitted to members of the first synchrony group.

Giaimo teaches having two different and separate audio data streams that are processed by the same device [first zone player] and output through separate sound transducers (abstract). In particular, Giaimo teaches transmitting, by a first player while the first player is playing a first audio information [while playing game sounds over the speaker], a second audio information to the second player [transmitting audio data from a chat session to headphones] (par. [0006], [0010]); and playing, by the second player [headset], the second audio information [chat audio data] while the first player is playing the first audio information [game audio] (par. [0030]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method and system of Goldberg, particularly disclosed in Figure 33 of Goldberg by having broadcast unit 710 broadcast a first audio information over the channel A and a second audio information over a channel B according to teachings of Giaimo in order to allow different output devices (different receive units 730 belonging to different cluster/sub-cluster in Goldberg) to output different audio information such that

the use can experience both the first and second audio information with minimal interference (par. [0006] in Giaimo).

As to claim 22, Goldberg in view of Giaimo teaches transmitting, by the first zone player, the second audio information to a third zone player, wherein the third zone player is a member of the second synchrony group [in Goldberg the broadcast unit 710 communicates with multiple receive units 730 that are part of sub-cluster 701] (Fig. 33, par. [0263]-[0266] in Goldberg).

As to claim 23, Goldberg in view of Giaimo teaches transmitting, by the first zone player, playback timing information to the second zone player and the third zone player (step 1902, Fig. 34A, par. [0200]-[0202] in Goldberg).

As to claim 24, Goldberg in view of Giaimo teaches that playing, by the second synchrony group, the second audio information comprises utilizing, by the second zone player and the third zone player, the playback timing information to synchronously playback the second audio information (par. [0188], [0200]-[0202] in Goldberg).

As to claim 25, Goldberg in view of Giaimo teaches receiving, at the first zone player, the first audio information and playback timing information from a fourth zone

player; wherein the fourth zone player is a member of the first synchrony group (par. [0267] in Goldberg).

As to claim 26, Goldberg in view of Giaimo teaches utilizing, at the first zone player, the playback timing information received from the fourth zone player to synchronously playback the first audio information with the fourth zone player (par. [0188], [0200]-[0202] in Goldberg).

As to claim 27, Goldberg in view of Giaimo teaches receiving, at the first zone player, the second audio information from an audio information source, wherein the audio information source is directly connected to the first zone player (Fig. 25 in Goldberg; par. [0008] in Giaimo).

As to claim 28, Goldberg in view of Giaimo teaches that the second audio information is received at the first zone player as analog audio, and wherein the first player converts the second audio information from analog to digital prior to transmission to the second zone player (par. [0136] in Goldberg).

As to claim 29, Goldberg in view of Giaimo teaches a system comprising a first synchrony group [cluster 700 in Goldberg] and a second synchrony group [sub-cluster 701 in Goldberg], wherein a first zone player [broadcast unit 710 in Goldberg] is a member of the first synchrony group; a second zone player [receive unit 730 of sub-

cluster 710 or broadcast receive unit 770 in Goldberg] is a member of the second synchrony group; the first synchrony group is arranged to play first audio information (par. [0188]); the first zone player is arranged to transmit a second audio information to the second zone player, wherein the second audio information is different from the first audio information; and the second synchrony group is arranged to play the second audio information while the first synchrony group is playing the first audio information, as discussed per claim 21 above.

As to claims 30-36, Goldberg in view of Giaimo teaches all the elements as discussed per corresponding method claims 22-28.

As to claim 37, Goldberg in view of Giaimo teaches a tangible computer-readable memory having instructions stored thereon [inventions of Goldberg and Giaimo are computer implemented] that when executed cause a first zone player to perform the method steps as discussed per claim 21 above.

As to claims 38-40, Goldberg in view of Giaimo teaches all the elements as discussed per corresponding method claims 23, 27, and 28.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLEG SURVILLO whose telephone number is

(571)272-9691. The examiner can normally be reached on Mon-Thu 10:00am - 7:30pm; Fri 10:00am - 6:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton B. Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/OLEG SURVILLO/
Primary Examiner, Art Unit 2442

Notice of References Cited	Application/Control No. 13/864,249	Applicant(s)/Patent Under Reexamination MILLINGTON, NICHOLAS A.	
	Examiner OLEG SURVILLO	Art Unit 2442	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-2005/0159833 A1	07-2005	Giaimo, Edward C.	A63F13/12	700/94
*	B	US-2004/0044742 A1	03-2004	Evron, Roni	G06F17/30017	709/217
*	C	US-2003/0008616 A1	01-2003	Anderson, Lelan S.	H04B1/1646	455/45
*	D	US-2005/0262217 A1	11-2005	Nonaka, Masao	H04N7/17318	709/217
*	E	US-2005/0105052 A1	05-2005	McCormick, Tom	G03B31/02	352/40
	F	US-				
	G	US-				
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FOREIGN PATENT DOCUMENTS

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	O					
	P					
	Q					
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NON-PATENT DOCUMENTS

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
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Application Number	13864249
Filing Date	04-17-2013
First Named Inventor	NICHOLAS; A. J. Millington
Art Unit	2442
Examiner Name	SURVILLO, OLEG
Attorney Docket Number	13-0402 (MBHB 15-518-CON)

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	1	6816818		2004-11-09	WOLF; Michael Jaochim. et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030018797		2003-01-23	DUNNING; Ted E. et al.	
	2	20030067437		2003-04-10	MCCLINTOCK; Dale Thomas et al.	
	3	20040213230		2004-10-28	DOUSKALIS; William et al.	
	4	20040228367		2004-11-18	MOSIG; Rudiger et al.	
	5	20130018960		2013-01-17	KNYSZ; Matthew S. et al.	

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	6	20040208158		2004-10-21	FELLMAN; Ronald D. et al.	
	7	20020114354		2002-08-22	SINHA; Pranesh. et al.	
	8	20020080783		2002-06-27	FUJIMORI; Junichi	

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	1	"Advisory Action mailed on 25 March 2015, issued in connection with U.S. Patent Application No. 13/533105, filed 26 June 2012, 5 pages.".	☐
	2	"Final Office Action mailed on 26 March 2015, issued in connection with U.S. Patent Application No. 14/184528, filed on 19 February 2014, 18 pages".	☐
	3	"Final Office Action mailed on 4 March 2015, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 16 pages.".	☐

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	4	"Final Office Action mailed on 5 March 2015, issued in connection with U.S. Patent Application No. 13/888203, filed on 6 May 2013, 13 pages.".	☐
	5	"Final Office Action mailed on 9 March 2015, issued in connection with U.S. Patent Application No. 14/516867, filed on 17 October 2014, 14 pages.".	☐
	6	"Non-Final Office Action mailed on 12 March 2015, issued in connection with U.S. Patent Application No. 13/705174, filed 5 December 2012, 13 pages.".	☐
	7	"Non-Final Office Action mailed on 13 March 2015, issued in connection with U.S. Patent Application No. 13/705177, filed 5 December 2012, 15 pages.".	☐
	8	"Non-Final Office Action mailed on 27 March 2015, issued in connection with U.S. Patent Application No. 13/705178, filed 5 December 2012, 14 pages.".	☐
	9	"Non-Final Office Action mailed on 4 March 2015, issued in connection with U.S. Patent Application No. 13/435776, filed on 30 March 2012, 16 pages.".	☐
	10	"Pre-Interview First Office Action mailed on 10 March 2015, issued in connection with U.S. Patent Application No. 14/505027, filed on 2 October 2014, 4 pages.".	☐
	11	"Advisory Action mailed on 15 April 2015, issued in connection with U.S. Patent Application No. 14/184526, filed on 19 February 2014, 9 pages.".	☐
	12	"Advisory Action mailed on 15 April 2015, issued in connection with U.S. Patent Application No. 14/184935, filed on 20 February 2014, 9 pages.".	☐

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	Filing Date	2013-04-17
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	Art Unit	2484
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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4296278		1981-10-20	CULLISON; Steven B. et al.	
	2	4816989		1989-03-28	FINN; Alan M. et al.	
	3	5182552		1993-01-26	PAYNTING; Richard J.	
	4	5406634		1995-04-11	ANDERSON; Charles W. et al.	
	5	5440644		1995-08-08	FARINELLI; Robert et al.	
	6	5467342		1995-11-14	LOGSTON; Gary L. et al.	
	7	5491839		1996-02-13	SCHOTZ; Larry	
	8	5553222		1996-09-03	MILNE; Steve H. et al.	

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	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	9	5668884		1997-09-16	CLAIR; Jr. Roy Barry et al.	
	10	5673323		1997-09-30	SCHOTZ; Larry et al.	
	11	5815689		1998-09-29	SHAW; George H. J. et al.	
	12	5867691		1999-02-02	SHIRAISHI; Hajime	
	13	5875354		1999-02-23	CHARLTON; Paul et al.	
	14	5887143		1999-03-23	SAITO; Masahiko et al.	
	15	5946343		1999-08-31	SCHOTZ; Larry et al.	
	16	6009457		1999-12-28	MOLLER; Matthew Donaldson	
	17	6026150		2000-02-15	FRANK; Edward H. et al.	
	18	6031818		2000-02-29	LO; W. Steven et al.	
	19	6128318		2000-10-03	SATO; Takashi	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.S./

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	20	6157957		2000-12-05	BERTHAUD; Jean-Marc	
	21	6175872		2001-01-16	NEUMANN; Eric K. et al.	
	22	6185737		2001-02-06	NORTHCUTT; J. Duane et al.	
	23	6195436		2001-02-27	SCIBORA; Marco et al.	
	24	6199169		2001-03-06	VOTH; Duane J.	
	25	6256554		2001-07-03	DILORENZO; Mark	
	26	6308207		2001-10-23	TSENG; Weinan William et al.	
	27	6324586		2001-11-27	JOHNSON; Aric R.	
	28	6332147		2001-12-18	MORAN; Thomas P. et al.	
	29	6351821		2002-02-26	VOTH; Duane J.	
	30	6430353		2002-08-06	HONDA; Susumu et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.S./

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	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	31	6487296		2002-11-26	ALLEN; Steven W. et al.	
	32	6526325		2003-02-25	SUSSMAN; Robert et al.	
	33	6587127		2003-07-01	LEEKE; Steven D. et al.	
	34	6598172		2003-07-22	VANDEUSEN; Mark P. et al.	
	35	6611537		2003-08-26	EDENS; Glenn T. et al.	
	36	6631410		2003-10-07	KOWALSKI; John Michael et al.	
	37	6674803		2004-01-06	KESSELRING; William David	
	38	6757517		2004-06-29	CHANG; Chin-Chi	
	39	6778869		2004-08-17	CHAMPION; Mark	
	40	6826283		2004-11-30	WHEELER; Thomas M. et al.	
	41	6836788		2004-12-28	KIM; Sang-Gil et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.S./

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	42	6898642		2005-05-24	CHAFLE; Girish Bhimrao et al.	
	43	6912610		2005-06-28	SPENCER; Thomas Vincent	
	44	6920373		2005-07-19	XI; Ning et al.	
	45	6934766		2005-08-23	RUSSELL; Paul J.	
	46	6985694		2006-01-10	DE; Bonet Jeremy S. et al.	
	47	7007106		2006-02-28	FLOOD; Mark et al.	
	48	7020791		2006-03-28	AWEYA; James et al.	
	49	7043651		2006-05-09	AWEYA; James et al.	
	50	7047308		2006-05-16	DESHPANDE; Sachin G.	
	51	7115017		2006-10-03	LAURSEN; Thomas et al.	
	52	7130608		2006-10-31	HOLLSTROM; Magnus et al.	

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.S./

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	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	53	7162315		2007-01-09	GILBERT; Erik J.	
	54	7185090		2007-02-27	KOWALSKI; John Michael et al.	
	55	7187947		2007-03-06	WHITE; Russell W. et al.	
	56	7206367		2007-04-17	MOORE; Daniel L.	
	57	7209795		2007-04-24	SULLIVAN; Gary E. et al.	
	58	7312785		2007-12-25	TSUK; Robert W. et al.	
	59	7324857		2008-01-29	GODDARD; Mark D.	
	60	7333519		2008-02-19	SULLIVAN; Gary E. et al.	
	61	7372846		2008-05-13	ZWACK; Eduard	
	62	7392102		2008-06-24	SULLIVAN; Gary E. et al.	
	63	7643894		2010-01-05	BRAITHWAITE; Michael et al.	

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	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	64	7675943		2010-03-09	MOSIG; Rudiger et al.	
	65	7720096		2010-05-18	KLEMETS; Anders E.	
	66	7742740		2010-06-22	GOLDBERG; David et al.	
	67	7934239		2011-04-26	DAGMAN; Vadim	
	68	8014423		2011-09-06	THALER; Thomas et al.	
	69	8045952		2011-10-25	QURESHEY; Safi et al.	
	70	8050652		2011-11-01	QURESHEY; Safi et al.	
	71	8074253		2011-12-06	NATHAN; Guy	
	72	8086752		2011-12-27	MILLINGTON; Nicholas A.J. et al.	
	73	8103009		2012-01-24	MCCARTY; William A. et al.	
	74	8131390		2012-03-06	BRAITHWAITE; Michael et al.	

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	75	8234395		2012-07-31	MILLINGTON; Nicholas A.J.	
	76	8370678		2013-02-05	MILLINGTON; Nicholas A. J. et al.	
	77	8423659		2013-04-16	MILLINGTON; Nicholas A. J.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20010009604		2001-07-26	ANDO; Hideo et al.	
	2	20010022823		2001-09-20	RENAUD; Pierre	
	3	20010032188		2001-10-18	MIYABE; Yoshiyuki et al.	
	4	20020002039		2002-01-03	QURESHEY; Safi et al.	
	5	20020002562		2002-01-03	MORAN; Thomas P. et al.	
	6	20020034374		2002-03-21	BARTON; James M.	

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	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	7	20020042844		2002-04-11	CHIAZZESE; Giovanni	
	8	20020065926		2002-05-30	HACKNEY; Michael L.J. et al.	
	9	20020073228		2002-06-13	COGNET; Yves et al.	
	10	20020090914		2002-07-11	KANG; Hyun-Sook et al.	
	11	20020093478		2002-07-18	YEH; Chun Lin	
	12	20020112244		2002-08-15	LIOU; Shih-Ping et al.	
	13	20020129156		2002-09-12	YOSHIKAWA; Masato	
	14	20020143998		2002-10-03	RAJAGOPAL; Priya et al.	
	15	20020163361		2002-11-07	PARKIN; Michael W.	
	16	20020165921		2002-11-07	SAPIEYEVSKI; Jerzy	
	17	20030023741		2003-01-30	TOMASSETTI; Stephen Robert et al.	

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	18	20030035444		2003-02-20	ZWACK; Eduard	
	19	20030041173		2003-02-27	HOYLE; Stephen L.	
	20	20030041174		2003-02-27	WEN; Sayling et al.	
	21	20030066094		2003-04-03	VAN; Der Schaar Auke Sjoerd et al.	
	22	20030099212		2003-05-29	ANJUM; Farooq et al.	
	23	20030099221		2003-05-29	RHEE; Sokwoo	
	24	20030126211		2003-07-03	ANTTILA; Akseli et al.	
	25	20030195964		2003-10-16	MANE; Pravin D.	
	26	20030198257		2003-10-23	SULLIVAN; Gary E. et al.	
	27	20030210796		2003-11-13	MCCARTY; William A. et al.	
	28	20030231871		2003-12-18	USHIMARU; Chikara	

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	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	29	20040001484		2004-01-01	OZGUNER; Tolga	
	30	20040001591		2004-01-01	MANI; Murali et al.	
	31	20040024925		2004-02-05	CYPHER; Robert E. et al.	
	32	20040027166		2004-02-12	MANGUM; Wayne G. et al.	
	33	20040170383		2004-09-02	MAZUR; Leszek	
	34	20040203378		2004-10-14	POWERS; Simon	
	35	20040249965		2004-12-09	HUGGINS; Guy Dwayne et al.	
	36	20040249982		2004-12-09	ARNOLD; Johann et al.	
	37	20040252400		2004-12-16	BLANK; William Thomas et al.	
	38	20050010691		2005-01-13	OYADOMARI; Randy et al.	
	39	20050013394		2005-01-20	RAUSCH; Mathias et al.	

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	40	20050058149		2005-03-17	HOWE; Wayne Richard	
	41	20050081213		2005-04-14	SUZUOKI; Masakazu et al.	
	42	20050114538		2005-05-26	ROSE; Steven W.	
	43	20050177643		2005-08-11	XU; Shugong	
	44	20050281255		2005-12-22	DAVIES; Trevor et al.	
	45	20050283820		2005-12-22	RICHARDS; Martin J. et al.	
	46	20050288805		2005-12-29	MOORE; Jeffrey C. et al.	
	47	20070038999		2007-02-15	MILLINGTON; Nicholas A.J. et al.	
	48	20070054680		2007-03-08	MO; Shaomin S. et al.	
	49	20070142944		2007-06-21	GOLDBERG; David et al.	
	50	20070271388		2007-11-22	BOWRA; Todd et al.	

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	51	20080120429		2008-05-22	MILLINGTON; Nicholas A.J. et al.	
	52	20090157905		2009-06-18	DAVIS; Bradford C.	
	53	20090228919		2009-09-10	ZOTT; Joseph A. et al.	
	54	20120029671		2012-02-02	MILLINGTON; Nicholas A. J. et al.	

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	1	0251584	EP	A2	1988-01-07	NORTHERN TELECOM LTD [CA]		☐
	2	0672985	EP	A1	1995-09-20	IBM [US]		☐
	3	1111527	EP	A2	2001-06-27	TOSHIBA KK [JP]		☐
	4	9525313	WO	A1	1995-09-21	IBM [US], et al.		☐
	5	9961985	WO	A1	1999-12-02	DOW CHEMICAL CO [US]		☐

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	1	AKYILDIZ I.F., et al., "Multimedia Group Synchronization Protocols for Integrated Services Networks," IEEE Journal on Selected Areas in Communications, 1996, Vol. 14 (1), pp. 162-173.	☐
	2	BENSLIMANE A., "A Multimedia Synchronization Protocol for Multicast Groups," Proceedings of the 26th Euromicro Conference, 2000, Vol. 1, pp. 456-463.	☐
	3	BIERSACK E., et al., "Intra- and Inter-Stream Synchronisation for Stored Multimedia Streams," IEEE International Conference on Multimedia Computing and Systems, 1996, pp. 372-381.	☐
	4	BRETL W.E., et al., MPEG2 Tutorial [online], 2000 [retrieved on 2009-01-13] Retrieved from the Internet:< http://www.bretl.com/mpeghtml/MPEGindex.htm>, pp. 1-23.	☐
	5	Final Office Action mailed 13 July 2009 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	6	Final Office Action mailed 21 October 2011 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	7	Final Office Action mailed 28 January 2011 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	8	Final Office Action mailed 30 June 2008 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	9	HUANG C.M., et al., "A Synchronization Infrastructure for Multicast Multimedia at the Presentation Layer," IEEE Transactions on Consumer Electronics, 1997, Vol. 43 (3), pp. 370-380.	☐

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	Nicholas A. J. Millington
	Art Unit	2484
	Examiner Name	TBD
	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	10	International Search Report for Application No. PCT/US04/23102, mailed on 01 August 2008, 5 pages.	☐
	11	ISHIBASHI Y., "A Group Synchronization Mechanism for Live Media in Multicast Communications," IEEE Global Telecommunications Conference, 1997, Vol. 2, pp. 746-752.	☐
	12	ISHIBASHI Y., "A Group Synchronization Mechanism for Stored Media in Multicast Communications," IEEE Information Revolution and Communications, 1997, Vol. 2, pp. 692-700.	☐
	13	JO J., et al., "Synchronized One-to-many Media Streaming with Adaptive Playout Control," Proceedings of SPIE, 2002, Vol. 4861, pp. 71-82.	☐
	14	MILLS D.L., "Network Time Protocol (Version 3) Specification, Implementation and Analysis," Network Working Group, March 1992, <http://www.ietf.org/rfc/rfc1305.txt>.	☐
	15	MILLS D.L., "Precision Synchronization of Computer Network Clocks," ACM SIGCOMM Computer Communication Review, 1994, Vol. 24 (2), pp. 28-43.	☐
	16	MOTOROLA., "Simplefi, Wireless Digital Audio Receiver, Installation and User Guide", 2001-12-31.	☐
	17	Non-Final Office Action mailed 18 January 2008 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	18	Non-Final Office Action mailed 21 June 2011 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	19	Non-Final Office Action mailed 22 January 2009 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	20	Non-Final Office Action mailed 25 June 2010 for U.S. Application No. 10/816217 filed 01 April 2004.	☐

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	21	Non-Final Office Action mailed 29 February 2012 for U.S. Application No. 13/297000 filed 15 November 2011.	☐
	22	Notice of Allowance mailed 27 December 2011 for U.S. Application No. 10/816217 filed 01 April 2004.	☐
	23	PARK S., et al., "Group Synchronization in MultiCast Media Communications," Proceedings of the 5th Research on Multicast Technology Workshop, 2003.	☐
	24	PRISMIQ; Inc., "PRISMIQ Media Player User Guide", 2003, 44 pages.	☐
	25	ROTHERMEL K., et al., "An Adaptive Stream Synchronization Protocol," 5th International Workshop on Network and Operating System Support for Digital Audio and Video, 1995.	☐
	26	SCHULZRINNE H., et al., "RTP: A Transport Protocol for Real-Time Applications, RFC 3550," Network Working Group, 2003, pp. 1-89.	☐
	27	The MPEG-2 Transport Stream. Retrieved from the Internet:< URL: http://www.coolstf.com/mpeg/#ts>. ; retrieved on 08/24/2006	☐
	28	Final Office Action mailed 13 September 2012 for U.S. Application No. 13/297000", 2012-09-13, 17 pages.	☐
	29	"UPnP; "Universal Plug and Play Device Architecture"; 08 June 2000; version 1.0; Microsoft Corporation; pp 1-54".	☐
	30	VOYETRA; Turtle Beach Inc., "AudioTron Quick Start Guide, Version 1.0", March, 2001, 24 pages.	☐
	31	VOYETRA; Turtle Beach Inc., "AudioTron Reference Manual, Version 3.0", May 2002, 70 pages.	☐

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	32	VOYETRA; Turtle Beach Inc., "AudioTron Setup Guide, Version 3.0", May 2002, 38 pages.	☐

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	1	RE41608		2010-08-31	BLAIR; Christopher Douglas et al.	
	2	6122668		2000-09-19	TENG; Peter Y. et al.	
	3	6449653		2002-09-10	KLEMETS; Anders Edgar et al.	
	4	6823225		2004-11-23	SASS; Jonathan	
	5	7068596		2006-06-27	MOU; Hensen	
	6	7313593		2007-12-25	PULITO; Brian et al.	
	7	7702403		2010-04-20	GLADWIN; Stephen Christopher et al.	
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	1	20010047377		2001-11-29	SINCAGLIA; Nicholas William et al.	
	2	20020159596		2002-10-31	DURAND; Julian et al.	
	3	20020165721		2002-11-07	CHANG; Kenneth H.P. et al.	
	4	20030219007		2003-11-27	BARRACK; Craig et al.	
	5	20040012620		2004-01-22	BUHLER; Rene et al.	
	6	20040048569		2004-03-11	KAWAMURA; Harumi	
	7	20040080671		2004-04-29	SIEMENS; Duane et al.	
	8	20040224638		2004-11-11	FADELL; Anthony M. et al.	
	9	20050015551		2005-01-20	EAMES; Russell Mark et al.	
	10	20050131558		2005-06-16	BRAITHWAITE; Michael et al.	

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	11	20050166135		2005-07-28	BURKE; David G. et al.	
	12	20060193454		2006-08-31	ABOU-CHAKRA RABIH . et al.	

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	1	"Advisory Action mailed on 28 July 2015, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 7 pages".	☐
	2	"BAUDISCH et al., "Flat Volume Control: Improving Usability by Hiding the Volume Control Hierarchy in the User Interface", 2004, 8 pages.".	☐
	3	"CHAKRABARTI et al., "A Remotely Controlled Bluetooth Enabled Environment", IEEE, 2004, pp. 77-81.".	☐
	4	"SCHMANDT et al., "Impromptu: Managing Networked Audio Applications for Mobile Users", 2004, 11 pages.".	☐

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	5	"Final Office Action mailed on 10 August 2015, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 26 pages.".	☐
	6	"Final Office Action mailed on 11 August 2015, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 15 pages".	☐
	7	"Final Office Action mailed on 15 July, 2015, issued in connection with U.S. Patent Application No. 14/504812, filed on 2 October 2014, 18 pages".	☐
	8	"Final Office Action mailed on 3 August 2015, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 13 pages".	☐
	9	"FULTON et al., "The Network Audio System: Make Your Application Sing (As Well As Dance)!", The X Resource, 1994, 14 pages.".	☐
	10	"HANS et al., "Interacting with Audio Streams for Entertainment and Communication", 2003, 7 pages.".	☐
	11	"LEVERGOOD et al., "AudioFile: A Network-Transparent System for Distributed Audio Applications", Digital Equipment Corporation, 1993, 109 pages.".	☐
	12	"Notice of Allowance mailed on 10 August 2015, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 9 pages".	☐
	13	"Notice of Allowance mailed on 12 August 2015, issued in connection with U.S. Patent Application No. 13/435739, filed on 30 March 2012, 27 pages".	☐
	14	"Notice of Allowance mailed on 13 July 2015, issued in connection with U.S. Patent Application No. 14/184526, filed on 19 February 2014, 22 pages".	☐
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	16	"Notice of Allowance mailed on 17 July 2015, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 20 pages".	☐
	17	"Notice of Allowance mailed on 29 July 2015, issued in connection with U.S. Patent Application No. 13/359976, filed on 27 January 2012, 28 pages".	☐
	18	"Notice of Allowance mailed on 29 July 2015, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 9 pages".	☐
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	21	"Notice of Allowance mailed on 5 August 2015, issued in connection with U.S. Patent Application No. 13/435776, filed on 30 March 2012, 26 pages".	☐
	22	"NUTZEL et al., "Sharing Systems for Future HiFi Systems", IEEE, 2004, 9 pages.".	☐
	23	"Re-Exam Final Office Action mailed on 5 August 2015, issued in connection with U.S. Patent Application No. 90/013423, filed on 5 January 2015, 25 pages.".	☐

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	1	2003169089	JP	A	2003-06-13	ANCL INC., et al.		☐
	2	2003506765	JP	A	2003-02-18			☐
	3	0110125	WO	A1	2001-02-08	CHUNG RANDALL M [US]		☐

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	2	"Notice of Allowance mailed on 21 September 2015, issued in connection with U.S. Patent Application No. 13/297000, filed on 15 November 2011, 11 pages.".	☐
	3	"Notice of Allowance mailed on 22 September 2015, issued in connection with U.S. Patent Application No. 13/888203, filed on 6 May 2013, 7 pages".	☐
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	7	"Notice of Allowance mailed on 27 August 2015, issued in connection with U.S. Patent Application No. 14/505027, filed on 2 October 2014, 18 pages.".	☐
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	2	20050168630		2005-08-04	YAMADA; Norihiko et al.	
	3	20080126943		2008-05-29	PARASNIS; Shashank Mohan et al.	

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	2	"Non-Final Office Action mailed 01 May 2014 for U.S. Application No. 14/184522 filed 19 February 2014".	☐
	3	"Non-Final Office Action mailed 06 May 2014 for U.S. Application No. 13/705176 filed 05 December 2012".	☐
	4	"Non-Final Office Action mailed 12 May 2014 for U.S. Application No. 14/184528 filed 19 February 2014".	☐
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	1	5761320		1998-06-02	FARINELLI; Robert et al.	
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	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	"European Extended Search Report for Application No. 14181454.1 mailed on 31 March 2015, 9 pages.".	☐
	2	"Final Office Action mailed on 28 April 2015, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 20 pages".	☐
	3	"Notice of Allowance mailed on 19 May 2015, issued in connection with U.S. Patent Application No. 13/907666, filed on 31 May 2013, 7 pages".	☐
	4	"Re-Exam Non-Final Office Action mailed on 22 April 2015, issued in connection with U.S. Patent Application No. 90/013423, filed on 5 January 2015, 16 pages.".	☐

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Examiner Signature	/Oleg Survillo/	Date Considered	09/29/2016

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	13864249
Filing Date	2013-04-17
First Named Inventor	NICHOLAS; A. J. Millington
Art Unit	2442
Examiner Name	SURVILLO, OLEG
Attorney Docket Number	13-0402 (MBHB 15-518-CON)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5533021		1996-07-02	BRANSTAD; Mark W. et al.	
	2	5652749		1997-07-29	DAVENPORT; David William et al.	
	3	6078725		2000-06-20	TANAKA; Mitsumasa	
	4	6163647		2000-12-19	TERASHIMA; Masaru et al.	
	5	6253293		2001-06-26	RAO; Raghunath et al.	
	6	6349285		2002-02-19	LIU; Pu et al.	
	7	6456783		2002-09-24	ANDO; Hideo et al.	
	8	6763274		2004-07-13	GILBERT; Erik J.	

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	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	9	6803964		2004-10-12	POST; Lauren Lee et al.	
	10	7058889		2006-06-06	TROVATO I; Karen et al.	
	11	7330875		2008-02-12	PARASNIS; Shashank Mohan et al.	
	12	7359006		2008-04-15	XIANG; Shuhua et al.	
	13	7392481		2008-06-24	GEWICKEY; Greg et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020103635		2002-08-01	MESAROVIC; Vladimir Z. et al.	
	2	20020136335		2002-09-26	LIOU; Shih-Ping et al.	
	3	20030097478		2003-05-22	KING; James Reynell	
	4	20030135822		2003-07-17	EVANS; Glenn F.	

EFS Web 2.1.17

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	5	20040019911		2004-01-29	GATES; Matthijs A. et al.	
	6	20040111473		2004-06-10	LYSENKO; Anton et al.	
	7	20040128701		2004-07-01	KANEKO; Toshimitsu et al.	
	8	20040179554		2004-09-16	TSAO; Hsi-Kang	
	9	20050125222		2005-06-09	BROWN; Michael Wayne et al.	
	10	20050198574		2005-09-08	LAMKIN; Allan B. et al.	
	11	20060041639		2006-02-23	LAMKIN; Allan B. et al.	
	12	20080025535		2008-01-31	RAJAPAKSE; Ravi	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	0895427	EP	A3	2006-01-18	SONY ELECTRONICS INC.		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

NON-PATENT LITERATURE DOCUMENTS			Remove
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	Advisory Action mailed 02 February 2016, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 8 pages.	
	2	Advisory Action mailed on 01 February 2016, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 6 pages.	
	3	Final Office Action mailed 18 November 2015, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 56 pages.	
	4	Final Office Action mailed on 30 November 2015, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 26 pages.	
	5	Non-Final Office Action mailed on 13 January 2016, issued in connection with U.S. Patent Application No. 14/184528, filed on 19 February 2014, 14 pages.	
	6	Non-Final Office Action mailed on 28 December 2015, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 29 pages.	
	7	Notice of Allowance mailed on 11 January 2016, issued in connection with U.S. Patent Application No. 14/565544, filed on 09 December 2014, 5 pages.	

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Examiner Signature	/Oleg Survillo/	Date Considered	09/29/2016

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	9	("20020098878" | "20020181355" | "20030229900" | "20040014426" | "20040059965" | "5185680" | "5623483" | "7310334" | "7665115").PN.	US-PGPUB; USPAT	OR	ON	2016/09/05 23:38
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S38	0	survillo and (disengag$3).clm.	USPAT	OR	ON	2016/09/06 02:51
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S52	2	"20070142944" and switch$3 with broadcast	US-PGPUB; USPAT	OR	ON	2016/09/06 03:16
S53	2	"20070142944" and transfer$4 with broadcast	US-PGPUB; USPAT	OR	ON	2016/09/06 03:17
S54	9	("20020098878" | "20020181355" | "20030229900" | "20040014426" | "20040059965" | "5185680" | "5623483" | "7310334" | "7665115").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S55	37	("20080002836" | "20080072816" | "20080077619" | "20080077620" | "20080086318" | "20080189272" | "20080263010" | "20090089327" | "20120185771" | "20120192071" | "20120207290" | "20120281058" | "20130031475" | "20130041954" | "20130052940" | "20130070093" | "20130094670" | "20130124664" | "20130132837" | "20130159126" | "20130179163" | "20130208911" | "20130208921" | "20130226323" | "20130232416" | "20130253934" |	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46

		"20130287186" | "20130290504" | "20140298174" | "20150019670" | "20150304288" | "6658091" | "7996566" | "8204890" | "8285404" | "8672744" | "9160965").PN.				
S56	19	("20020067909" | "20040023697" | "20050201549" | "20060155721" | "20070003067" | "20070022207" | "20070265031" | "20080144864" | "20080146289" | "20100031366" | "20110002487" | "20120051567" | "20130129122" | "4696037" | "5553147" | "6809635" | "6882335" | "8934647" | "8934655").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S57	25	("20020103635" | "20020136335" | "20030097478" | "20030135822" | "20040019911" | "20040111473" | "20040128701" | "20040179554" | "20050125222" | "20050198574" | "20060041639" | "20080025535" | "5533021" | "5652749" | "6078725" | "6163647" | "6253293" | "6349285" | "6456783" | "6763274" | "6803964" | "7058889" | "7330875" | "7359006" | "7392481").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S58	1	("20150139210").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S59	111	("20080212786" | "20080215169" | "20090017868" | "20090100189" | "20090251604" | "20110228944" | "20120148075" | "20120237054" | "20130038726" | "20130047084" | "20130167029" | "20130230175" | "20130279706" | "20140006483" | "20140037097" | "20140064501" | "20140075308" | "20140075311" | "20140079242" | "20140108929" | "20140123005" | "20140140530" | "20140161265" | "20140242913" | "20140256260" | "20140267148" | "20140270202" | "20140273859" | "20140279889" | "20140285313" | "20140286496" | "20140323036" | "20140344689" | "20140378056" | "20150026613" | "20150032844" | "20150043736" | "20150049248" | "20150074527" | "20150074528" | "20150098576" | "20150256954" | "7158488" | "7319764" | "7474677" | "7483540" | "7509181" | "7631119" | "7669113" | "7672470" | "7689304" | "7689305" | "7765315" | "7827259" | "7958441" | "8015306" | "8045721" | "8055364" | "8090317" | "8111132" | "8116476" | "8126172" | "8144883" | "8148622" | "8170260" | "8175297" | "8185674" | "8194874" | "8208653" | "8214447" | "8214740" | "8218790" | "8233648" | "8239748" | "8279709" | "8281001" | "8300845" | "8316147" | "8325931" | "8340330" | "8345709" | "8364295" | "8407623" | "8423893" |	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46

		"8432851" | "8433076" | "8457334" | "8463184" | "8463875" | "8509211" | "8520870" | "8577048" | "8611559" | "8615091" | "8639830" | "8683009" | "8731206" | "8750282" | "8751026" | "8762565" | "8818538" | "8819554" | "8843586" | "8885851" | "8904066" | "8917877" | "8930006" | "8954177" | "8965544" | "8966394" | "9137602").PN.				
S60	1	("20030101253").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S61	19	("20010047377" | "20020159596" | "20020165721" | "20030219007" | "20040012620" | "20040048569" | "20040080671" | "20040224638" | "20050015551" | "20050131558" | "20050166135" | "20060193454" | "6122668" | "6449653" | "6823225" | "7068596" | "7313593" | "7702403" | "RE41608").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S62	18	("20020114359" | "20030035072" | "20030198254" | "20030198255" | "20030200001" | "20040248601" | "20060098936" | "20070043847" | "20100284389" | "20100299639" | "5726989" | "5923869" | "6108485" | "6343028" | "6687664" | "6778493" | "6970482" | "7130368").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S63	3	("20140181569" | "5761320" | "6535121").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S64	9	("20020080783" | "20020114354" | "20030018797" | "20030067437" | "20040208158" | "20040213230" | "20040228367" | "20130018960" | "6816818").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S65	8	("20010046235" | "20020173273" | "20040098754" | "20050062637" | "20130022221" | "5153579" | "7206967" | "7711774").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S66	19	("20020177411" | "20030061428" | "20030110329" | "20040093096" | "20040143368" | "20040143852" | "20040148237" | "20050011388" | "20050027821" | "20050120128" | "20050195823" | "20070047712" | "20070249295" | "7483538" | "7519667" | "7606174" | "7853341" | "7996588" | "8473844").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S67	16	("20010042107" | "20020022453" | "20020026442" | "20030073432" | "20030157951" | "20040019497" | "20040024478" | "5602992" | "5923902" | "6404811" | "6522886" | "7130616" | "7136934" | "7143939" | "7236773" | "7657910").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S68	18	("20010027498" | "20020184310" | "20030055892" | "20030204273" | "20030204509" | "20030227478" |	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46

		"20040133689" | "20050216556" | "20070192156" | "20090193345" | "20130197682" | "5696896" | "5787249" | "6839752" | "6907458" | "7412499" | "7743009" | "8020023").PN.				
S69	3	("20020002565" | "20020062406" | "20100004983").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S70	3	("20020095460" | "20050168630" | "20080126943").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S71	26	("20020049843" | "20020168938" | "20020194309" | "20030002609" | "20030043924" | "20040032348" | "20040041836" | "20040066736" | "20040075767" | "20040078383" | "20050021590" | "20060119497" | "20070143493" | "20070180137" | "20080022320" | "20120290621" | "20130174100" | "20130197682" | "5956088" | "7143141" | "7574274" | "7657644" | "7676142" | "8169938" | "8290603" | "8588949").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S72	64	("20020003548" | "20020072816" | "20020109710" | "20020124097" | "20020188762" | "20030020763" | "20030235304" | "20040008852" | "20040010727" | "20040015252" | "20040131192" | "20050047605" | "20050125357" | "20050181348" | "20050195205" | "20050289224" | "20060095516" | "20060143236" | "20070048713" | "20070142022" | "20070169115" | "20070299778" | "20080091771" | "20080144861" | "20090031336" | "20090222115" | "20100049835" | "20100228740" | "20110066943" | "20120030366" | "20120060046" | "20120129446" | "20130080599" | "20130191454" | "5239458" | "5299266" | "5751819" | "5808662" | "6108686" | "6255961" | "6349339" | "7113999" | "7218708" | "7236739" | "7293060" | "7483958" | "7571014" | "7599685" | "7657224" | "7668990" | "7669219" | "7702279" | "7835689" | "7865137" | "7885622" | "7916877" | "7917082" | "8023663" | "8028038" | "8028323" | "8112032" | "8214873" | "8230099" | "8315555").PN.	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S73	131	("20010009604" | "20010022823" | "20010032188" | "20020002039" | "20020002562" | "20020034374" | "20020042844" | "20020065926" | "20020073228" | "20020090914" | "20020093478" | "20020112244" | "20020129156" | "20020143998" | "20020163361" | "20020165921" | "20030023741" | "20030035444" | "20030041173" | "20030041174" | "20030066094" | "20030099212" |	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46

		"20030099221" | "20030126211" | "20030195964" | "20030198257" | "20030210796" | "20030231871" | "20040001484" | "20040001591" | "20040024925" | "20040027166" | "20040170383" | "20040203378" | "20040249965" | "20040249982" | "20040252400" | "20050010691" | "20050013394" | "20050058149" | "20050081213" | "20050114538" | "20050177643" | "20050281255" | "20050283820" | "20050288805" | "20070038999" | "20070054680" | "20070142944" | "20070271388" | "20080120429" | "20090157905" | "20090228919" | "20120029671" | "4296278" | "4816989" | "5182552" | "5406634" | "5440644" | "5467342" | "5491839" | "5553222" | "5668884" | "5673323" | "5815689" | "5867691" | "5875354" | "5887143" | "5946343" | "6009457" | "6026150" | "6031818" | "6128318" | "6157957" | "6175872" | "6185737" | "6195436" | "6199169" | "6256554" | "6308207" | "6324586" | "6332147" | "6351821" | "6430353" | "6487296" | "6526325" | "6587127" | "6598172" | "6611537" | "6631410" | "6674803" | "6757517" | "6778869" | "6826283" | "6836788" | "6898642" | "6912610" | "6920373" | "6934766" | "6985694" | "7007106" | "7020791" | "7043651" | "7047308" | "7115017" | "7130608" | "7162315" | "7185090" | "7187947" | "7206367" | "7209795" | "7312785" | "7324857" | "7333519" | "7372846" | "7392102" | "7643894" | "7675943" | "7720096" | "7742740" | "7934239" | "8014423" | "8045952" | "8050652" | "8074253" | "8086752" | "8103009" | "8131390" | "8234395" | "8370678" | "8423659").PN.				
S74	539	S54 or S55 or S56 or S57 or S58 or S59 or S60 or S61 or S62 or S63 or S64 or S65 or S66 or S67 or S68 or S69 or S70 or S71 or S72 or S73	US-PGPUB; USPAT	OR	ON	2016/09/06 07:46
S75	31	S74 and overload$3	US-PGPUB; USPAT	OR	ON	2016/09/06 07:47
S76	8	S74 and overload$3 with master	US-PGPUB; USPAT	OR	ON	2016/09/06 07:47
S77	56496483	@ad<"20040401" or @rlad<"20040401"	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:48
S78	161	S77 and overload$3 with master same (migrat$3 or switch$3 or leav$3 or disengag$3)	US-PGPUB; USPAT; FPRS;	OR	ON	2016/09/06 07:49

			EPO; JPO			
S79	6	S77 and overload$3 with master same (stream$3)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:50
S80	1	S77 and overload$3 near3 master same (stream$3)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:51
S81	0	S77 and determin$3 with overload$3 near3 master same (stream$3) same (migrat$3 or switch$3 or leav$3 or disengag$3) near4 master	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:52
S82	0	S77 and determin$3 with overload$3 near3 master same (migrat$3 or switch$3 or leav$3 or disengag$3) near4 master	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:52
S83	0	S77 and determin$3 with overload$3 near3 master same (migrat$3 or switch$3 or leav$3 or disengag$3)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:53
S84	0	S77 and determin$3 with overload$3 near3 master	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:53
S85	3	S77 and determin$3 with overload$3 near3 (master or streaming near2 (device or server) or broadcaster)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:54
S86	7	S77 and (determin$3 or detect$3) with overload$3 near3 (master or streaming near2 (device or server) or broadcaster)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:56
S87	3259	S77 and (determin$3 or detect$3) with overload$3 same (migrat$3 or switch$3 or leav$3 or disengag$3)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:58
S88	2016	S77 and (determin$3 or detect$3) near4 overload$3 same (migrat$3 or switch$3 or leav$3 or disengag$3)	US-PGPUB; USPAT; FPRS;	OR	ON	2016/09/06 07:58

			EPO; JPO			
S89	23	S77 and (determin$3 or detect$3) near4 overload$3 same (migrat$3 or switch$3 or leav$3 or disengag$3) same (stream$3 or broadcast$3)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 07:59
S90	1	S77 and (determin$3 or detect$3) near4 overload$3 with peer same (migrat$3 or switch$3 or leav$3 or disengag$3)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 08:03
S91	1	"9354656".pn.	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 11:12
S92	16	zone adj1 player and survillo	USPAT	OR	ON	2016/09/06 11:16
S93	1	"9158327".pn.	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/06 11:30
S94	16	zone adj1 player and survillo	USPAT	OR	ON	2016/09/14 12:12
S95	5	S94 and obtain$3 near4 audio.clm.	USPAT	OR	ON	2016/09/14 12:12
S96	3	S94 and obtain$3 near4 audio with source.clm.	USPAT	OR	ON	2016/09/14 12:12
S97	2	S94 and (receiv$3 near4 audio and enter$3 near4 group).clm.	USPAT	OR	ON	2016/09/14 12:36
S98	3	S94 and (lan with wan).clm.	USPAT	OR	ON	2016/09/14 12:59
S99	4	S94 and (obtain$3 near4 first and obtain$3 near4 second).clm.	USPAT	OR	ON	2016/09/14 13:01
S100	0	S94 and (cancel or cancell or cancelling or canceling).clm.	USPAT	OR	ON	2016/09/14 13:28
S101	2	S94 and (switch$3).clm.	USPAT	OR	ON	2016/09/14 13:35
S102	2	S94 and (stop$4).clm.	USPAT	OR	ON	2016/09/14 13:36
S103	16	zone adj1 player and survillo	USPAT	OR	ON	2016/09/14 16:04
S104	3	S103 and (source near3 source).clm.	USPAT	OR	ON	2016/09/14 16:05
S105	16	zone adj1 player and survillo	USPAT	OR	ON	2016/09/15 12:56
S106	0	S105 and (thereby).clm.	USPAT	OR	ON	2016/09/15 12:56
S107	3	S105 and (causing).clm.	USPAT	OR	ON	2016/09/15 12:57

S108	1	("7324857").PN.	US-PGPUB; USPAT	OR	ON	2016/09/19 08:53
S109	1	("6466832").PN.	US-PGPUB; USPAT	OR	ON	2016/09/19 08:53
S110	1	"20020124097"	US-PGPUB; USPAT	OR	ON	2016/09/19 08:53
S111	2	"20050131558"	US-PGPUB; USPAT	OR	ON	2016/09/19 08:54
S112	1	"20030014486"	US-PGPUB; USPAT	OR	ON	2016/09/19 08:54
S113	1	"20040223622"	US-PGPUB; USPAT	OR	ON	2016/09/19 08:57
S114	1	"9213357".pn.	US-PGPUB; USPAT	OR	ON	2016/09/19 08:59
S115	1	"7295548".pn.	US-PGPUB; USPAT	OR	ON	2016/09/19 08:59
S116	1	"6684060".pn.	US-PGPUB; USPAT	OR	ON	2016/09/19 09:04
S117	1	"7263110".pn.	US-PGPUB; USPAT	OR	ON	2016/09/19 09:08
S118	1	"7305694".pn.	US-PGPUB; USPAT	OR	ON	2016/09/19 09:10
S119	1	"8938637".pn.	US-PGPUB; USPAT	OR	ON	2016/09/19 09:16
S120	1	"9195258".pn.	US-PGPUB; USPAT	OR	ON	2016/09/19 09:16
S121	203	("20010009604" | "20010022823" | "20010027498" | "20010032188" | "20010042107" | "20010046235" | "20010047377" | "20020002039" | "20020002562" | "20020002565" | "20020003548" | "20020022453" | "20020026442" | "20020034374" | "20020042844" | "20020049843" | "20020062406" | "20020065926" | "20020067909" | "20020072816" | "20020073228" | "20020080783" | "20020090914" | "20020093478" | "20020095460" | "20020103635" | "20020109710" | "20020112244" | "20020114354" | "20020114359" | "20020124097" | "20020129156" | "20020136335" | "20020143998" | "20020159596" | "20020163361" | "20020165721" | "20020165921" | "20020168938" | "20020173273" |	US-PGPUB; USPAT	OR	ON	2016/09/19 09:25

		"20020177411" | "20020184310" | "20020188762" | "20020194309" | "20030002609" | "20030018797" | "4296278" | "4696037" | "4816989" | "5153579" | "5182552" | "5239458" | "5299266" | "5406634" | "5440644" | "5467342" | "5491839" | "5533021" | "5553147" | "5553222" | "5602992" | "5652749" | "5668884" | "5673323" | "5696896" | "5726989" | "5751819" | "5761320" | "5787249" | "5808662" | "5815689" | "5867691" | "5875354" | "5887143" | "5923869" | "5923902" | "5946343" | "5956088" | "6009457" | "6026150" | "6031818" | "6078725" | "6108485" | "6108686" | "6122668" | "6128318" | "6157957" | "6163647" | "6175872" | "6185737" | "6195436" | "6199169" | "6253293" | "6255961" | "6256554" | "6308207" | "6324586" | "6332147" | "6343028" | "6349285" | "6349339" | "6351821" | "6404811" | "6430353" | "6449653" | "6456783" | "6487296" | "6522886" | "6526325" | "6535121" | "6587127" | "6598172" | "6611537" | "6631410" | "6658091" | "6674803" | "6687664" | "6757517" | "6763274" | "6778493" | "6778869" | "6803964" | "6809635" | "6816818" | "6823225" | "6826283" | "6836788" | "6839752" | "6882335" | "6898642" | "6907458" | "6912610" | "6920373" | "6934766" | "6970482" | "6985694" | "7007106" | "7020791" | "7043651" | "7047308" | "7058889" | "7068596" | "7113999" | "7115017" | "7130368" | "7130608" | "7130616" | "7136934" | "7143141" | "7143939" | "7158488" | "7162315" | "7185090" | "7187947" | "7206367" | "7206967" | "7209795" | "7218708" | "7236739" | "7236773" | "7293060" | "7312785" | "7313593" | "7319764" | "7324857" | "7330875" | "7333519" | "7359006" | "7372846" | "7392102" | "7392481" | "7412499" | "7474677" | "7483538" | "7483540" | "7483958" | "7509181" | "7519667" | "7571014" | "7574274" | "7599685" | "7606174" | "7631119" | "7643894" | "7657224" | "7657644" | "7657910" | "7668990" | "7669113" | "7669219" | "7672470" | "7675943" | "7676142" | "7689304" | "7689305" | "7702279" | "7702403" | "7711774" | "7720096" | "7742740" | "7743009" | "7765315" | "7827259").PN.				
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S127	21	zone adj1 player and (transmit$4 with second adj1 audio).clm.	US-PGPUB; USPAT	OR	ON	2016/09/29 09:16
S128	6	zone adj1 player and (transmit$4 with second adj1 audio).clm.	USPAT	OR	ON	2016/09/29 09:18
S129	41	zone adj1 player and (second near2 group).clm.	USPAT	OR	ON	2016/09/29 09:19
S130	26	zone adj1 player and (second adj2 group).clm.	USPAT	OR	ON	2016/09/29 09:20
S131	1	zone adj1 player and (second adj2 group).clm. and survillo	USPAT	OR	ON	2016/09/29 09:22
S132	0	zone adj1 player and (while adj playing).clm. and survillo	USPAT	OR	ON	2016/09/29 10:16
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S134	56504035	@ad<"20040401" or @rlad<"20040401"	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 10:51
S135	19	S134 and (transmit$4 or stream$3 or send$3) near3 (second or diffent or another) adj2 (audio or file or data or song) with (while or during) near2 (playback or playing or output$4)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 10:53
S136	14	S134 and (transmit$4 or streaming or streamed or send$3) near3 (second or diffent or another) adj2 (audio or file or data or song) with (while or during) near2 (playback or playing or output$4)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 10:55
S137	0	S134 and (transmit$4 or streaming or streamed or send$3) near2 (second or different or another) adj2 (audio or file or data or song) with (while or during) near2 (playback or playing or output$4) not S136	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:00
S138	64	S134 and (transmit$4 or streaming or streamed or send$3) near2 (second or different or another) with (while or during) adj2 (playback or playing or output$4)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:01

S139	7	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3) near2 (second or different or another) with (while or during or when) adj2 (playback or playing or output$4) near2 (first)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:12
S140	13	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3 or broadcast$3) near2 (second) with (while or during or when) adj2 (playback or playing or output$4 or display$3) near2 (first)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:19
S141	0	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3 or broadcast$3) near2 (simultaneous$3) with (while or during or when) adj2 (playback or playing or output$4 or display$3) near2 (first)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:30
S142	0	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3 or broadcast$3) near2 (simultaneous$3) with (second or different or another) with (while or during or when) adj2 (playback or playing or output$4 or display$3)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:30
S143	9516	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3 or broadcast$3) near2 (simultaneous$3) with (second or different or another)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:31
S144	442	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3 or broadcast$3) near2 (simultaneous$3) with (second or different or another) with (while or during)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:31
S145	6	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3 or broadcast$3) near2 (simultaneous$3) with (second or different or another) with (while or during) with audio	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:32
S146	243	S134 and (transmit$4 or streaming or streamed or send$3 or forward$3 or broadcast$3) near2 (simultaneous$3) with (second or different or another) with audio	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 11:34
S147	56504035	@ad<"20040401" or @rlad<"20040401"	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 13:25
S148	0	S147 and shar$3 near3 (different or another or next) near3 (song or audio or file) with (while or during) near2 (play$3 or playback)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 13:26

S149	11	S147 and shar$3 near3 (different or another or next) near3 (song or audio or file) with (play$3 or playback)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 13:27
S150	80	S147 and transmit$4 near3 (different or another or next) near3 (song or audio or file) with (play$3 or playback)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 13:29
S151	21	S147 and broadcast$3 near3 (different or another or next) near3 (song or audio or file) with (play$3 or playback)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 13:35
S152	18	S147 and broadcaster near3 (different or another or next or second) near3 (song or audio or file)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 13:41
S153	0	S147 and transmit$4 near3 (different or another or next or second) with (while)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:19
S154	0	S147 and transmit$4 with (different or another or next or second) with (while)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:20
S155	34437	S147 and transmit$4 with (different or another or next or second) with (during)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:20
S156	51	S147 and transmit$4 with (different or another or next or second) with (during) near3 playback	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:21
S157	2114	S147 and transmit$4 with (different or another or next or second) with player	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:31
S158	305	S147 and transmit$4 with (different or another or next or second) near2 (song or audio or information or file or data or content) with player	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:31

S159	8	S147 and transmit$4 with (first and second) near2 (song or audio or information or file or data or content) with player with (different or another)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:42
S160	0	S147 and broadcast$3 with (first and second) near2 (song or audio or information or file or data or content) with player with (different or another)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:43
S161	4	S147 and broadcast$3 with (first and second) near2 (song or audio) with player	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 14:44
S162	17	S147 and (simultaneous$3 or concurrent$3) near3 stream$3 near3 ((first and second) or different) near2 (audio or music or song)	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 15:03
S163	14	zone adj player and survillo and playback adj timing.clm.	US-PGPUB; USPAT; FPRS; EPO; JPO	OR	ON	2016/09/29 17:19
S164	26	zone adj player and playback adj timing.clm.	US-PGPUB	OR	ON	2016/09/29 17:24

EAST Search History (Interference)

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	Millington, Nicholas A. J.
	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301.US.11 (13-0402)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5956088		1999-09-21	SHEN; Paul et al.	
	2	7143141		2006-11-28	MORGAN; Jeffrey A. et al.	
	3	7574274		2009-08-11	HOLMES; Stephen G.	
	4	7657644		2010-02-02	ZHENG; Qinghua	
	5	7676142		2010-03-09	HUNG; Andy Chao	
	6	8169938		2012-05-01	DUCHSCHER; Rob et al.	
	7	8290603		2012-10-16	LAMBOURNE; Robert A.	
	8	8588949		2013-11-19	LAMBOURNE; Robert A. et al.	
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	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301.US.11 (13-0402)

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020049843		2002-04-25	BARONE; Samuel T. et al.	
	2	20020168938		2002-11-14	CHANG; Chin-Chi	
	3	20020194309		2002-12-19	CARTER; Harry Nick et al.	
	4	20030002609		2003-01-02	FALLER; Christof et al.	
	5	20030043924		2003-03-06	HADDAD; Semir S. et al.	
	6	20040032348		2004-02-19	LAI; Angela C. W. et al.	
	7	20040041836		2004-03-04	ZANER; Melora et al.	
	8	20040066736		2004-04-08	KROEGER; Brian William	
	9	20040075767		2004-04-22	NEUMAN; Darren et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.S./

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	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	10	20040078383		2004-04-22	MERCER; Ian Cameron et al.	
	11	20050021590		2005-01-27	DEBIQUE; Kirt A. et al.	
	12	20060119497		2006-06-08	MILLER; Kevin L. et al.	
	13	20070143493		2007-06-21	MULLIG; Richard M. et al.	
	14	20070180137		2007-08-02	RAJAPAKSE; Ravi	
	15	20080022320		2008-01-24	VER; Steeg William C.	
	16	20120290621		2012-11-15	HEITZ III; Geremy A. et al.	
	17	20130174100		2013-07-04	SEYMOUR; Eric T. et al.	
	18	20130197682		2013-08-01	MILLINGTON; Nicholas A. J.	

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	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	1	1122931	EP	A2	2001-08-08			☐
	2	2284327	GB	A	1995-05-31			☐
	3	03093950	WO	A2	2003-11-13			☐

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	1	BLAKOWSKI G. et al., "A Media Synchronization Survey: Reference Model, Specification, and Case Studies", January 1996, Vol. 14, No. 1, 5-35.	☐
	2	"European Extended Search Report for Application No. 13184747.7 mailed on 28 February 2014, 8 pages".	☐
	3	"Final Office Action mailed 3 July 2012 for U.S. Patent Application No. 13/298090 filed on 16 November 2011".	☐
	4	"Final Rejection mailed on 21 January 2010 for U.S. Application No. 11/906,702 filed on 2 October 2007".	☐
	5	"Maniactools, "Identify Duplicate Files by Sound," 09/28/2010, http://www.maniactools.com/soft/music-duplicate-remover/identify-duplicate-files-by-sound.shtml".	☐
	6	"Non-Final Office Action mailed 05 December 2013 for U.S. Application No. 13/827653 filed 14 March 2013".	☐

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	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301.US.11 (13-0402)

	7	"Non-Final Office Action mailed 19 March 2013 for U.S. Application No. 13/724048 filed 21 December 2012".	☐
	8	"Non-Final Office Action mailed 30 April 2012 for U.S. Patent Application No. 13/204511 filed 5 August 2011".	☐
	9	"Non-Final Office Action mailed 30 July 2013 for U.S. Application No. 13/724048 filed 21 December 2012".	☐
	10	"Non-Final Rejection mailed on 20 August 2009 for U.S. Application No. 11/906,702 filed on 2 October 2007".	☐
	11	"Notice of Allowance mailed 06 March 2014 for U.S. Application No. 13/827653 filed 14 March 2013".	☐
	12	"Notice of Allowance mailed 10 November 2011 for U.S. Patent Application No. 11/906,702 filed on 2 October 2007".	☐
	13	"Notice of Allowance mailed 13 November 2013 for U.S. Application No. 13/724048 filed 21 December 2012".	☐
	14	"Notice of Allowance mailed 21 January 2013 for U.S. Patent Application No. 13/298090 filed on 16 November 2011".	☐
	15	"Notice of Allowance mailed 5 October 2012 for U.S. Patent Application No. 13/204511 filed 5 August 2011".	☐

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Examiner Signature	/Oleg Survillo/	Date Considered	09/29/2016

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SERIAL NUMBER	FILING or 371(c) DATE / RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/864,249	04/17/2013	709	2442	13-0402 (MBHB 15-518-CON)

APPLICANTS
SONOS, INC., Santa Barbara, CA

INVENTORS
Nicholas A. J. Millington, Santa Barbara, CA;

**** CONTINUING DATA ***************************
This application is a CON of 13/297,000 11/15/2011 PAT 9182777
which is a CON of 10/816,217 04/01/2004 PAT 8234395
which claims benefit of 60/490,768 07/28/2003

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Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /OLEG SURVILLO/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	5	20	3

ADDRESS
McDonnell Boehnen Hulbert & Berghoff LLP
Sonos, Inc.
300 South Wacker Drive
Chicago, IL 60606
UNITED STATES

TITLE
METHOD AND APPARATUS FOR PLAYING AND PROVIDING AUDIO CONTENT IN A SYNCHRONY GROUP

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301US11(13-0402)

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	1	7483538		2009-01-27	MCCARTY; William A. et al.	
	2	7519667		2009-04-14	CAPPS; Stephen P.	
	3	7606174		2009-10-20	OCHI; Mitsunori et al.	
	4	7853341		2010-12-14	MCCARTY; William A. et al.	
	5	7996588		2011-08-09	SUBBIAH; Baranitharan et al.	
	6	8588949		2013-11-19	LAMBOURNE; Robert A. et al.	
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	1	20020177411		2002-11-28	YAJIMA; Kiyoshi et al.	
	2	20030061428		2003-03-27	GARNEY I; John et al.	
	3	20030110329		2003-06-12	HIGAKI; Nobuo et al.	
	4	20040093096		2004-05-13	HUANG; Steve Lan-Ping et al.	
	5	20040143368		2004-07-22	MAY; Robert E. et al.	
	6	20040143852		2004-07-22	MEYERS; Philip G.	
	7	20040148237		2004-07-29	BITTMANN; Ran et al.	
	8	20050011388		2005-01-20	KOUZNETSOV; Alex A.	
	9	20050027821		2005-02-03	ALEXANDER; Justin et al.	
	10	20050120128		2005-06-02	WILLES; W. P. et al.	
	11	20050195823		2005-09-08	CHEN; Jian-Rong et al.	

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	12	20070047712		2007-03-01	GROSS; Kevin P. et al.	
	13	20070249295		2007-10-25	UKITA; Yoshitaka et al.	

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	1	"Advisory Action mailed on 12 November 2014, issued in connection with U.S. Patent Application No. 13/907666, filed on 31 May 2013, 6 pages".	☐
	2	"Advisory Action mailed on 26 November 2014, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 9 pages".	☐
	3	"Advisory Action mailed on 8 January 2015, issued in connection with U.S. Patent Application Serial No. 13/705,176, filed on 5 December 2012, 4 pages".	☐
	4	"Crown PIP Manual available for sale at least 2004, 68 pages".	☐

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	5	"Final Office Action mailed on 17 December 2014, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 36 pages".	☐
	6	"Final Office Action mailed on 3 December 2014, issued in connection with U.S. Patent Application No. 14/184528, filed on 19 February 2014, 12 pages".	☐
	7	"Final Office Action mailed on 7 January 2015, issued in connection with U.S. Patent Application Serial No. 13/848932, filed on 22 March 2013, 14 pages".	☐
	8	"Non-Final Office Action mailed on 1 December 2014, issued in connection with U.S. Patent Application No. 14/516867, filed on 17 October 2014, 11 pages".	☐
	9	"Non-Final Office Action mailed on 17 November 2014, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 11 pages".	☐
	10	"Non-Final Office Action mailed on 18 November 2014, issued in connection with U.S. Patent Application No. 13/435739, filed on 30 March 2012, 10 pages".	☐
	11	"Non-Final Office Action mailed on 19 November 2014, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 9 pages".	☐
	12	"Renkus Heinz Manual; available for sale at least 2004, 6 pages".	☐

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	1	4696037		1987-09-22	FIERENS; Gustaaf E. M.	
	2	5553147		1996-09-03	PINEAU; Joseph E. M.	
	3	6809635		2004-10-26	KAARESOJA; Topi	
	4	6882335		2005-04-19	SAARINEN; Pertti	
	5	8934647		2015-01-13	JOYCE; John et al.	
	6	8934655		2015-01-13	BREEN; John J. et al.	

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	1	20020067909		2002-06-06	IIVONEN; Jukka-Pekka	
	2	20040023697		2004-02-05	KOMURA; Tatsumi	
	3	20050201549		2005-09-15	DEDIEU; Stephane et al.	
	4	20060155721		2006-07-13	GRUNWALD; David et al.	
	5	20070003067		2007-01-04	GIERL; Stefan et al.	
	6	20070022207		2007-01-25	MILLINGTON; Nicholas A. et al.	
	7	20070265031		2007-11-15	KOIZUMI; Michiaki et al.	
	8	20080144864		2008-06-19	HUON; Graeme John	
	9	20080146289		2008-06-19	KORNELUK; Jose E. et al.	
	10	20100031366		2010-02-04	KNIGHT; Mark Stephen et al.	
	11	20110002487		2011-01-06	PANTHER; Heiko et al.	

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	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	12	20120051567		2012-03-01	CASTOR-PERRY, Kendall	
	13	20130129122		2013-05-23	JOHNSON; Martin E. et al.	

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	1	2002111817	JP		2002-04-12	NEC CORP.	English translation of Abstract only	
	2	2002123267	JP	A	2002-04-26	SONY CORP.	English translation of Abstract only	
	3	2005136457	JP		2005-05-26	SANYO ELECTRIC CO. LTD.	English translation of Abstract only	
	4	2007241652	JP	A	2007-09-20	CORE COLORS INC.	English translation of Abstract only	
	5	2009135750	JP		2009-06-18	KYOCERA CORP.	English translation of Abstract only	
	6	2009506603	JP	A	2009-02-12		English translation of Abstract only	
	7	2009538006	JP	A	2009-10-29		English translation of Abstract only	

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	8	2011130496	JP		2011-06-30	TOSHIBA CORP.	English translation of Abstract only	
	9	2007023120	WO	A1	2007-03-01	SONY ERICSSON MOBILE COMM AB		
	10	2008114389	WO	A1	2008-09-25	PIONEER CORPORATION	English translation of Abstract only	
	11	2012050927	WO		2012-04-19	BEYOND OBLIVION INC.		

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	1	Advisory Action mailed on 10 February 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 3 pages.	
	2	European Extended Search Report mailed 07 March 2016, issued in connection with EP Application No. 13810340.3, 9 pages.	
	3	Final Office Action mailed on 24 February 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 28 pages.	
	4	HORWITZ, Jeremy, "Logic3 i-Station25," retrieved from the internet: http://www.ilounge.com/index.php/reviews/entry/logic3-i-station25/, last visited December 17, 2013, 5 pages.	
	5	INTERNATIONAL BUREAU, International Preliminary Search Report mailed on 30 January 2014, issued in connection with International Application No. PCT/US2012/045894, 6 pages.	

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	6	INTERNATIONAL SEARCHING AUTHORITY, International Search Report for Application No. PCT/US2012/045894, mailed 26 December 2012, 3 pages.	
	7	INTERNATIONAL SEARCHING AUTHORITY, Written Opinion mailed on 26 December 2012, issued in connection with International Application No. PCT/US2012/045894, filed on 09 July 2012, 4 pages.	
	8	JAPANESE INTELLECTUAL PROPERTY OFFICE, Office Action Summary mailed on 02 February 2016, issued in connection with Japanese Patent Application No. 2015-520286, 6 pages.	
	9	Japanese Patent Office, Notice of Rejection, mailed on 03 February 2015, issued in connection with Japanese Patent Application No. 2014-521648, 7 pages.	
	10	ROLAND CORPORATION, "Roland announces BA-55 Portable PA System," press release, April 6, 2011, 2 pages.	

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6658091		2003-12-02	NAIDOO; Surendra N. et al.	
	2	7996566		2011-08-09	SYLVAIN; Dany et al.	
	3	8204890		2012-06-19	GOGAN; Brian	
	4	8285404		2012-10-09	KEKKI; Samuli T.	
	5	8672744		2014-03-18	GRONKOWSKI; Timothy T. et al.	
	6	9160965		2015-10-13	REDMANN; William Gibbens et al.	

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	1	20080002836		2008-01-03	MOELLER; Niklas et al.	
	2	20080072816		2008-03-27	RIESS; Walter H. et al.	
	3	20080077619		2008-03-27	GILLEY; Glenn Gregory et al.	
	4	20080077620		2008-03-27	GILLEY; Glenn Gregory et al.	
	5	20080086318		2008-04-10	GILLEY; Glenn Gregory et al.	
	6	20080189272		2008-08-07	POWERS; Michael et al.	
	7	20080263010		2008-10-23	ROYCHOUDHURI; Subrata et al.	
	8	20090089327		2009-04-02	KALABOUKIS; Chris et al.	
	9	20120185771		2012-07-19	ROTHKOPF; Fletcher R. et al.	
	10	20120192071		2012-07-26	MILLINGTON; Nicholas A. J.	
	11	20120207290		2012-08-16	MOYERS; Josh et al.	

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	12	20120281058		2012-11-08	LANEY; Alan et al.	
	13	20130031475		2013-01-31	MAOR; Yehonatan Rafael et al.	
	14	20130041954		2013-02-14	KIM; Laeyoung et al.	
	15	20130052940		2013-02-28	BRILLHART; David C. et al.	
	16	20130070093		2013-03-21	RIVERA; Ed et al.	
	17	20130094670		2013-04-18	MILLINGTON; Nicholas A. J.	
	18	20130124664		2013-05-16	FONSECA Jr.; Benedito J. et al.	
	19	20130132837		2013-05-23	MEAD; Jonathan Selwyn et al.	
	20	20130159126		2013-06-20	ELKADY; Amr	
	21	20130179163		2013-07-11	HERBIG; Tobias et al.	
	22	20130208911		2013-08-15	MILLINGTON; Nicholas A. J.	

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	23	20130208921		2013-08-15	MILLINGTON; Nicholas A. J.	
	24	20130226323		2013-08-29	MILLINGTON; Nicholas A. J.	
	25	20130232416		2013-09-05	MILLINGTON; Nicholas A. J.	
	26	20130253934		2013-09-26	PAREKH; Jateen P. et al.	
	27	20130287186		2013-10-31	QUADY; Curtis E.	
	28	20130290504		2013-10-31	QUADY; Curtis E.	
	29	20140298174		2014-10-02	IKONOMOV; Artashes Valeryevich	
	30	20150019670		2015-01-15	REDMANN; William Gibbens	
	31	20150304288		2015-10-22	BALASAYGUN; Mehmet et al.	

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	1	2009535708	JP		2009-10-01	MICROSOFT CORPORATION	English Translation of Abstract only	
	2	2007127485	WO		2007-11-08	MICROSOFT CORPORATION		
	3	2007131555	WO		2007-11-22	SONY ERICSOON MOBILE COMMUNICATIONS AB		
	4	2014004182	WO		2014-01-03	SONOS, INC.		

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	1	CANADIAN INTELLECTUAL PROPERTY OFFICE, Canadian Office Action mailed on 04 April 2016, issued in connection with Canadian Patent Application No. 2,842,342, 5 pages.	
	2	EUROPEAN PATENT OFFICE, Examination Report mailed on 22 March 2016, issued in connection with European Patent Application No. EP14181454.1, 6 pages.	
	3	FALCONE, John, "Sonos BU150 Digital Music System review," CNET, CNET [online] 2009.07.27 [retrieved on 2016.03.16], 11 pages Retrieved from the Internet: URL:http://www.cnet.com/products/sonos-bu150-digital-music-system/.	
	4	JAPANESE PATENT OFFICE, Office Action mailed on 29 March 2016, issued in connection with Japanese Patent Application No. JP2015-520288, 12 pages.	
	5	Non-Final Office Action mailed on 08 March 2016, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 13 pages.	

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	6	Notice of Allowance mailed on 07 April 2016, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 40 pages.	
	7	Notice of Allowance mailed on 11 April 2016, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 21 pages.	

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	13864249
Filing Date	2013-04-17
First Named Inventor	MILLINGTON, Nicholas A. J.
Art Unit	2442
Examiner Name	SURVILLO, OLEG
Attorney Docket Number	SNS-71301US11 (13-0402)

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	1	20020002565		2002-01-03	OHYAMA; Akira	
	2	20020062406		2002-05-23	CHANG; William Ho et al.	
	3	20100004983		2010-01-07	DICKERSON; Stephanie et al.	

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	1	"Final Office Action mailed 05 June 2014 for U.S. Application No. 13/907666 filed 31 May 2013".	☐
	2	"Non-Final Office Action mailed 05 January 2012 for U.S. Patent Application No. 13/298090 filed on 16 November 2011, 40 pages".	☐
	3	"Non-Final Office Action mailed 17 June 2014 for U.S. Application No. 14/176808 filed 10 February 2014".	☐
	4	"Non-Final Office Action mailed 18 December 2013 for U.S. Application No. 13/907666 filed 31 May 2013".	☐
	5	"Non-Final Office Action mailed 27 May 2014 for U.S. Application No. 14/186850 filed 21 February 2014".	☐
	6	"Yamaha DME Designer software manual: Copyright 2004", p.1-250.	☐
	7	"Yamaha DME Designer software manual: Copyright 2004", p.251-482.	☐

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Attorney Docket Number	13-0402 (MBHB 15-518-CON)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5185680		1993-02-09	KAKUBO; Yuji	
	2	5623483		1997-04-22	AGRAWAL; Prathima et al.	
	3	7310334		2007-12-18	FITZGERALD; Cary et al.	
	4	7665115		2010-02-16	GALLO; Kevin T. et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020098878		2002-07-25	MOONEY; Philip D. et al.	
	2	20020181355		2002-12-05	SHIKUNAMI; Juichi et al.	

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	3	20030229900		2003-12-11	REISMAN; Richard	
	4	20040014426		2004-01-22	MOORE; Richard A.	
	5	20040059965		2004-03-25	MARSHALL; Kenneth R. et al.	

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	1	2002358241	JP	A	2002-12-13	VICTOR COMPANY OF JAPAN.	English Translation of Abstract only	

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	1	Advisory Action mailed on 09 June 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 25 April 2013, 14 pages.	
	2	Final Office Action mailed on 03 June 2016, issued in connection with U.S. Patent Application No. 13/705176, filed on 05 December 2012, 24 pages.	
	3	Final Office Action mailed on 25 May 2016, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 33 pages.	

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	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	4	JAPANESE PATENT OFFICE, Office Action mailed on 24 May 2016, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages.	
	5	Non-Final Office Action mailed on 01 June 2016, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 21 pages.	
	6	Non-Final Office Action mailed on 10 May 2016, issued in connection with U.S. Patent Application No. 14/504812, filed 02 October 2014, 22 pages.	

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	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

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That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Benjamin M. Urban/	Date (YYYY-MM-DD)	2016-07-07
Name/Print	Benjamin M. Urban	Registration Number	71,591

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	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7158488		2007-01-02	FUJIMORI; Junichi	
	2	7319764		2008-01-15	REID; Glenn et al.	
	3	7474677		2009-01-06	TROTT; Christian A.	
	4	7483540		2009-01-27	RABINOWITZ; William M. et al.	
	5	7509181		2009-03-24	CHAMPION; Mark	
	6	7631119		2009-12-08	MOORE; Jeffrey C. et al.	
	7	7669113		2010-02-23	MOORE; Jeff et al.	
	8	7672470		2010-03-02	LEE; Jae-Hoon	

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	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	9	7689304		2010-03-30	SASAKI; Yoshio	
	10	7689305		2010-03-30	KREIFELDT; Richard A. et al.	
	11	7765315		2010-07-27	BATSON; James D. et al.	
	12	7827259		2010-11-02	HELLER; David et al.	
	13	7958441		2011-06-07	HELLER; David et al.	
	14	8015306		2011-09-06	BOWMAN; Timothy D.	
	15	8045721		2011-10-25	BURGAN; John M. et al.	
	16	8055364		2011-11-08	CHAMPION; Mark	
	17	8090317		2012-01-03	BURGE; Benjamin D. et al.	
	18	8111132		2012-02-07	ALLEN; William A. et al.	
	19	8116476		2012-02-14	INOHARA; Yuichi	

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	20	8126172		2012-02-28	HORBACH; Ulrich et al.	
	21	8144883		2012-03-27	PDERSEN; Jan A. et al.	
	22	8148622		2012-04-03	ROTHKOPF; Fletcher R. et al.	
	23	8170260		2012-05-01	REINING; Friedrich et al.	
	24	8175297		2012-05-08	HO; Harvey et al.	
	25	8185674		2012-05-22	MOORE; Jeffrey C. et al.	
	26	8194874		2012-06-05	STAROBIN; Bradley M. et al.	
	27	8208653		2012-06-26	EO; Kil-Su et al.	
	28	8214447		2012-07-03	DESLIPPE; Mark H. et al.	
	29	8214740		2012-07-03	JOHNSON; Timothy	
	30	8218790		2012-07-10	BULL; William et al.	

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	31	8233648		2012-07-31	SOREK; Noam et al.	
	32	8239748		2012-08-07	MOORE; Jeff et al.	
	33	8279709		2012-10-02	CHOISEL; Sylvain et al.	
	34	8281001		2012-10-02	BUSAM; Vincent R. et al.	
	35	8300845		2012-10-30	ZUREK; Robert et al.	
	36	8316147		2012-11-20	BATSON; James D. et al.	
	37	8325931		2012-12-04	HOWARD; Damian et al.	
	38	8340330		2012-12-25	YOON; Eung-Sik et al.	
	39	8345709		2013-01-01	NITZPON; Hans-Juergen et al.	
	40	8364295		2013-01-29	BECKMANN; Paul E. et al.	
	41	8407623		2013-03-26	KERR; Duncan et al.	

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	42	8423893		2013-04-16	RAMSAY; Max Gordon et al.	
	43	8432851		2013-04-30	XU; Guijin et al.	
	44	8433076		2013-04-30	ZUREK; Robert et al.	
	45	8457334		2013-06-04	YOON; Eung-Sik et al.	
	46	8463184		2013-06-11	DUA; Robin	
	47	8463875		2013-06-11	KATZ; Hagay et al.	
	48	8509211		2013-08-13	TROTTER; John et al.	
	49	8520870		2013-08-27	SATO; Katsuyuki et al.	
	50	8577048		2013-11-05	CHAIKIN; Peter et al.	
	51	8611559		2013-12-17	SANDERS; Christopher	
	52	8615091		2013-12-24	TERWAL; Remco	

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	53	8639830		2014-01-28	BOWMAN; Timothy D.	
	54	8683009		2014-03-25	NG; Stanley et al.	
	55	8731206		2014-05-20	PARK; Keun Young	
	56	8750282		2014-06-10	GELTER; Aaron et al.	
	57	8751026		2014-06-10	SATO; Teppei et al.	
	58	8762565		2014-06-24	TOGASHI; Ryuichiro et al.	
	59	8818538		2014-08-26	SAKATA; Junichiro	
	60	8819554		2014-08-26	BASSO; Andrea et al.	
	61	8843586		2014-09-23	PANTOS; Roger et al.	
	62	8885851		2014-11-11	WESTENBROEK; Marcel	
	63	8904066		2014-12-02	MOORE; Jeffrey C. et al.	

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	64	8917877		2014-12-23	HAAFF; Olle et al.	
	65	8930006		2015-01-06	HAATAINEN; Niko	
	66	8954177		2015-02-10	SANDERS; Christopher John	
	67	8965544		2015-02-24	RAMSAY; Max Gordon	
	68	8966394		2015-02-24	GATES; Patrick et al.	
	69	9137602		2015-09-15	MAYMAN; Avrum G. et al.	

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	1	20080212786		2008-09-04	PARK; Hae-Kwang	
	2	20080215169		2008-09-04	DEBETTENCOURT; Lisa et al.	
	3	20090017868		2009-01-15	UEDA; Joji et al.	

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	4	20090100189		2009-04-16	BAHREN; Frank et al.	
	5	20090251604		2009-10-08	IYER; Suraj C.	
	6	20110228944		2011-09-22	CROGHAN; Frank et al.	
	7	20120148075		2012-06-14	GOH; Aik Hee Daniel et al.	
	8	20120237054		2012-09-20	EO; Kil-Su et al.	
	9	20130038726		2013-02-14	KIM; Jin-Hyong	
	10	20130047084		2013-02-21	SANDERS; Christopher John et al.	
	11	20130167029		2013-06-27	FRIESEN; Sharon E. et al.	
	12	20130230175		2013-09-05	BECH; Soeren et al.	
	13	20130279706		2013-10-24	MARTI; Stefan J.	
	14	20140006483		2014-01-02	GARMARK; Sten et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	15	20140037097		2014-02-06	LABOSCO; Mark	
	16	20140064501		2014-03-06	OLSEN; Martin et al.	
	17	20140075308		2014-03-13	SANDERS; Christopher John et al.	
	18	20140075311		2014-03-13	BOETTCHER; Jesse William et al.	
	19	20140079242		2014-03-20	NGUYEN; Nam et al.	
	20	20140108929		2014-04-17	GARMARK; Sten et al.	
	21	20140123005		2014-05-01	FORSTALL; Scott J. et al.	
	22	20140140530		2014-05-22	GOMES-CASSERES GLENN . et al.	
	23	20140161265		2014-06-12	CHAIKIN; Peter et al.	
	24	20140242913		2014-08-28	PANG; Hawk Yin	
	25	20140256260		2014-09-11	UEDA; Joji et al.	

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	26	20140267148		2014-09-18	LUNA; Michael Edward Smith et al.	
	27	20140270202		2014-09-18	IVANOV; Plamen A. et al.	
	28	20140273859		2014-09-18	LUNA; Michael Edward Smith et al.	
	29	20140279889		2014-09-18	LUNA; Michael Edward Smith	
	30	20140285313		2014-09-25	LUNA; Michael Edward Smith et al.	
	31	20140286496		2014-09-25	LUNA; Michael Edward Smith et al.	
	32	20140323036		2014-10-30	DALEY; Michael J. et al.	
	33	20140344689		2014-11-20	SCOTT; Mark David et al.	
	34	20140378056		2014-12-25	LIU; Peter T.	
	35	20150026613		2015-01-22	KWON; Yunmi et al.	
	36	20150032844		2015-01-29	TARR; Morton et al.	

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	37	20150043736		2015-02-12	OLSEN; Martin et al.	
	38	20150049248		2015-02-19	WANG; Min et al.	
	39	20150074527		2015-03-12	SEVIGNY; Jonathan Christopher et al.	
	40	20150074528		2015-03-12	SAKALOWSKY; John Michael et al.	
	41	20150098576		2015-04-09	SUNDARESAN; Rameshwar et al.	
	42	20150256954		2015-09-10	CARLSSON; Gregory Peter et al.	

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	1	0772374	EP	A2	1997-05-07	BANG & OLUFSEN AS.		☐
	2	2043381	EP	A2	2009-04-01	BANG & OLUFSEN AS.		☐
	3	2161950	EP	A2	2010-03-10	BANG & OLUFSEN AS.		☐

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	4	2591617	EP	B1	2014-06-18	BANG & OLUFSEN AS.		☐
	5	2486183	GB		2012-06-13	CAMBRIDGE SILICON RADIO LIMITED.		☐
	6	2014149533	WO	A2	2014-09-25	BOSE CORP [US]		☐

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	1	CANADIAN INTELLECTUAL PROPERTY OFFICE, Canadian Office Action mailed on 14 September 2015, issued in connection with Canadian Patent Application No. 2,842,342, 2 pages.	☐
	2	Notice of Allowance mailed on 07 October 2015, issued in connection with U.S. Patent Application No. 14/184526, filed on 19 February 2014, 7 pages.	☐
	3	Notice of Allowance mailed on 09 October 2015, issued in connection with U.S. Patent Application No. 13/435739, filed on 30 March 2012, 4 pages.	☐
	4	"Notice of Allowance mailed on 13 October 2015, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 7 pages.".	☐
	5	Advisory Action mailed on 28 September 2009, issued in connection with U.S. Patent Application No. 10/816217, filed on 01 April 2004, 4 pages.	☐
	6	First Action Interview Office Action Summary mailed on 15 April 2015, issued in connection with U.S. Patent Application No. 14/505027, filed on 02 October 2014, 6 pages.	☐

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	7	Advisory Action mailed on 05 January 2012, issued in connection with U.S. Patent Application No. 12/035112, filed on 21 February 2008, 3 pages.	☐
	8	Final Office Action mailed on 13 October 2011, issued in connection with U.S. Patent Application No. 12/035112, filed on 21 February 2008, 10 pages.	☐
	9	Final Office Action mailed on 18 February 2009, issued in connection with U.S. Patent Application No. 10/861653, filed on 05 June 2004, 18 pages.	☐
	10	Non-Final Office Action mailed on 10 March 2011, issued in connection with U.S. Patent Application No. 12/035112, filed on 21 February 2008, 12 pages.	☐
	11	Non-Final Office Action mailed on 27 June 2008, issued in connection with U.S. Patent Application No. 10/861653, filed on 05 June 2004, 19 pages.	☐
	12	Notice of Allowance mailed on 14 June 2012, issued in connection with U.S. Patent Application No. 12/035112, filed on 21 February 2008, 9 pages.	☐
	13	Notice of Allowance mailed on 16 June 2009, issued in connection with U.S. Patent Application No. 10/861653, filed on 05 June 2004, 11 pages.	☐

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	1	5726989		1998-03-10	DOKIC; Miroslav V.	
	2	5923869		1999-07-13	KASHIWAGI; Yoshiichiro et al.	
	3	6108485		2000-08-22	KIM; Jeong-Kyu	
	4	6343028		2002-01-29	KUWAOKA; Toshiharu	
	5	6687664		2004-02-03	SUSSMAN; Robert et al.	
	6	6778493		2004-08-17	ISHII; Atsushi	
	7	6970482		2005-11-29	KIM; Sung-Tae	
	8	7130368		2006-10-31	AWEYA; James et al.	

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	1	20020114359		2002-08-22	IBARAKI; Susumu et al.	
	2	20030035072		2003-02-20	HAGG; Wilhelm	
	3	20030198254		2003-10-23	SULLIVAN; Gary E. et al.	
	4	20030198255		2003-10-23	SULLIVAN; Gary E. et al.	
	5	20030200001		2003-10-23	GODDARD; Mark D.	
	6	20040248601		2004-12-09	CHANG; Chin-Chi	
	7	20060098936		2006-05-11	IKEDA; Wataru et al.	
	8	20070043847		2007-02-22	CARTER; Harry N. et al.	
	9	20100284389		2010-11-11	RAMSAY; Max et al.	

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	10	20100299639		2010-11-25	RAMSAY; Max Gordon et al.		

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	1	"Advisory Action mailed on 1 June 2015, issued in connection with U.S. Patent Application No. 14/516867, filed on 17 October 2014, 11 pages".	☐
	2	"Baldwin, Roberto. "How-To: Setup iTunes DJ on Your Max and iPhone", available at http://www.maclife.com/article/howtos/howto_setup_itunes_dj_your_mac_and_iphone, archived on 3/17/ 2009, 4 pages.".	☐
	3	"Final Office Action mailed on 15 June 2015, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 25 pages".	☐
	4	"Non-Final Office Action mailed on 12 June 2015, issued in connection with U.S. Patent Application No. 13/848932, filed on 22 March 2013, 16 pages".	☐
	5	"Non-Final Office Action mailed on 19 June 2015, issued in connection with U.S. Patent Application No. 13/533105 filed on 26 June 2012, 38 pages.".	☐

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	6	"Non-Final Office Action mailed on 23 June 2015, issued in connection with U.S. Patent Application No. 13/705176, filed on 5 December 2012, 30 pages".	☐
	7	"Non-Final Office Action mailed on 3 June 2015, issued in connection with U.S. Patent Application No. 14/564544, filed on 9 December 2014, 7 pages.".	☐
	8	"Non-Final Office Action mailed on 4 June 2015, issued in connection with U.S. Patent Application No. 13/871795 filed on 26 April 2013, 16 pages.".	☐
	9	"Notice of Allowance mailed on 2 July 2015, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 17 pages".	☐
	10	"Notice of Allowance mailed on 2 July 2015, issued in connection with U.S. Patent Application No. 13/888203, filed on 6 May 2013, 19 pages".	☐
	11	"Notice of Allowance mailed on 2 July 2015, issued in connection with U.S. Patent Application No. 14/184935, filed on 20 February 2014, 23 pages".	☐
	12	"Notice of Allowance mailed on 6 July 2015, issued in connection with U.S. Patent Application No. 13/297000, filed on 15 November 2011, 24 pages.".	☐

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5696896		1997-12-09	BADOVINATZ; Peter Richard et al.	
	2	5787249		1998-07-28	BADOVINATZ; Peter Richard et al.	
	3	6839752		2005-01-04	MILLER; Robert et al.	
	4	6907458		2005-06-14	TOMASSETTI; Stephen Robert et al.	
	5	7412499		2008-08-12	CHANG; Chun-Shi et al.	
	6	7743009		2010-06-22	HANGARTNER; Rick et al.	
	7	8020023		2011-09-13	MILLINGTON; Nicholas A.J. et al.	
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	1	20010027498		2001-10-04	VAN; De Meulenhof Dennis et al.	
	2	20020184310		2002-12-05	TRAVERSAT; Bernard A. et al.	
	3	20030055892		2003-03-20	HUITEMA; Christian et al.	
	4	20030204273		2003-10-30	DINKER; Darpan et al.	
	5	20030204509		2003-10-30	DINKER; Darpan et al.	
	6	20030227478		2003-12-11	CHATFIELD; Keith M.	
	7	20040133689		2004-07-08	VASISHT; Samrat	
	8	20050216556		2005-09-29	MANION; Todd R. et al.	
	9	20070192156		2007-08-16	GAUGER; Derek K.	
	10	20090193345		2009-07-30	WENSLEY; Paul et al.	

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	11	20130197682		2013-08-01	MILLINGTON; Nicholas A. J.	

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	1	2003037585	JP		2003-02-07	SONY CORP		☐
	2	2003101958	JP		2003-04-04	TOSHIBA CORP		☐
	3	02073851	WO		2002-09-19	PULSE-LINK, INC.		☐

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	1	"Advisory Action mailed 18 September 2008 for U.S. Application No. 10/816217 filed 01 April 2004, 8 pages".	☐
	2	"JAPANESE INTELLECTUAL PROPERTY OFFICE, "Decision of Rejection," issued in connection with Japanese patent application No.2012-178711, mailed on July 4, 2014, 3 pages".	☐
	3	"JAPANESE INTELLECTUAL PROPERTY OFFICE, "Office Action Summary," issued in connection with Japanese patent application No. 2012-178711, mailed on November 19, 2013, 5 pages".	☐

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	4	"Non-Final Office Action mailed 19 April 2010 for U.S. Application No. 11/801468 filed 09 May 2007, 16 pages".	☐
	5	"Non-Final Office Action mailed 25 July 2014 for U.S. Application No. 14/184526 filed 19 February 2014".	☐
	6	"Non-Final Office Action mailed 29 November 2010 for U.S. Application No. 11/801468 filed 09 May 2007, 17 pages".	☐
	7	"Non-Final Office Action mailed 31 July 2014 for U.S. Application No. 13/533105 filed 26 June 2012".	☐
	8	"Notice of Allowance mailed 06 May 2011 for U.S. Application No. 11/801468 filed 09 May 2007, 10 pages".	☐

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	1	20150139210	A1	2015-05-21	MARIN et al.	

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	1	Creative, "Connecting Bluetooth Devices with Creative D200," http://support.creative.com/kb/ShowArticle.aspx?url=http://ask.creative.com:80/SRVS/CGI-BIN/WEBCGI.EXE/,/?St=106,E=0000000000396859016,K=9377,Sxi=8,VARSET=ws:http://us.creative.com,case=63350>, available on 11/28/2011, 2 pages

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	13864249
Filing Date	2013-04-17
First Named Inventor	MILLINGTON, NICHOLAS A. J.
Art Unit	2442
Examiner Name	SURVILLO, OLEG
Attorney Docket Number	SNS-71301US11 (13-0402)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5153579		1992-10-06	FISCH; Kenneth D. et al.	
	2	7206967		2007-04-17	MARTI; Philippe et al.	
	3	7711774		2010-05-04	ROTHSCHILD; Leigh M.	

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	1	20010046235		2001-11-29	TREVITT; Stephen et al.	
	2	20020173273		2002-11-21	SPURGAT; Jeffrey Jonathan et al.	
	3	20040098754		2004-05-20	VELLA; Zane et al.	

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	4	20050062637		2005-03-24	EL; Zabadani Hicham Mahmoud et al.	
	5	20130022221		2013-01-24	KALLAI; Christopher et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2338374	GB		1999-12-15	MOTOROLA LTD.		☐
	2	07-210129	JP		1995-08-11	INTERNAT'L BUSINESS MACH CORP (IBM)		☐
	3	2005108427	JP		2005-04-21	RICOH KK.		☐

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	1	"Advisory Action mailed on 2 March 2015, issued in connection with U.S. Patent Application No. 13/848932, filed on March 22, 2013, 3 pages.".	☐
	2	"Advisory Action mailed on 26 February 2015, issued in connection with U.S. Patent Application No. 14/184,528, filed on 19 February 2014, 3 pages.".	☐

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	3	"Final Office Action mailed on 11 February 2015, issued in connection with U.S. Patent Application No. 14/184526, filed on 19 February 2014, 13 pages".	☐
	4	"Final Office Action mailed on 11 February 2015, issued in connection with U.S. Patent Application No. 14/184,935, filed on 20 February 2014, 17 pages".	☐
	5	"Final Office Action mailed on 12 February 2015, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 20 pages".	☐
	6	"INTERNATIONAL BUREAU,"International Preliminary Report on Patentability" issued in connection with International Patent application No. PCT/US2013/046372, mailed December 31, 2014, 5 pages.".	☐
	7	"International Preliminary Report on Patentability and Written Opinion, issued by the International Searching Authority in connection with International Patent Application No. PCT/US2013/046386, mailed on January 8, 2015, 8 pages".	☐
	8	"Non-Final Office Action mailed on 26 February 2015, issued in connection with U.S. Patent Application No. 14/186,850, filed on 21 February 2014, 25 pages.".	☐
	9	"Non-Final Office Action mailed on 30 January 2015, issued in connection with U.S. Patent Application No. 14/504,812, filed on 2 October 2014, 13 pages".	☐
	10	"Non-Final Office Action mailed on 30 January 2015, issued in connection with U.S. Patent Application No. 14/290,493, filed on 29 May 2014, 29 pages.".	☐
	11	Final Office Action mailed on 3 March 2015, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 13 pages.	☐

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	1	5239458		1993-08-24	SUZUKI; Takashi	
	2	5299266		1994-03-29	LUMSDEN; John L.	
	3	5751819		1998-05-12	DORROUGH; Michael L.	
	4	5808662		1998-09-15	KINNEY; Daniel Reid et al.	
	5	6108686		2000-08-22	WILLIAMS Jr.; ,Henry R.	
	6	6255961		2001-07-03	VAN; Ryzin John M. et al.	
	7	6349339		2002-02-19	WILLIAMS; Henry R.	
	8	7113999		2006-09-26	PESTONI; Florian et al.	

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	9	7218708		2007-05-15	BEREZOWSKI; Andrew G. et al.	
	10	7236739		2007-06-26	CHANG; Chin-Chi	
	11	7293060		2007-11-06	KOMSI; Asko	
	12	7483958		2009-01-27	ELABBADY; Tarek Z. et al.	
	13	7571014		2009-08-04	LAMBOURNE; Robert A. et al.	
	14	7599685		2009-10-06	GOLDBERG; David et al.	
	15	7657224		2010-02-02	GOLDBERG; David et al.	
	16	7668990		2010-02-23	KRZYZANOWSKI; Paul et al.	
	17	7669219		2010-02-23	SCOTT; Samuel T.III.	
	18	7702279		2010-04-20	KO; Steve et al.	
	19	7835689		2010-11-16	GOLDBERG; David et al.	

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	20	7865137		2011-01-04	GOLDBERG; David et al.	
	21	7885622		2011-02-08	KRAMPF; Steven S. et al.	
	22	7916877		2011-03-29	GOLDBERG; David et al.	
	23	7917082		2011-03-29	GOLDBERG; David et al.	
	24	8023663		2011-09-20	GOLDBERG; David	
	25	8028038		2011-09-27	WEEL; Martin	
	26	8028323		2011-09-27	WEEL; Martin	
	27	8112032		2012-02-07	KO; Steve et al.	
	28	8214873		2012-07-03	WEEL; Martin	
	29	8230099		2012-07-24	WEEL; Martin	
	30	8315555		2012-11-20	KO; Steve et al.	

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	1	20020003548		2002-01-10	KRUSCHE; Arnd et al.	
	2	20020072816		2002-06-13	SHDEMA; Yoav et al.	
	3	20020109710		2002-08-15	HOLTZ; Alex et al.	
	4	20020124097		2002-09-05	ISELY; Larson J. et al.	
	5	20020188762		2002-12-12	TOMASSETTI; Stephen Robert et al.	
	6	20030020763		2003-01-30	MAYER; Theodore et al.	
	7	20030235304		2003-12-25	EVANS; Glenn F. et al.	
	8	20040008852		2004-01-15	ALSO; Masaru et al.	
	9	20040010727		2004-01-15	FUJINAMI; Yasushi	

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	10	20040015252		2004-01-22	AISO; Masaru et al.	
	11	20040131192		2004-07-08	METCALF; Randall B.	
	12	20050047605		2005-03-03	LEE; Noel et al.	
	13	20050125357		2005-06-09	SAADAT; Abbas S. et al.	
	14	20050181348		2005-08-18	CAREY; Tadhg M. et al.	
	15	20050195205		2005-09-08	ABRAMS; Thomas A.Jr	
	16	20050289224		2005-12-29	DESLIPPE; Mark H. et al.	
	17	20060095516		2006-05-04	WIJERATNE; Viranga L.	
	18	20060143236		2006-06-29	WU; Michael	
	19	20070048713		2007-03-01	PLASTINA; Daniel et al.	
	20	20070142022		2007-06-21	MADONNA; Robert P. et al.	

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	21	20070169115		2007-07-19	KO; Steve et al.	
	22	20070299778		2007-12-27	HAVESON; Ryan A. et al.	
	23	20080091771		2008-04-17	ALLEN; Jeffrey L. et al.	
	24	20080144861		2008-06-19	MELANSON; John L. et al.	
	25	20090031336		2009-01-29	CHAVEZ; Timothy R. et al.	
	26	20090222115		2009-09-03	MALCOLM; David et al.	
	27	20100049835		2010-02-25	KO; Steve et al.	
	28	20100228740		2010-09-09	CANNISTRARO; Alan et al.	
	29	20110066943		2011-03-17	BRILLON; Francois et al.	
	30	20120030366		2012-02-02	COLLART; Todd et al.	
	31	20120060046		2012-03-08	MILLINGTON; Nicholas A. J.	

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	32	20120129446		2012-05-24	KO; Steve et al.	
	33	20130080599		2013-03-28	KO; Steve et al.	
	34	20130191454		2013-07-25	OLIVER; Michael R. et al.	

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	1	2005013047	WO	A2	2005-02-10	SONOS INC [US], et al.		☐

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	1	"INTERNATIONAL BUREAU,"Search Report" issued in connection with International Patent application No. PCT/ US2013/046372, mailed August 26, 2013, 3 pages."	☐
	2	"INTERNATIONAL BUREAU,"Written opinion" issued in connection with International Patent application No. PCT/ US2013/046372, mailed August 26, 2013, 4 pages."	☐
	3	"International Search Report, issued by the International Searching Authority in connection with PCT Application No. PCT/US2013/046386, on September 30, 2013, 3 pages."	☐

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	4	M. NILSSON., "ID3 Tag Version 2", March 26, 1998, 28 Pages.	☐
	5	"Non-final Office Action in connection with Application No. 13/619,237, mailed April 10, 2013", United States Patent and Trademark Office, 10 pages.	☐
	6	"Non-Final Office Action mailed 25 November 2013 for U.S. Application No. 13/533105 filed 26 June 2012."	☐
	7	"Notice of Allowability in Application No. 13/619,237", September 6, 2013, 4 pages.	☐
	8	"Polycom Conference Composer manual: copyright 2001".	☐
	9	"Written Opinion of the International Searching Authority. issued by the International Searching Authority in connection with PCT Application No. PCT/US2013/046386, on September 30, 2013, 6 pages."	☐
	10	"Yamaha DME 32 manual: copyright 2001".	☐

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	OLEG SURVILLO	2442

CPC- SEARCHED		
Symbol	Date	Examiner
G06F 3/167, 17/00, 17/3074, 3/048, 3/0482, 3/0484, 3/126, 3/16	9/28/2016	OS
H04L 65/60, 12/2812	9/28/2016	OS

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
709	219, 220, 231	9/28/2016	OS

SEARCH NOTES		
Search Notes	Date	Examiner
Updated Inventor search	9/28/2016	OS
Updated Assignee search	9/28/2016	OS
Updated EAST search in USPAT, US-PGPUB, EPO, JPO, and FPRS databases	9/28/2016	OS

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/OLEG SURVILLO/ Primary Examiner.Art Unit 2442

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✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
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CLAIM		DATE								
Final	Original	09/28/2016								
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CLAIM		DATE								
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	37	✓								
	38	✓								
	39	✓								
	40	✓								

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	1	5602992		1997-02-11	DANNEELS; Gunner	
	2	5923902		1999-07-13	INAGAKI; Yoshihiro	
	3	6404811		2002-06-11	CVETKO; John F. et al.	
	4	6522886		2003-02-18	YOUNGS; Edward A. et al.	
	5	7130616		2006-10-31	JANIK; Craig M.	
	6	7136934		2006-11-14	CARTER; Harry Nick et al.	
	7	7143939		2006-12-05	HENZERLING; David P.	
	8	7236773		2007-06-26	THOMAS; Graham	

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	9	7657910		2010-02-02	MCAULAY; Roger et al.	
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	1	20010042107		2001-11-15	PALM; Stephen R.	
	2	20020022453		2002-02-21	BALOG; Horia et al.	
	3	20020026442		2002-02-28	LIPSCOMB; Kenneth O. et al.	
	4	20030073432		2003-04-17	MEADE; William K.	
	5	20030157951		2003-08-21	HASTY; William V.	
	6	20040019497		2004-01-29	VOLK; Andrew R. et al.	
	7	20040024478		2004-02-05	HANS; Mathieu Claude et al.	
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	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301US11 (13-0402)

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2713281	EP		2004-04-02	SONOS, INC.		☐
	2	0153994	WO		2001-07-26	FRISKIT, INC.		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	"Advisory Action mailed 5 September 2014 for U.S. Application No. 13/907666 filed 31 May 2013, 3 pages".	☐
	2	"Bluetooth. "Specification of the Bluetooth System: The ad hoc SCATTERNET for affordable and highly functional wireless connectivity" Core, Version 1.0 A, 26 July 1999, 1068 pages".	☐
	3	"Bluetooth. "Specification of the Bluetooth System: Wireless connections made easy" Core, Version 1.0 B, 1 December 1999, 1076 pages".	☐
	4	"Dell, Inc. "Dell Digital Audio Receiver: Reference Guide" June 2000, 70 pages".	☐
	5	"Dell, Inc. "Start Here" June 2000, 2 pages".	☐
	6	"Final Office Action mailed on 22 October 2014, issued in connection with U.S. Patent Application No. 14/186850, filed on 21 February 2014, 12 pages".	☐

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.S./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	MILLINGTON, Nicholas A. J.
	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301US11 (13-0402)

	7	"Final Office Action mailed on 23 October 2014, issued in conection with U.S. Patent Application No. 13/705176, filed on 5 December 2012, 23 pages".	☐
	8	"Jones, Stephen. "Dell Digital Audio Receiver: Digital upgrade for your analog stereo" Analog Stereo. 24 June 2000 < http://www.reviewsonline.com/articles/961906864.htm> retrieved 18 June 2014, 2 pages".	☐
	9	"Louderback, Jim. "Affordable Audio Receiver Furnishes Homes With MP3" TechTV Vault. 28 June 2000 <http://www.g4tv.com/articles/17923/affordable-audio-receiver-furnishes-homes-with-mp3/> retrieved 10 July 2014, 2 pages".	☐
	10	"Non-Final Office Action mailed 25 July 2014 for U.S. Application No. 14/184935 filed 20 February 2014".	☐
	11	"Non-Final Office Action mailed on 23 October 2014, issued in connection with U.S. Patent Application No. 13/848904, filed on 22 March 2013, 11 pages".	☐
	12	"Non-Final Office Action mailed on 23 October 2014, issued in connection with U.S. Patent Application No. 13/864251, filed on 17 April 2013, 11 pages".	☐
	13	"Non-Final Office Action mailed on 23 October 2014, issued in connection with U.S. Patent Application No. 13/888203, filed on 6 May 2013, 9 pages".	☐
	14	"Non-final Office Action mailed on 24 October 2014, issued in connection with U.S. Patent Application No. 13/435776, filed 30 March 2012, 14 pages".	☐
	15	"Notice of Allowance mailed on 25 September 2014, issued in connection with U.S. Patent Application No. 14/176,808, filed on 10 February 2014, 5 pages".	☐
	16	"Palm, Inc. "Handbook for the Palm VII Handheld" May 2000, 311 pages".	☐
	17	"Welcome. You're watching Apple TV." Apple TV 1st Generation Setup Guide, 8 April 2008 <http://manuals.info.apple.com/MANUALS/0/MA403/en_US/AppleTV_SetupGuide.pdf> Retrieved 10/14/14, 40 pages".	☐

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	Art Unit	2442
	Examiner Name	SURVILLO, OLEG
	Attorney Docket Number	SNS-71301US11 (13-0402)

	18	"Welcome. You're watching Apple TV." Apple TV 2nd Generation Setup Guide, 10 March 2011 <http://manuals.info.apple.com/MANUALS/1000/MA1555/en_US/Apple_TV_2nd_gen_Setup_Guide.pdf> Retrieved 10/16/14, 35 pages".	☐
	19	"Welcome. You're watching Apple TV." Apple TV 3rd Generation Setup Guide, 16 March 2012 <http://http://manuals.info.apple.com/MANUALS/1000/MA1607/en_US/apple_tv_3rd_gen_setup.pdf> Retrieved 10/16/14, 35 pages".	☐
	20	Presentations at WinHEC 2000, May 2000, 139 pages	☐

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Examiner Signature	/Oleg Survillo/	Date Considered	09/29/2016

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	13864249
Filing Date	2013-04-17
First Named Inventor	MILLINGTON; Nicholas A.J.
Art Unit	2442
Examiner Name	SURVILLO, Oleg
Attorney Docket Number	13-0402 (MBHB 15-518-CON)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5185680		1993-02-09	KAKUBO; Yuji	
	2	5623483		1997-04-22	AGRAWAL; Prathima et al.	
	3	7310334		2007-12-18	FITZGERALD; Cary et al.	
	4	7665115		2010-02-16	GALLO; Kevin T. et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020098878		2002-07-25	MOONEY; Philip D. et al.	
	2	20020181355		2002-12-05	SHIKUNAMI; Juichi et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	3	20030229900		2003-12-11	REISMAN; Richard	
	4	20040014426		2004-01-22	MOORE; Richard A.	
	5	20040059965		2004-03-25	MARSHALL; Kenneth R. et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2002358241	JP	A	2002-12-13	VICTOR COMPANY OF JAPAN.	English Translation of Abstract only	

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Advisory Action mailed on 09 June 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 25 April 2013, 14 pages.	
	2	Final Office Action mailed on 03 June 2016, issued in connection with U.S. Patent Application No. 13/705176, filed on 05 December 2012, 24 pages.	
	3	Final Office Action mailed on 25 May 2016, issued in connection with U.S. Patent Application No. 14/290493, filed on 29 May 2014, 33 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	MILLINGTON; Nicholas A.J.
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	4	JAPANESE PATENT OFFICE, Office Action mailed on 24 May 2016, issued in connection with Japanese Patent Application No. 2014-220704, 7 pages.	
	5	Non-Final Office Action mailed on 01 June 2016, issued in connection with U.S. Patent Application No. 14/184522, filed on 19 February 2014, 21 pages.	
	6	Non-Final Office Action mailed on 10 May 2016, issued in connection with U.S. Patent Application No. 14/504812, filed 02 October 2014, 22 pages.	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Benjamin M. Urban/	Date (YYYY-MM-DD)	2016-07-07
Name/Print	Benjamin M. Urban	Registration Number	71,591

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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Bibliographic data: JP2002358241 (A) — 2002-12-13

COPY MANAGEMENT METHOD FOR CONTENT, RECORDING/ REPRODUCING UNIT AND REPRODUCING UNIT

Inventor(s): SHIYUKUNAMI SHIYUUICHI; FUCHIGAMI NORIHIKO ± (SHIYUKUNAMI SHIYUUICHI, ; FUCHIGAMI NORIHIKO)

Applicant(s): VICTOR COMPANY OF JAPAN ± (VICTOR CO OF JAPAN LTD)

Classification: **- international:** ***G06F12/14; G06F21/24; G10K15/02; G11B20/10; G11B27/00;*** (IPC1-7): G06F12/14; G10K15/02; G11B20/10; G11B27/00

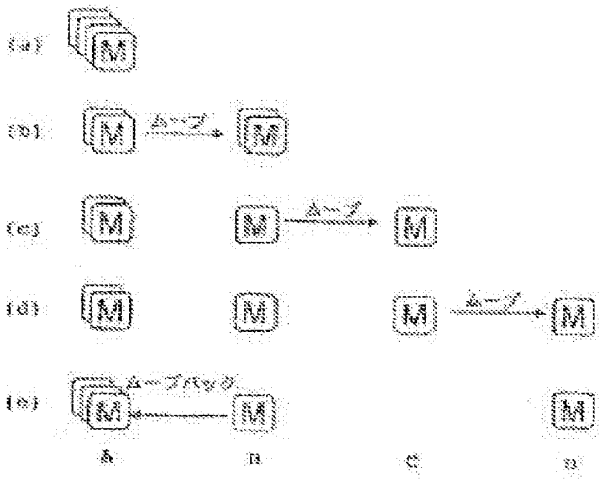
- cooperative:

Application number: JP20010165605 20010531

Priority number(s): JP20010165605 20010531

Abstract of JP2002358241 (A)

PROBLEM TO BE SOLVED: To make the protection given to a copyright holder by SDMI(secure digital music initiative) regulations compatible with user's convenience in the copy management of content. SOLUTION: The content and a copying right number that the copy right holder gives to the user with respect to the content are distributed to the user as the virtual content files M of the number same as the copying right number, and, if the user copies from a medium with the distributed content to another medium, this case is treated as that the virtual content file is moved and the virtual content file of the move source is to be erased. By decrementing the copying right number of the medium of the copy source and by incrementing the copying right number of the medium of the copy destination, the virtual content file is treated as a movable object.



(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号
特開2002－358241
（P2002－358241A）
(43)公開日　平成14年12月13日(2002.12.13)

(51)Int.Cl.[7]	識別記号	FI		テーマコード(参考)
G06F 12/14	320	G06F 12/14	320E	5B017
G10K 15/02		G10K 15/02		5D044
G11B 20/10		G11B 20/10	D	5D110
			H	
27/00		27/00	B	

審査請求　未請求　請求項の数８　ＯＬ　（全 8 頁）

(21)出願番号　特願2001－165605(P2001－165605)

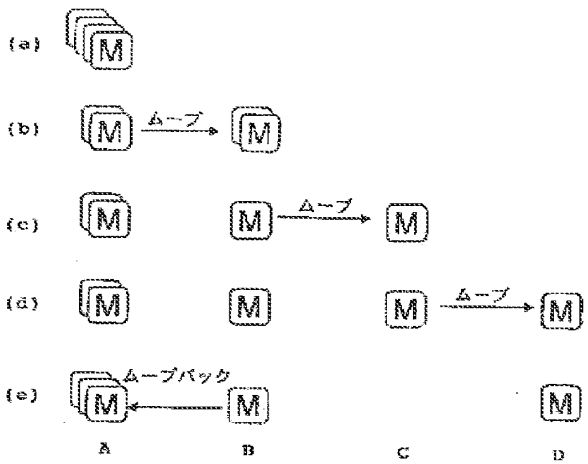
(22)出願日　平成13年５月31日(2001.5.31)

(71)出願人　000004329
日本ビクター株式会社
神奈川県横浜市神奈川区守屋町３丁目12番地
(72)発明者　宿波　拾一
神奈川県横浜市神奈川区守屋町３丁目12番地　日本ビクター株式会社内
(72)発明者　渕上　徳彦
神奈川県横浜市神奈川区守屋町３丁目12番地　日本ビクター株式会社内
(74)代理人　100093067
弁理士　二瓶　正敬

最終頁に続く

(54)【発明の名称】　コンテンツのコピー管理方法、記録再生装置及び再生装置

(57)【要約】
【課題】　コンテンツのコピー管理において、ＳＤＭＩ規則で著作権者に与えている保護とユーザの利便性を両立させる。
【解決手段】　コンテンツ及びそのコンテンツに対して著作権者からユーザに与えるコピー権利数を、コピー権利数と同じ数の仮想コンテンツファイルMとしてユーザに配信し、ユーザが配信コンテンツを媒体から媒体にコピーする場合に、仮想コンテンツファイルを移動して移動元の仮想コンテンツファイルを消去するものとして取り扱う。コピー元の媒体のコピー権利数をデクリメントし、コピー先の媒体のコピー権利数をインクリメントすることにより、仮想コンテンツファイルを移動するものとして取り扱う。



【特許請求の範囲】
【請求項１】　コンテンツ及びそのコンテンツに対して著作権者からユーザに与えるコピー権利数を、コピー権利数と同じ数の仮想コンテンツファイルとしてユーザに配信するステップと、
ユーザが前記コンテンツを媒体から媒体にコピーする場合に、前記仮想コンテンツファイルを移動して移動元の媒体の仮想コンテンツファイルを消去するステップとを、
有するコンテンツのコピー管理方法。
【請求項２】　コンテンツをそのコンテンツに対して著作権者からユーザに与えるコピー権利数と共にユーザに配信するステップと、
ユーザが前記配信されたコンテンツを媒体から媒体にコピーする場合に、前記コンテンツ及びコピー権利数をコピー権利数と同じ数の仮想コンテンツファイルとして移動して移動元の仮想コンテンツファイルを消去するステップとを、
有するコンテンツのコピー管理方法。
【請求項３】　コピー元の媒体のコピー権利数をデクリメントし、コピー先の媒体のコピー権利数をインクリメントすることにより、前記仮想コンテンツファイルを移動することを特徴とする請求項１又は２に記載のコンテンツのコピー管理方法。
【請求項４】　１つの配信コンテンツを、著作権者からユーザに与えるコピー権利数と同じ数の仮想コンテンツファイルとして媒体から媒体に移動し、移動元の媒体の仮想コンテンツファイルを消去するコンテンツ配信システムにおいて前記コンテンツを記録再生する装置であって、
前記仮想コンテンツファイルの移動方向及び移動数に応じてコピー権利数をデクリメント又はインクリメントすることを特徴とする記録再生装置。
【請求項５】　請求項４に記載の前記記録再生装置は、ユーザが配信コンテンツを受信して他の媒体にコピーするためのサーバであることを特徴とする記録再生装置。
【請求項６】　請求項４に記載の前記記録再生装置は、ポータブルメディアであることを特徴とする記録再生装置。
【請求項７】　請求項４に記載の前記記録再生装置は、光ディスク記録再生装置であることを特徴とする記録再生装置。
【請求項８】　１つの配信コンテンツを、著作権者からユーザに与えるコピー権利数と同じ数の仮想コンテンツファイルとして媒体から媒体に移動し、移動元の媒体の仮想コンテンツファイルを消去するコンテンツ配信システムにおいて前記コンテンツを再生する装置であって、コピー権利数が０の場合に仮想コンテンツファイルのコンテンツを再生しないことを特徴とする再生装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ユーザが音楽などのコンテンツを媒体から媒体にコピーする場合にそのコピーを管理するためのコンテンツのコピー管理方法、記録再生装置及び再生装置に関する。
【０００２】
【従来の技術】例えば電子音楽配信システムにおいて配信されたコンテンツをユーザが媒体から媒体へコピーする場合、コンテンツプロバイダ側の著作権を守る方法としてＳＤＭＩ（Secure Digital Music Initiatuve）のガイドラインにより幾つかの取り決めが規定されている。この取り決めでは、コンテンツプロバイダ側でコンテンツに対してチェックアウト・イン数をあらかじめ設定してユーザに配信し、ユーザが配信コンテンツをパーソナルコンピュータ（ＰＣ）を用いて受信してＰＣ内の記録メディア（例えばＨＤ）に記録し、このＨＤを親（サーバ）として扱う。
【０００３】また、ユーザはそのＰＣを用いて配信コンテンツを再生するだけではなく、設定チェックアウト・イン数だけＰＣからポータブル装置（ＰＤ）やポータブルメディア（ＰＭ）にチェックアウトしてコピーし、これを再生することができる。この場合、チェックアウト毎に設定数がデクリメントされ、チェックアウト数は設定数の範囲内に限定される。また、ユーザはＰＤやＰＭで不要になったコンテンツをＰＣに戻してチェックアウト数を増やす（チェックインする）ことができる。
【０００４】図７を参照して詳しく説明する。なお、図７はチェックアウト・イン数＝３の場合を示している。Ｐ１、Ｐ２はそれぞれ上記のＰＣ（ＨＤ）である親を示し、それぞれ３つのＣ１、Ｃ２は、親Ｐ１、Ｐ２からチェックアウトされた子を示す。ＳＤＭＩでは、チェックアウトされた子Ｃ１、Ｃ２からは、他の媒体には移動もコピーもすることができず、また、他の親にはチェックインすることができないように規定されている。
【０００５】さらに、チェックアウトを行うコピー先のＰＤやＰＭについては、著作権保護を確保するためにＳＤＭＩの取り決めに準拠しているか否かをコピー元とコピー先の間で認証（Authentification）を行い、著作権保護が確保されない装置にはコピーを許可しないことが取り決められている。認証に合格してチェックアウトされた音楽は、元のＰＣに返却（チェックイン）することにより当該音楽の著作権を管理可能にするとともに、ＰＤやＰＭの限られた記録容量で他の音楽を記録可能にしている。また、ＳＤＭＩでは、コンテンツ自体をコピーではなく、全ての権利と共に「移動」することも可能である。この場合にはコピーではなく移動であるので、移動元のコンテンツは削除される。
【０００６】
【発明が解決しようとする課題】しかしながら、上記のようにチェックアウト／チェックインによりコピー先な

どを管理する方法では、ユーザにとってチェックインの際の戻し先（親Ｐ１、Ｐ２）が固定であり、また、子から他のメディアに移動することができないので不便であるという問題点がある。

【０００７】また、ＳＤＭＩは子ＣのＰＭとして記録容量の比較的少ないフラッシュメモリなどのみを想定し、図８に示すように記録再生用のＤＶＤなどのポータブル、大容量の光ディスク６を子として想定していないので、例えばＰＭ５の代表例であるメモリカードなどの子から光ディスク６へのコピー、移動ができず、このため、ユーザが光ディスク６上で多くの配信音楽を管理することができず、不便である。

【０００８】また、大容量の光ディスク６は、コピー経路を考慮すると、親Ｐとしても子Ｃとしてもなり得るので、親Ｐの権利を有する音楽と子Ｃの権利を有する音楽が同居することが考えられるが、この場合にはユーザにとってその区別が分かりづらい。このため、光ディスク６上の音楽をチェックアウトしようとしても、それが子Ｃであればチェックアウトすることができず、また、光ディスク６にチェックインしようとしても、どの光ディスク６が親Ｐであったかがわからない場合が出てくる。

【０００９】また、ＳＤＭＩはユーザが１台のＰＣ１を使用することを想定しているので、ユーザが複数台のＰＣを使用している場合にはチェックイン先のＰＣがわからない場合が出てくる。さらに、このようにユーザにとって不便であると、音楽の販売業者（コンテンツプロバイダ）にとって、チェックアウトに対する販売価格がユーザの理解を得ることができなくなるという問題点がある。

【００１０】本発明は上記の問題点に鑑み、ＳＤＭＩ規則で著作権者に与えている保護とユーザの利便性を両立させることができるコンテンツのコピー管理方法、記録再生装置及び再生装置を提供することを目的とする。

【００１１】

【課題を解決するための手段】本発明は上記目的を達成するために、１つの配信コンテンツを、著作権者からユーザに与えるコピー権利数と同じ数の仮想コンテンツファイルとして移動し、移動元の媒体の仮想コンテンツファイルを消去するようにしたものである。すなわち本発明によれば、コンテンツ及びそのコンテンツに対して著作権者からユーザに与えるコピー権利数を、コピー権利数と同じ数の仮想コンテンツファイルとしてユーザに配信するステップと、ユーザが前記コンテンツを媒体から媒体にコピーする場合に、前記仮想コンテンツファイルを移動して移動元の媒体の仮想コンテンツファイルを消去するステップとを、有するコンテンツのコピー管理方法が提供される。

【００１２】上記方法により、移動という処理により移動元の仮想コンテンツファイルは消去されるので、１つの配信コンテンツがコピーされる媒体の数は、常に著作権者からユーザに与えるコピー権利数以下となり、したがって、ＳＤＭＩ規則で著作権者に与えている保護と同等の保護を実現することができる。また、ユーザは現在コピーされている媒体の数をコピー権利数以下とする条件下で、コンテンツを任意の媒体から任意の媒体にコピーすることができるので、ユーザの利便性を向上させることができる。

【００１３】

【発明の実施の形態】以下、図面を参照して本発明の実施の形態について説明する。図１は本発明に係るコピー管理方法の一実施形態を示す説明図、図２は図１のコピー管理方法によるコピー形態を示す説明図、図３は図１のコピー管理方法による配信コンテンツのデータ構造を示す説明図である。

【００１４】本発明では、ＳＤＭＩに定められているチェックアウト数でコンテンツのコピー数を許可する代わりに、著作権者側からユーザに許可するコピー権利数（コピー媒体の数）と同じ数の仮想ファイルを想定することにより、コンテンツを「コピー」するのではなく仮想ファイルを「移動（ムーブ）」する。すなわち、コンテンツプロバイダからユーザに対しては、例えば１つのコンテンツと権利数＝４が配信されるが、同じコンテンツの４つの仮想的なファイルとして配信される。そして、ユーザが媒体から媒体へコピーする場合には、実コンテンツがコピーされるものとは取り扱わず、コピー元では権利数カウンタをデクリメントし、コピー先では権利数カウンタをインクリメントすることにより仮想的なファイルが移動されるものとして取り扱う。このため、権利数＝１のコンテンツをコピーする場合には１つの仮想ファイルが移動されることになり、コピー元では仮想ファイルは消去され（権利数は０）、再生も移動も不可となる。

【００１５】図１（ａ）は権利数＝４のコンテンツが媒体Ａに配信されて、媒体Ａには４つの仮想ファイルＭが記録されていることを示している。図１（ｂ）は図１（ａ）の状態から、媒体Ａに配信された権利数＝４のコンテンツの内、権利数＝２のコンテンツを媒体Ｂにコピーする場合を示し、この場合には２つの仮想ファイルＭが媒体Ａから媒体Ｂに移動（ムーブ）する（移動するものとして取り扱う。以下同じ）。この２つの仮想ファイルＭの移動の結果、媒体Ａ、Ｂには共に２つの仮想ファイルＭ（権利数＝２のコンテンツ）が記録される。図１（ｃ）は図１（ｂ）の状態から、媒体Ｂに移動された権利数＝２のコンテンツの内、権利数＝１のコンテンツを媒体Ｃにコピーする場合を示し、この場合には１つの仮想ファイルＭが媒体Ｂから媒体Ｃに移動する。この１つの仮想ファイルＭの移動の結果、媒体Ｂ、Ｃには共に１つの仮想ファイルＭ（権利数＝１のコンテンツ）が記録される。

【００１６】図１（ｄ）は、図１（ｃ）の状態から、媒

体Ｃに移動された権利数＝１のコンテンツを媒体Ｄにコピーする場合を示し、１つの仮想ファイルＭが媒体Ｃから媒体Ｄに移動する。この１つの仮想ファイルＭの移動の結果、媒体Ｃは権利数＝０となって仮想ファイルＭが０となり、消去されるか又は再生も移動も不可となる。図１（ｅ）は図１（ｄ）の状態から、図１（ｂ）において媒体Ａから媒体Ｂに移動された権利数＝１のコンテンツを媒体Ａに戻す場合（ムーブバック）を示し、この仮想ファイルＭの移動の結果、媒体Ａは権利数＝３（３つの仮想ファイルＭ）となり、媒体Ｂは権利数＝０（仮想ファイルＭは０）となって消去されるか又は再生も移動も不可となる。

【００１７】上記の媒体Ａ～Ｄを搭載した機器、又は媒体Ａ～Ｄ自身は、コンテンツをコピーする場合、すなわち仮想ファイルＭを移動する場合には、お互いにＳＤＭＩ規則に従って権利確認を行う機器であることを認証し、認証結果がＯＫの場合にのみ受け渡しを行う。ここで、権利を管理する情報の具体的、詳細な内容はＳＤＭＩ規則により定められていないので、本発明はＳＤＭＩ規則を遵守している。

【００１８】図２はユーザが仮想ファイルＭを移動する形態を示している。ＰＣ１は不図示のインターネットを介してコンテンツプロバイダの大容量サーバから配信される権利管理情報が伴う楽曲を受信して、ＨＤＤ内のＨＤに記録することができる。権利管理情報は上記の権利数Ｎを含み、権利数Ｎは著作権者が一方的に決定したり、また、例えばＮ＝１～４のように限定してユーザが支払う対価に応じて異なるように決定することができる。

【００１９】有料で購入されるコンテンツは、著作権者により管理されないコピーを防ぐために暗号化されており、ユーザはコンテンツ購入時に暗号を解くための鍵を受け取る。また、権利数Ｎのデータは、一般ユーザが改ざんできない領域に配置される。ＰＣ１を介してコンテンツを受け取るユーザは、現在のコピー媒体の数が権利数Ｎの範囲内である条件下で、ＰＣ１内のＨＤに記録してＨＤからフラッシュメモリなどのＰＭ５や光ディスク６にコピー（仮想ファイルを移動）することができ、また、ＰＭ５や光ディスク６から他の媒体に再コピー、さらには再々コピー～することができる。

【００２０】図２において、また、携帯電話機２もＰＣ１と同様に、不図示の基地局を介してサーバから配信される権利管理情報が伴う楽曲を受信して、ＰＤとして内部メモリに記録したり、ＰＭ５などに記録することができる。記録・再生装置３はフラッシュメモリなどのＰＭ５の差し込み口と光ディスク６のドライブを備え、権利数Ｎの範囲内でＰＭ５と光ディスク６の間で双方向にコピー、再コピーすることができる。ポータブル型記録・再生装置４はフラッシュメモリなどのＰＭ５の差し込み口を備え、ＰＭ５にコピーされたコンテンツを再生することができる。これらの装置１～４の間では、ＰＭ５や光ディスク６を移動させて再生することができる。また、ＰＣ１と記録・再生装置３、４の間では、媒体の移動の代わりに、仮想ファイルＭを無線や有線のデジタルインタフェースを介して転送するように構成することもできる。

【００２１】図３は１曲分（１つの実コンテンツファイル）の配信データの構造例を示している。配信データは先頭のヘッダと、ヘッダ以下に続く権利管理情報、曲名や歌詞、静止画などの補助データ、及び音楽そのものの主データなどの各ブロックにより構成されている。ヘッダはファイル名と、ヘッダ以下の各ブロックの先頭アドレス及びデータサイズなどを含む。権利管理情報はコンテンツ名、コンテンツＩＤ、権利数Ｎ（１バイト）、チェックアウト・イン権利数（１バイト）、チェックアウト・イン管理情報（１００バイト）などを含む。

【００２２】ここで、本発明によれば、ＳＤＭＩのチェックアウト・インによりコピーを管理しないので、上記のチェックアウト・イン権利数とチェックアウト・イン管理情報は必ずしも必要はない。しかし、今後の普及を考えると、ＳＤＭＩのチェックアウト・インによる配信システムと、本発明による配信システムが共存するかもしれないので、上記のデータ構造によれば、前者のシステムにも対応することができる。

【００２３】さらに、本発明によれば、上記の権利数Ｎを含まずチェックアウト・イン権利数のみを含むデータ構造であっても、チェックアウト・イン権利数を権利数Ｎに換算することにより対応することができる。すなわち、チェックアウト・インのシステムは戻し先を限定するものであり、他方、本発明のシステムは戻し先を限定しないので、チェックアウト・イン権利数＝１、２をＮ＝１に換算し、チェックアウト・イン権利数＝３、４をＮ＝２に換算して対応することができる。また、著作権者がいずれかのシステムを選択可能にすることもできる。この場合にはシステム選択フラグをデータ構造内に設けることにより対応することができる。

【００２４】＜記録装置／再生装置＞図４は本発明の一実施形態として、図２に示した記録・再生装置３を詳しく示している。図４において、エンコード／デコード部１１は操作部１２から記録コマンドを受け取ると、音声入力部１３を介して音声データを入力し、また、静止画入力があればこれを画像入力部１４を介して入力し、次いで各入力データをエンコードしてそのストリームをディスクＤやフラッシュメモリＦＭに記録する。このとき、各入力データは編集部１５を介して編集することができる。また、エンコード／デコード部１１は操作部１２から再生コマンドを受け取ると、ディスクＤやフラッシュメモリＦＭからストリームを読み出してデコードし、次いでデコードした音声データは音声出力部１６を介して、また、静止画データは画像出力部１７を介して

出力する。

【００２５】図５、図６は、電子音楽配信された装置の媒体（例えば図２に示すＰＣ１内のディスク）から、例えば記録・再生装置３の光ディスク６にコピー（仮想ファイル移動）処理を示している。まず、ユーザが送出機（ＰＣ１）側でコンテンツの名称と権利数Ｎを確認し、ムーブする権利数を設定する（ステップＳ１）。そして、その設定によりコピー元の権利数が０になる場合には注意喚起のメッセージ、例えば「このＰＣでは再生できなくなりますが、このまま処理を続けますか」とＯＫ／ＮＯボタンを表示する（ステップＳ２）。そして、ステップＳ３においてＯＫボタンがクリックされればステップＳ４以下に進み、他方、ＮＯボタンがクリックされればステップＳ１に戻る。

【００２６】ステップＳ４以下では、まず、コピー元と行先（コピー先）の間でコピー先のレコーダ及びディスクがＳＤＭＩの取り決めに準拠しているか否かを認証し（ステップＳ４）、ステップＳ５において認証がＯＫでなければステップＳ６に分岐して認証不成立を表示し、この処理を終了する。他方、認証がＯＫであればステップＳ７に進み、記録スタートボタンが押下されると、図３に示すデータ構造のコンテンツの送出側再生と行先の記録を開始する。

【００２７】次いで、図３に示すデータ構造のコンテンツの送出側再生と行先の記録を終了すると、送出側ディスクの権利管理情報は元のままとし、記録側ディスクの権利管理情報は未記録とし（ステップＳ８）、次いで送出側と記録側の装置を共に操作禁止モードに設定する（ステップＳ９）。次いで記録側ディスクに新しい権利管理情報を記録してベリファイする（ステップＳ１０）。このとき、記録側ディスクに記録されているコンテンツの一覧表を作成して記録することにより、ディスク上のランダムなエリアに記録されている多数の楽曲を容易に管理することができる。

【００２８】ステップＳ１１においてベリファイ結果がＯＫの場合にはステップＳ１２に進み、他方、ＮＯの場合にはステップＳ１４に分岐する。ステップＳ１２では再生側ディスクの権利管理情報の権利数Ｎを移動数に応じて減算して書き換え、これをベリファイする。そして、ステップＳ１３においてベリファイ結果がＯＫの場合にはステップＳ１５に進み、他方、ＮＯの場合にはステップＳ１４に分岐する。ステップＳ１４では記録側ディスクの当該コンテンツの権利管理情報を消去して使用不能にし、次いでステップＳ１５に進む。ステップＳ１５ではステップＳ１３、Ｓ１４の処理結果をユーザに知らせ、次いで操作禁止モードを解除し（ステップＳ１６）、次いでこのコピー処理を終了する。

【００２９】

【発明の効果】以上説明したように本発明によれば、１つの配信コンテンツを、著作権者からユーザに与えるコピー権利数と同じ数の仮想コンテンツファイルとして移動し、移動元の仮想コンテンツファイルを消去するようにしたので、１つの配信コンテンツがコピーされる媒体の数は、常に著作権者からユーザに与えるコピー権利数以下となり、したがって、ＳＤＭＩ規則で著作権者に与えている保護と同等の保護を実現することができる。また、ユーザは現在コピーされている媒体の数をコピー権利数以下とする条件下でコンテンツを任意の媒体から任意の媒体にコピーすることができるので、ユーザの利便性を向上させることができる。

【図面の簡単な説明】

【図１】本発明に係るコピー管理方法の一実施形態を示す説明図である。

【図２】図１のコピー管理方法によるコピー形態を示す説明図である。

【図３】図１のコピー管理方法による配信コンテンツのデータ構造を示す説明図である。

【図４】本発明に係る光ディスク記録再生装置を示すブロック図である。

【図５】本発明に係るコピー管理方法によるコピー処理を説明するためのフローチャートである。

【図６】本発明に係るコピー管理方法によるコピー処理を説明するためのフローチャートである。

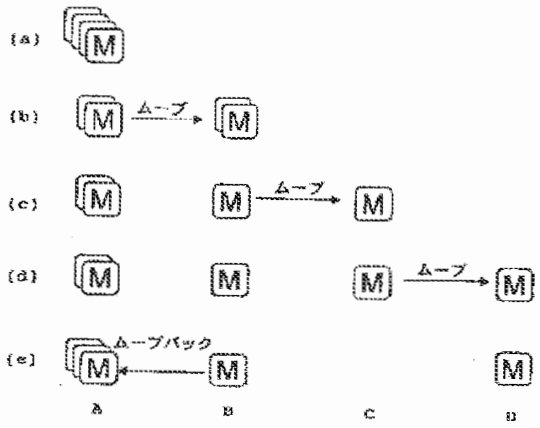
【図７】従来例としてＳＤＭＩによるコピー管理方法を示す説明図である。

【図８】図７のコピー管理方法によるコピー形態を示す説明図である。

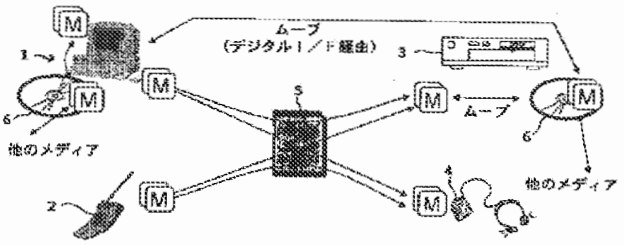
【符号の説明】

Ｍ　仮想ファイル

【図１】



【図２】

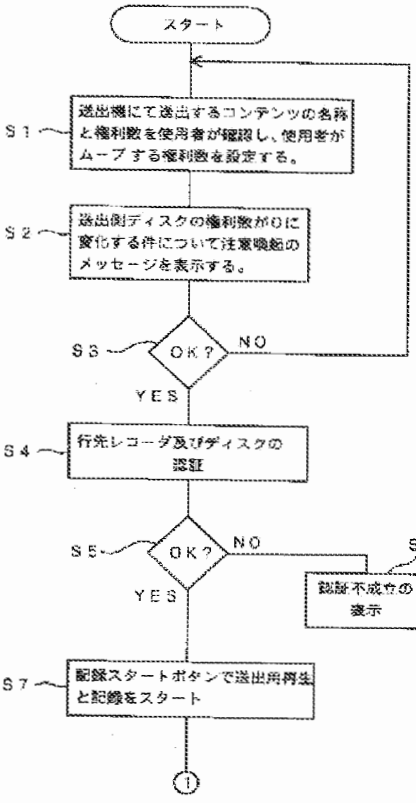


【図３】

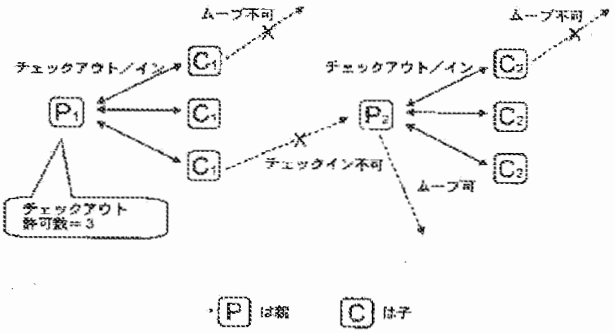
データ構造（１曲分：実ファイル）

ヘッダ　（ファイル名、下記ブロックのアドレスとサイズ）
権利管理情報 ・コンテンツ名、ＩＤ ・権利数（１バイト割当て） ・チェックアウト イン権利数（１バイト割当て） ・チェックアウト イン管理情報（１００バイト割当て）
補助データ ・曲名、歌詞、静止画・・・
主データ ・楽曲

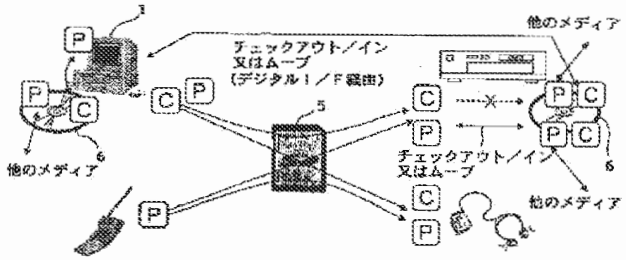
【図５】



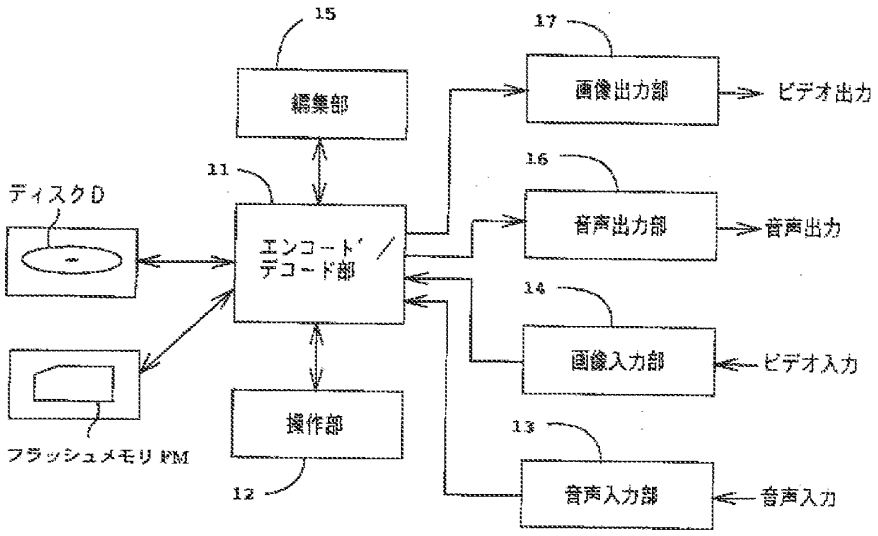
【図７】



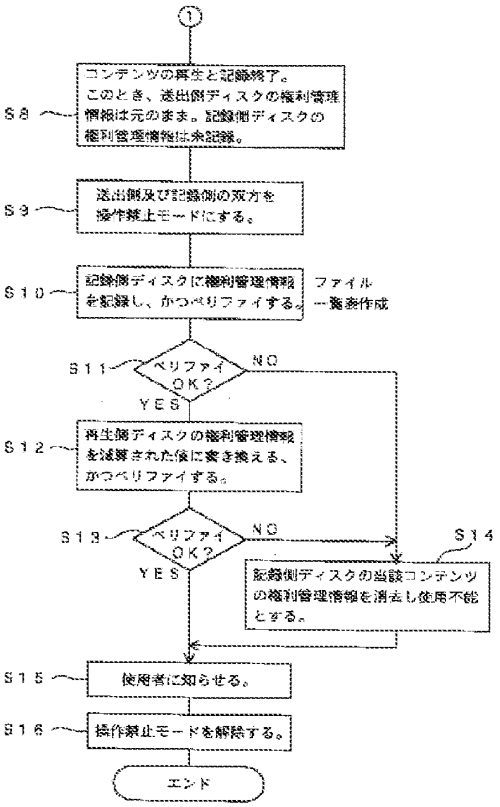
【図８】



【図４】


15
編集部
17
画像出力部
ビデオ出力
11
ディスクD
16
音声出力部
音声出力
エンコード／
デコード部
14
画像入力部
ビデオ入力
操作部
13
音声入力部
音声入力
フラッシュメモリ FM
12

【図６】


①
コンテンツの再生と記録終了。
このとき、送出側ディスクの権利管理
情報は元のまま。記録側ディスクの
権利管理情報は未記録。
S8
送出側及び記録側の双方を
操作禁止モードにする。
S9
記録側ディスクに権利管理情報
を記録し、かつベリファイする。
S10
ファイル
一覧表作成
S11
ベリファイ
OK?
NO
YES
再生側ディスクの権利管理情報
を減算された後に書き換える、
かつベリファイする。
S12
S13
ベリファイ
OK?
NO
YES
S14
記録側ディスクの当該コンテンツ
の権利管理情報を消去し使用不能
とする。
使用者に知らせる。
S15
操作禁止モードを解除する。
S16
エンド

Ｆターム(参考)　5B017 AA06 BA08 BB10 CA16
5D044 AB06 AB08 BC01 BC04 CC04
DE29 DE50 DE54 EF05 GK12
HL02 HL07
5D110 AA13 AA17 AA27 AA29 BB29
DA04 DA11 DB03 DB09 DC05
DC16 DD05 DD13 DE01

Electronic Acknowledgement Receipt

EFS ID:	26278575
Application Number:	13864249
International Application Number:	
Confirmation Number:	9806
Title of Invention:	METHOD AND APPARATUS FOR PLAYING AND PROVIDING AUDIO CONTENT IN A SYNCHRONY GROUP
First Named Inventor/Applicant Name:	Nicholas A. J. Millington
Customer Number:	107361
Filer:	Benjamin Michael Urban
Filer Authorized By:	
Attorney Docket Number:	13-0402 (MBHB 15-518-CON)
Receipt Date:	07-JUL-2016
Filing Date:	17-APR-2013
Time Stamp:	17:43:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	13-0402_MBHB15-518-CON_IDS.pdf	1054860 67f4a0b3ee13de0d3675ac6b441317e67bf49a9e	no	5
Warnings:					

Information:					
2	Foreign Reference	JP2002358241A.pdf	12952206 9d0f58947bcbca587920aee8f529848415f85a18	no	10
Warnings:					
Information:					
3	Non Patent Literature	13871795_AA_6-9-16.pdf	498253 f5d8509091f03c800bdbb7df0a6ea4a29ae48e5f	no	14
Warnings:					
Information:					
4	Non Patent Literature	13705176_FOA_06-03-2016.pdf	859254 392c30c0f724bc76d4002161681d787e15ccb77c	no	24
Warnings:					
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5	Non Patent Literature	14290493_FOA_05-25-2016.pdf	1162014 ea36c86a5acba6cdb9b991f02998f3bd6571998f	no	33
Warnings:					
Information:					
6	Non Patent Literature	Japanese_No_2014-220704_Office_Action_5-24-16.pdf	205657 ac13737727671ca89f2dba0cbc7ee7dd13ba7500	no	7
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Information:					
7	Non Patent Literature	14184522_OA_06-01-2016.pdf	727699 b57fd1d7d8d71c5f477de4cd983c778cdc67f752	no	21
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8	Non Patent Literature	14504812_OA_05-10-2016.pdf	728523 cb19ae43b57dfff68a416b8672565ab6cbf054a0	no	22
Warnings:					
Information:					
		Total Files Size (in bytes):	18188466		

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	13864249
Filing Date	2013-04-17
First Named Inventor	MILLINGTON; Nicholas A.J.
Art Unit	2442
Examiner Name	SURVILLO, Oleg
Attorney Docket Number	13-0402 (MBHB 15-518-CON)

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6658091		2003-12-02	NAIDOO; Surendra N. et al.	
	2	7996566		2011-08-09	SYLVAIN; Dany et al.	
	3	8204890		2012-06-19	GOGAN; Brian	
	4	8285404		2012-10-09	KEKKI; Samuli T.	
	5	8672744		2014-03-18	GRONKOWSKI; Timothy T. et al.	
	6	9160965		2015-10-13	REDMANN; William Gibbens et al.	

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	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	MILLINGTON; Nicholas A.J.
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	1	20080002836		2008-01-03	MOELLER; Niklas et al.	
	2	20080072816		2008-03-27	RIESS; Walter H. et al.	
	3	20080077619		2008-03-27	GILLEY; Glenn Gregory et al.	
	4	20080077620		2008-03-27	GILLEY; Glenn Gregory et al.	
	5	20080086318		2008-04-10	GILLEY; Glenn Gregory et al.	
	6	20080189272		2008-08-07	POWERS; Michael et al.	
	7	20080263010		2008-10-23	ROYCHOUDHURI; Subrata et al.	
	8	20090089327		2009-04-02	KALABOUKIS; Chris et al.	
	9	20120185771		2012-07-19	ROTHKOPF; Fletcher R. et al.	
	10	20120192071		2012-07-26	MILLINGTON; Nicholas A. J.	
	11	20120207290		2012-08-16	MOYERS; Josh et al.	

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	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	12	20120281058		2012-11-08	LANEY; Alan et al.	
	13	20130031475		2013-01-31	MAOR; Yehonatan Rafael et al.	
	14	20130041954		2013-02-14	KIM; Laeyoung et al.	
	15	20130052940		2013-02-28	BRILLHART; David C. et al.	
	16	20130070093		2013-03-21	RIVERA; Ed et al.	
	17	20130094670		2013-04-18	MILLINGTON; Nicholas A. J.	
	18	20130124664		2013-05-16	FONSECA Jr.; Benedito J. et al.	
	19	20130132837		2013-05-23	MEAD; Jonathan Selwyn et al.	
	20	20130159126		2013-06-20	ELKADY; Amr	
	21	20130179163		2013-07-11	HERBIG; Tobias et al.	
	22	20130208911		2013-08-15	MILLINGTON; Nicholas A. J.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2013-04-17
	First Named Inventor	MILLINGTON; Nicholas A.J.
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	23	20130208921		2013-08-15	MILLINGTON; Nicholas A. J.	
	24	20130226323		2013-08-29	MILLINGTON; Nicholas A. J.	
	25	20130232416		2013-09-05	MILLINGTON; Nicholas A. J.	
	26	20130253934		2013-09-26	PAREKH; Jateen P. et al.	
	27	20130287186		2013-10-31	QUADY; Curtis E.	
	28	20130290504		2013-10-31	QUADY; Curtis E.	
	29	20140298174		2014-10-02	IKONOMOV; Artashes Valeryevich	
	30	20150019670		2015-01-15	REDMANN; William Gibbens	
	31	20150304288		2015-10-22	BALASAYGUN; Mehmet et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	MILLINGTON; Nicholas A.J.
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	1	2009535708	JP		2009-10-01	MICROSOFT CORPORATION	English Translation of Abstract only	
	2	2007127485	WO		2007-11-08	MICROSOFT CORPORATION		
	3	2007131555	WO		2007-11-22	SONY ERICSOON MOBILE COMMUNICATIONS AB		
	4	2014004182	WO		2014-01-03	SONOS, INC.		

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	CANADIAN INTELLECTUAL PROPERTY OFFICE, Canadian Office Action mailed on 04 April 2016, issued in connection with Canadian Patent Application No. 2,842,342, 5 pages.	
	2	EUROPEAN PATENT OFFICE, Examination Report mailed on 22 March 2016, issued in connection with European Patent Application No. EP14181454.1, 6 pages.	
	3	FALCONE, John, "Sonos BU150 Digital Music System review," CNET, CNET [online] 2009.07.27 [retrieved on 2016.03.16], 11 pages Retrieved from the Internet: URL:http://www.cnet.com/products/sonos-bu150-digital-music-system/.	
	4	JAPANESE PATENT OFFICE, Office Action mailed on 29 March 2016, issued in connection with Japanese Patent Application No. JP2015-520288, 12 pages.	
	5	Non-Final Office Action mailed on 08 March 2016, issued in connection with U.S. Patent Application No. 13/848921, filed on 22 March 2013, 13 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	MILLINGTON; Nicholas A.J.
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	6	Notice of Allowance mailed on 07 April 2016, issued in connection with U.S. Patent Application No. 13/533105, filed on 26 June 2012, 40 pages.	
	7	Notice of Allowance mailed on 11 April 2016, issued in connection with U.S. Patent Application No. 13/864247, filed on 17 April 2013, 21 pages.	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	MILLINGTON; Nicholas A.J.
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Benjamin M. Urban/	Date (YYYY-MM-DD)	2016-05-20
Name/Print	Benjamin M. Urban	Registration Number	71,591

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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Espacenet

Bibliographic data: JP2009535708 (A) — 2009-10-01

Providing guest users network access based on information read from a mobile telephone or other object

Inventor(s):

Applicant(s):

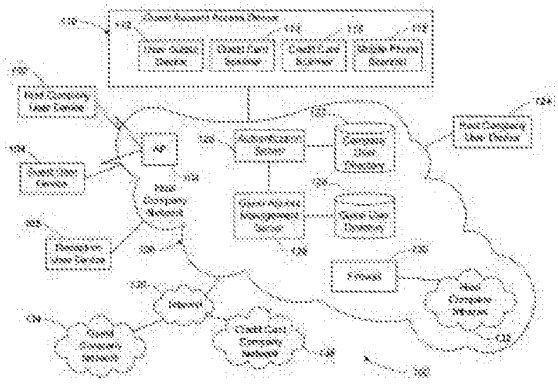
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Guest user are enabled to access network resources through an enterprise network using a guest user account. A guest user account may be created for a guest for a limited time. Guest account credentials of the guest account may be provided to the guest to use the guest account using any of a variety of techniques described herein, for example, by scanning a guest access card, credit card or mobile telephone of guest user, and providing the guest account credentials to the user based on the information obtained. A guest access management server may be configured to generate and maintain guest accounts, authenticate guest users, and track and log guest activity. A VLAN technology may be used to separate guest traffic from host enterprise traffic on the host enterprise network. After a guest

user is authenticated, communications to and from the guest user may be routed to a guest VLAN.

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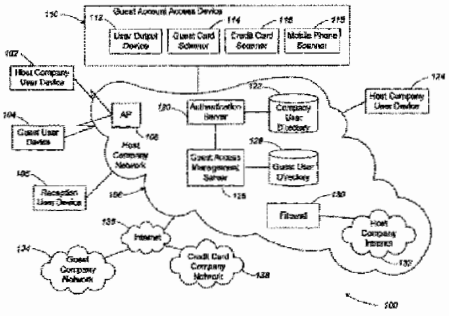
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(71)出願人　500046438
マイクロソフト　コーポレーション
アメリカ合衆国　ワシントン州　９８０５２－６３９９　レッドモンド　ワン　マイクロソフト　ウェイ
(74)代理人　100140109
弁理士　小野　新次郎
(74)代理人　100089705
弁理士　社本　一夫
(74)代理人　100075270
弁理士　小林　泰
(74)代理人　100080137
弁理士　千葉　昭男
(74)代理人　100096013
弁理士　富田　博行

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(54)【発明の名称】企業ネットワークを介したネットワーク資源へのゲスト・ユーザ・アクセスの提供

(57)【要約】
ゲスト・ユーザは、ゲスト・ユーザ・アカウントを使用して、企業ネットワークを介してネットワーク資源にアクセスすることが可能になる。ゲスト・ユーザ・アカウントは、限られた時間にゲストに対して作成されてもよい。ゲスト・ユーザのゲスト・アクセス・カード、クレジットカード又は携帯電話をスキャンし、得られた情報に基づいてユーザに対してゲスト・アカウント証明書を提供するなど、本明細書に記載の様々な技術を使用して、ゲスト・アカウントを使用するために、ゲスト・アカウントのゲスト・アカウント証明書をゲストに提供することができる。ゲスト・アクセス管理サーバは、ゲスト・アカウントを生成して維持し、ゲスト・ユーザーを認証し、ゲスト活動を追跡してログするように構成してもよい。ホスト企業ネットワーク上のホスト企業トラフィックからゲストトラフィックを分離するためにＶＬＡＮ技術を使用することができる。ゲスト・ユーザが認証された後、ゲスト・ユーザとの通信はゲストＶＬＡＮに対してルーティングすることができる。



【特許請求の範囲】
【請求項1】
ゲスト・ユーザが企業ネットワークを介してネットワーク資源へアクセスすることを可能にする方法であって、
（ａ）前記ゲスト・ユーザが所有している物から読み取られた情報を受け取るステップと、
（ｂ）前記読み取られた情報に基づいて、前記企業ネットワークを介して前記ネットワーク資源にアクセスするための１つ又は複数のゲスト・アカウント証明書を決定するステップと、
（ｃ）前記ゲスト・ユーザに対して前記１つ又は複数のゲスト・アカウント証明書を示すステップとを含む方法。
【請求項2】
前記物はゲスト・アクセス・カードである請求項１記載の方法。
【請求項3】
前記物はクレジットカードである請求項１記載の方法。
【請求項4】
前記物は携帯電話である請求項１記載の方法。
【請求項5】
（ｄ）前記ゲスト・ユーザのユーザ装置から前記１つ又は複数のゲスト・アカウント証明書を受け取るステップと、
（ｅ）前記１つ又は複数のゲスト・アカウント証明書に基づいて、前記企業ネットワークを介して前記ネットワーク資源へのゲスト・ユーザ・アクセスを提供するステップとをさらに含む請求項１記載の方法。
【請求項6】
前記ゲスト・アカウント証明書に対応するゲスト・アカウントは、制限された時間の期間を有するように構成され、前記方法は、
（ｆ）前記制限された時間の終了後に前記ネットワーク資源へのゲスト・ユーザ・アクセスを拒否するステップをさらに含む請求項５記載の方法。
【請求項7】
前記ゲスト・アカウント証明書に対応するゲスト・アカウントは、１つ又は複数の特定の時間期間中にのみネットワーク資源へのゲスト・ユーザ・アクセスを許可するように構成され、前記方法は、
（ｆ）前記１つ又は複数の特定の時間期間外に前記ネットワーク資源へのゲスト・ユーザ・アクセスを拒否するステップをさらに含む請求項５記載の方法。
【請求項8】
前記企業ネットワークは、ゲスト・ユーザに対する第１の仮想ローカルエリアネットワークを含む複数の仮想ローカルエリアネットワークを定義するように構成され、
前記ステップ（ｅ）が、前記第１の仮想ローカルエリアネットワークの一部として定義されたネットワーク資源のみに対するゲスト・ユーザ・アクセスを提供するステップを含む請求項５記載の方法。
【請求項9】
前記第１の仮想ローカルエリアネットワークがインターネットを含むように定義される請求項８記載の方法。
【請求項10】
前記ステップ（ｂ）は、前記読み取られた情報に基づいてゲスト・アカウント同一性及びパスワードを決定するステップを含み、
前記ステップ（ｃ）は、前記ゲスト・ユーザに対して前記ゲスト・アカウント同一性及びパスワードを示すステップを含む請求項１記載の方法。
【請求項11】

前記ステップ（ａ）は、前記ゲスト・アクセス・カードから読み取られた前記ゲスト・アカウント同一性及びパスワードを受け取るステップを含む請求項１０記載の方法。
【請求項12】
（ｄ）ゲスト・アクセス・カードから情報を読み取るステップをさらに含む請求項１記載の方法。
【請求項13】
前記ステップ（ｃ）は、前記ゲスト・ユーザに対して前記１つ又は複数のゲスト・アカウント証明書を表示するステップを含む請求項１記載の方法。
【請求項14】
ゲスト・ユーザが企業ネットワークを介してネットワーク資源へアクセスすることを可能にするためのシステムであって、
前記ゲスト・ユーザが所有している物から読み取られる情報に基づいて、前記企業ネットワークを介して前記ネットワーク資源にアクセスするための１つ又は複数のゲスト・アカウント証明書を決定し、前記１つ又は複数のゲスト・アカウント証明書を前記ゲスト・ユーザに対して示すことを開始する、ゲスト・アクセス管理サーバを含むシステム。
【請求項15】
前記物は、ゲスト・アクセス・カード、クレジットカード、又は携帯電話のうちの１つである請求項１４記載のシステム。
【請求項16】
前記物から前記情報を受け取るゲスト・アクセス・アカウント装置をさらに含む請求項１４記載のシステム。
【請求項17】
前記ゲスト・ユーザに対して１つ又は複数のゲスト・アカウント証明書を示すためのユーザ出力装置をさらに含む請求項１６記載のシステム。
【請求項18】
前記ゲスト・アクセス管理サーバは、前記ゲスト・ユーザのユーザ装置から１つ又は複数のゲスト・アカウント証明書を受け取り、前記１つ又は複数のゲスト・アカウント証明書に基づいて、前記企業ネットワークを介した前記ネットワーク資源へのゲスト・ユーザ・アクセスのためにアクセスを認証するように動作する請求項１４記載のシステム。
【請求項19】
コンピュータ可読媒体と、
前記コンピュータ可読媒体上に格納され、コンピュータによって実行されることの結果として、ゲスト・ユーザが企業ネットワークを介してネットワーク資源へアクセスすることを可能にする方法を実行するように前記コンピュータを制御する命令を定義するコンピュータ可読信号とを含むコンピュータ・プログラム製品であって、前記方法は、
（ａ）前記ゲスト・ユーザのゲスト・アクセス・カードから読み取られた情報を受け取るステップと、
（ｂ）前記読み取られた情報に基づいて、前記企業ネットワークを介して前記ネットワーク資源にアクセスするための１つ又は複数のゲスト・アカウント証明書を決定するステップと、
（ｃ）前記ゲスト・ユーザに対して前記１つ又は複数のゲスト・アカウント証明書を示すステップとを含む、コンピュータ・プログラム製品。
【請求項20】
前記方法は、
（ｄ）前記ゲスト・ユーザのユーザ装置から前記１つ又は複数のゲスト・アカウント証明書を受け取るステップと、
（ｅ）前記１つ又は複数のゲスト・アカウント証明書に基づいて、前記企業ネットワークを介した前記ネットワーク資源へのゲスト・ユーザ・アクセスを提供するステップとをさらに含む請求項１９記載のコンピュータ可読媒体。

【発明の詳細な説明】
【技術分野】

【0001】
本発明は、企業ネットワークを介したネットワーク資源へのゲスト・ユーザ・アクセスの提供に関する。
【背景技術】
【0002】
今日の世界において、企業は、しばしば様々な目的のうちのいずれかのために、ビジター、例えばベンダー、パートナー、クライアント、構成員、同僚、学生などにとってホストとして機能する。これらのゲストは、例えばラップトップ・コンピュータ、ノート型コンピュータ、電話、ブラックベリー（商標）ブランドの装置、ＰＣＳ装置、携帯情報端末（ＰＤＡ）等、自身のモバイルのユーザ装置を使用してインターネットあるいは別のネットワーク（例えば自分の企業のネットワーク）にアクセスすることをしばしば望む。したがって、ホスト企業は、しばしばホスト企業のネットワークを介してネットワーク資源へのゲスト・アクセスを提供する。本明細書において使用される場合、企業とは、会社、法人、組合、個人事業体、他の種類の企業体、組織、非営利組織、行政体及び／又は行政機関、教育機関、他の種類の企業、またこれらの任意の適切な組合せを含むが、これらに限定されるものではない。
【発明の開示】
【発明が解決しようとする課題】
【0003】
ネットワーク資源（例えばホスト・ネットワークの一部、インターネット、ゲスト用の企業ネットワークなど）に対するゲスト・アクセスを提供することは、しばしば専用ハードウェア及び／又はソフトウェアの使用並びにそのインストールやメンテナンスを要求する。これらの専用のソリューションは単純ではない。大部分は、１人又はより多くの管理者あるいは受付係の情報技術（ＩＴ）サポート及び／又は支援を要求する。したがって、ゲストにネットワーク資源へのアクセスを提供するために、ホスト企業は、通常、専用ハードウェア及び／又はソフトウェア、ＩＴサポート及び／又は管理上の支援のコストを招く。
【課題を解決するための手段】
【0004】
本発明の概要は、本発明の態様の説明のためのコンテキストを簡略化した形式で提供する。この概要は、特許請求の範囲を決定するのに使用されるようには意図されていない。本発明の態様は以下の詳細な説明でより十分に説明される。
【0005】
本明細書においては、ゲストが、ゲスト・ユーザ・アカウントを使用して企業ネットワークを介してネットワーク資源へアクセスするのを可能にするシステム及び方法を記載している。ゲスト・ユーザ・アカウントは、限られた時間（１日、２～３日、ある日のうち一定時間（例えば午前９時～午後５時）、１週間、あるいはさらに長い期間）にわたってゲストのために作成されてもよい。ゲスト・アカウントのゲスト・アカウント証明書（例えばゲスト・アカウントＩＤ及びパスワード）がゲストに提供されてもよく、それはゲストがゲスト・アカウントを使用することを可能にする。本明細書に記載されたものを含む様々な技術のうちのいずれも、ユーザにゲスト・アカウント証明書を提供するために使用できる。証明書の提供は、ゲスト・ユーザから情報を得て、当該情報の取得に応じてゲスト・アクセス証明書を提供することを含んでもよい。ゲスト・ユーザに関する情報を得ることは、ゲスト・ユーザのゲスト・アクセス・カード、クレジットカードもしくは携帯電話をスキャンすること、電子メール又は手紙を受け取ること、又は対面で口頭によりもしくは電話により取得することを含んでもよい。ゲスト・アクセス管理サーバは、ゲスト・アカウントを生成して維持し、ゲスト・ユーザを認証し、ゲストの行動を追跡してログするように構成されてもよい。
【0006】
いくつかの実施例では、仮想ＬＡＮ（つまりＶＬＡＮ）技術を使用して、ホスト企業ネ

ットワーク上のホスト企業トラフィックからゲスト・トラフィックを分けてもよい。ＶＬＡＮ技術の使用によって、ホスト企業の既存のネットワークインフラは、インフラを修正せざるを得ない状態に対立するものとして使用することができる。ゲスト・ユーザが認証された後、ゲスト・ユーザへの通信又はゲスト・ユーザからの通信は、ゲストＶＬＡＮへルーティングされてもよい。ゲストＶＬＡＮ内では、ユーザは、インターネットあるいはゲスト企業のネットワークのようなネットワーク資源にアクセスすることを許可されてもよい。

【0007】

本発明の実施例において、ゲスト・ユーザは、企業ネットワークを介してネットワーク資源にアクセスすることが可能になる。ゲスト・ユーザが所有している物（オブジェクト）（例えばクレジットカード、ゲスト・アクセス・カード、携帯電話など）から読み取られる情報が受け取られる。企業ネットワークを介してネットワーク資源にアクセスするための１つ以上のゲスト・アカウント証明書が、読み取られた情報に基づいて決定され、当該１つ以上のゲスト・アカウント証明書がゲスト・ユーザに示される。

【0008】

別の実施例では、企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にするためのシステムが提供される。システムは、ゲスト・ユーザが所有している物（例えばクレジットカード、ゲスト・アクセス・カード、携帯電話など）から読み取られる情報に基づいて、企業ネットワークを介してネットワーク資源にアクセスするための１つ以上のゲスト・アカウント証明書を決定し、そして当該１つ以上のゲスト・アカウント証明書をゲスト・ユーザに対して示すことを開始するためのゲスト・アクセス管理サーバを含んでいる。

【0009】

さらに別の実施例では、コンピュータ可読媒体及び当該コンピュータ可読媒体上に格納されたコンピュータ可読信号を含むコンピュータ・プログラム製品が提供される。当該信号は、コンピュータによって実行される結果として、企業ネットワークを介してゲスト・ユーザがネットワーク資源へアクセスするのを可能にする方法を実行するようにコンピュータを制御する命令を定義する。当該方法は、（ａ）ゲスト・ユーザのゲスト・アクセス・カードから読み取られた情報を受け取るステップ、（ｂ）読み取られた情報に基づいて、企業ネットワークを介してネットワーク資源にアクセスするための１つ以上のゲスト・アカウント証明書を決定するステップ、及び（ｃ）ゲスト・ユーザに対して当該１つ以上のゲスト・アカウント証明書を示すステップを含む。

【0010】

別の実施例では、ゲスト・ユーザは企業ネットワークを介してネットワーク資源にアクセスすることが可能になる。ゲスト・ユーザの同一性を確認するクレジットカード・ベンダーからの情報が受け取られる。企業ネットワークを介してネットワーク資源にアクセスするための１つ以上のゲスト・アカウント証明書が、当該受け取られた情報に基づいて決定され、当該１つ以上のゲスト・アカウント証明書がゲスト・ユーザに示される。

【0011】

別の実施例では、企業ネットワークを介したネットワーク資源へのゲスト・ユーザのアクセスを可能にするためのシステムが提供される。システムは、ゲスト・ユーザの同一性を確認するクレジットカード・ベンダーからの情報を受け取り、企業ネットワークを介してネットワーク資源にアクセスするための１つ以上のゲスト・アカウント証明書を当該受け取った情報に基づいて決定し、当該１つ以上のゲスト・アカウント証明書をゲスト・ユーザに示すことを開始するための、ゲスト・アクセス管理サーバを含んでいる。

【0012】

さらに別の実施例では、ユーザは、企業ネットワークを介してネットワーク資源にアクセスすることが可能になる。クレジットカード・ベンダーのサーバにおいて、企業の敷地内のクレジットカード・スキャナによるユーザのクレジットカードから読み取られた情報が受け取られる。ユーザの同一性が受け取られた情報に基づいて確認され、ユーザに関す

る確認情報は企業のゲスト・アクセス・サーバへ送られ、ゲスト・アクセス・サーバは、ゲスト・ユーザが当該エンティティのネットワークを介してネットワーク資源へアクセスすることにつき責任をもつ。

【0013】

別の実施例では、企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にするためのシステムが提供される。システムは、企業の敷地内のクレジットカード・スキャナによってユーザのクレジットカードから読み取られた情報を受け取り、受け取った情報に基づいてユーザの同一性を確認し、当該企業のネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることにつき責任をもつ、当該企業のゲスト・アクセス・サーバに対して、ユーザに関する確認情報を送るように動作する、クレジットカード・ベンダーのサーバを含んでいる。

【0014】

本発明の他の利点、新規な特徴、目的、態様及び実施例は、本発明の態様及び実施例を含む以下の発明の詳細な説明を添付の図面と共に考慮した場合に明白となる。添付の図面は概略的なものであって、一律の縮尺で描かれるように意図されていない。図面において、さまざまな図に示されている同一又はほぼ同一の各構成要素は、単一の参照符号によって表される。明瞭にするために、全ての構成要素が全ての図面においてラベル付けされているとは限らず、当業者に本発明を理解させるのに図解が必要ない場合は本発明の各実施例及び態様の全ての構成要素が示されてはいない。

【発明を実施するための最良の形態】

【0015】

本発明の実施例は、ホスト企業ネットワークを介してネットワーク資源に対するゲスト・ユーザー・ワイヤレス・アクセスを提供することに関して以下に述べられるが、本発明はそのように制限されるものではなく、非ワイヤレス（例えば有線）アクセスについて実施されてもよい。

【0016】

上記の実施例及び本発明の他の実施例の機能及び利点は、以下に述べられた例からより完全に理解される。以下の例は、よりよい理解を容易にし、かつ本発明の利点を説明するように意図されるが、発明の完全な範囲を例証するものではない。

【0017】

明細書又は特許請求の範囲において使用されるように、「備える」、「含む」、「持っている」、「有する」、「包含する」、「含んでいる」という語及び同様の語は、制約されていないこと、つまり、含んでいるが限定されていないということであると理解されるべきである。「からなる」、「本質的に・・・からなる」という移行句はそれぞれ、特許審査手続についての米国特許庁マニュアル（第８版、改定２、２００４年５月）の２１１１．０３項において特許請求の範囲に関して述べられているように、限定されていること又はほぼ限定されていることである。

実施例

いくつかの実施例では、ゲスト・ユーザは、ホスト企業によって発行されたゲスト・アクセス・カードを使用して、ホスト企業を介してゲスト・アクセスを与えられる。ゲストのホスト企業への到着に先立って、あるいはその時に、ゲストはゲスト・アクセス・カードを提供されてもよい。ゲスト・アクセス・カードは、例えばゲスト・アクセスＩＤ及びパスワード等、ゲスト・アカウントのためのゲスト・アカウント証明書を（平文あるいは暗号化された形式で）エンコードしてもよいし、あるいは、ゲスト・アカウント及び／又はゲスト・アカウント証明書に関連付けられる値をエンコードしてもよい。ゲスト・アカウント証明書及び／又は他の情報は、ゲスト・アクセス・カード上の磁気ストライプあるいは半導体メモリに格納されてもよい。

【0018】

ホスト企業（例えばロビー又は受付エリア）への到着に際して、ゲスト・ユーザは、ユーザ装置（例えばラップトップ又はＰＤＡ）を使用して、ネットワーク資源（例えばイン

ターネット及び／又はゲストの企業ネットワーク）にアクセスすることを試みてもよいし、ゲスト・アカウント証明書（例えばゲスト・アカウントＩＤ及びパスワード）を促されてもよい。ネットワーク資源にアクセスすることを試みる前や、その間やその後に、ゲスト・ユーザは、ホスト企業の敷地（例えば受付エリアかロビー）内でスキャナを使用して、ゲスト・アクセス・カード（例えば、磁気的、光学的又はＲＦ技術を使用したもの）をスキャンしてもよく、当該スキャナはこの目的のために特に設計されてもよい。ホスト・ネットワーク上のゲスト・アクセス管理サーバは、スキャンされた情報を受け取り、ゲスト・アカウント証明書を決定してもよい。この決定は、単に、ゲスト・アクセス・カードにより提供されるゲスト・アカウント証明書を読み取ったり、カード上の暗号化されたアカウント情報を解読したり、あるいはカードによって提供される情報をゲスト・アカウントＩＤ及びパスワードにマッピングすることにより行うことができる。ゲスト・アカウント証明書は、それをゲスト・ユーザに、例えば、ゲスト・ユーザ及び／又はスキャナの近くの装置に示すことができる装置へ送られてもよい。そのような装置は、ディスプレイ装置（例えばモニタ）、プリンタ、バッジ及び／又はＩＤカードを生成する装置、スピーカ、電話、別の種類の装置、あるいはこれらの任意の適切な組合せのいずれかであるか、又はこれらをふくんでもよい。

【0019】

その後、ゲスト・ユーザは、ユーザ装置（例えばラップトップやＰＤＡ）を使用し、ゲスト証明書を使用して、ホスト企業ネットワークにログインすることができる。ホスト企業ネットワークは、ゲスト・ユーザのアクセスを、例えばインターネット及び／又はゲスト用の企業ネットワークに、限定するように構成されてもよい。例えば、ホスト企業ネットワークは、ゲスト・ユーザのゲスト・アクセス・アカウントに基づいてゲストのアクセスを制限するために仮想ローカルエリアネットワーク（ＶＬＡＮ）技術を使用してもよい。その後、ホスト企業ネットワークは、ゲストのネットワーク活動を監視し、必要な場合、例えばインターネットのような特定のネットワーク資源へのアクセスについてゲスト・ユーザに請求をする。

【0020】

さらに、ゲスト・アカウントは、例えば一定の（例えば、所定の）時間、日、週、月あるいはその組合せのような制限された期間をもつように構成されてもよい。ゲスト・アカウントは、例えば、３日間の期間にわたって午前９時から午後５時までの制限された期間内の特定の時間にのみ使用するために構成されてもよい。

【0021】

本発明のいくつかの実施例において、ホスト企業よって発行されたゲスト・アクセス・カードを使用するのではなく、ゲスト・ユーザは、ネットワーク資源にホスト企業のネットワークを介してアクセスするために、例えばビザ、マスターカード、アメリカンエクスプレス、ディスカヴァーなどのようなクレジットカード・ベンダーによって発行されたクレジットカードを使用してもよい。ラップトップあるいは他のユーザ装置を使用してネットワーク資源にアクセスすることを試みる前に、又はその間に、又はその後に、ゲスト・ユーザは、ホスト企業の敷地内でスキャナを使用してクレジットカードをスキャンしてもよい。スキャンから生じる情報は、クレジットカード会社のネットワークへ送られ、当該会社はゲスト・ユーザの同一性を確認することができる。その後、クレジットカード会社は、ホスト企業ネットワークへ、例えばホスト企業ネットワーク上のゲスト・アクセス管理サーバへ、ゲスト・ユーザに関する確認情報を送ってもよい。当該確認情報の受信に応じて、ゲスト・アクセス管理サーバは、ゲスト・アカウント及びゲスト・アカウント証明書を生成し、当該証明書を（例えば上述のようにして）ゲスト・ユーザに対して示す（例えば表示する）装置へ、当該証明書を送ってもよい。その後、ゲスト・ユーザは、ホスト企業ネットワークにログインするために証明書を使用することができる。例えば、上述のように、ゲストのネットワーク資源へのアクセスは制限されてもよいし、ゲストの活動はモニタされ料金請求されてもよい。さらに、ゲスト・アカウントを使用したアクセスの期間及び特定の時間は制限されてもよい。

【0022】
いくつかの実施例中で、ゲスト・アクセス・カードか既存のクレジットカードを使用するのではなく、ゲスト・ユーザは、ネットワーク資源にホスト企業のネットワークを介してアクセスするために携帯電話を使用してもよい。ホスト企業の敷地で提供される携帯電話スキャナを使用して、ゲスト・ユーザは、ゲストの携帯電話、例えば、携帯電話の加入者識別モジュール（ＳＩＭ）カード上に格納された情報をスキャンしてもよい。この情報はゲスト・アクセス管理サーバへ送られ、当該サーバは、スキャンされた情報の受信に応じて、ゲスト・アカウント及びゲスト・アカウント証明書を生成してもよい。例えば、上述のように、ゲスト・アカウント証明書は、装置へ送られ、ユーザに示されてもよい（例えば、表示されてもよい）。その後、ラップトップあるいは他のユーザ装置を使用して、ゲスト・ユーザは、ゲスト証明書の入力によりホスト企業ネットワークを介してネットワーク資源にアクセスすることができる。上述と同様に、ゲスト・ユーザーのアクセスは特定のネットワーク資源に制限されてもよいし、特定の期間及び当該期間内の特定の時間に制限されてもよいし、ゲスト・ユーザの活動はモニタされ、必要に応じて料金請求されてもよい。
【0023】
いくつかの実施例では、ゲスト・ユーザは、ホスト企業への到着前にゲスト・アカウント証明書を提供されてもよく、あるいは、ゲスト企業において受付係又は別の管理者がゲストの到着の際にゲスト・ユーザにゲスト・アカウント証明書を提供してもよい。そのような実施例では、ゲスト・ユーザは、単に、ゲスト・カード、クレジットカード、携帯電話あるいは他のアイテムを最初にスキャンする必要なしに、ゲスト・アカウント証明書を使用して、ネットワークにログインすることができる。
【0024】
図１は、本発明のいくつかの実施例による、ホスト企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にするシステム１００の例を説明するブロック図である。システム１００は、ホスト企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にするためのシステムの実例となる実施例に過ぎず、本発明の範囲を制限するようには意図されない。そのようなシステムに対する様々な実施、例えばシステム１００の変更のいずれもが可能であり、本発明の範囲内にあるように意図される。
【0025】
システム１００は、１つ以上のホスト企業ユーザ装置（例えば１０２及び１２４）、１つ以上のゲスト・ユーザ装置（例えば１０４）、１つ以上の受信ユーザ装置（例えば１０５）、１つ以上のゲスト・アカウント・アクセス装置（例えば１１０）、ホスト企業ネットワーク１０６、インターネット１３６、１つ以上のゲスト企業ネットワーク（例えば１３４）、１つ以上のクレジットカード会社ネットワーク（例えば１３８）、及びこれらの任意の適切な組合せのうちいずれを含んでもよい。
【0026】
本明細書において使用される場合、「ネットワーク」は、伝送媒体の１つ以上のセグメントによって相互接続された２つ以上の構成要素のグループであって、当該伝送媒体を介して通信が構成要素間で交換され得るものである。各セグメントは、１つ以上の電気的もしくは光学的なワイヤ、金属及び／又は光ファイバで作られたケーブル、空気（例えば、搬送波を介した無線伝送を使用して）又はこれら伝送媒体の任意の組合せを含む複数の種類の伝送媒体のいずれかであってもよい。本明細書にて使用される場合、「複数」は２以上を意味する。ネットワークが単一配線、バス、ワイヤレス接続あるいは他の種類のセグメントで接続されている２つのコンポーネントと同じくらい単純であり得ることが認識されるべきである。さらに、ネットワークが本願の図面中で図中の素子に接続されるように図示される場合、接続している素子がそれ自身ネットワークの一部と考えられることは認識されるべきである。
【0027】

本明細書において使用される場合、「ネットワーク装置」は、ワークステーション、パーソナルコンピュータ、端末、ラップトップ・コンピュータ、終端局、ユーザ装置、サーバ、ゲートウエイ、レジスタ、スイッチ、ルーター、ハブ、ブリッジ、ディレクトリ、送信機、受信機、トランシーバー、無線アクセスポイント（ＡＰ）、リピーター及びその任意の組合せを含み、これらに限定されない、ネットワーク上で通信するように動作する装置である。本明細書において使用される場合、「ユーザ装置」は、ユーザがそれに対して通信を送信／受信でき、通信ネットワーク上での通信にとって終点として機能し得るネットワーク装置である。ユーザ装置は、ワークステーション、パーソナルコンピュータ（例えばＰＣ）、ラップトップ・コンピュータ、ノート型コンピュータ、電話（例えば地上通信線又はモバイル）、ページャ、ブラックベリー（商標）ブランドの装置、ＰＣＳ装置、携帯情報端末（ＰＤＡ）、スマートフォン、双方向無線機（例えば「ウォーキートーキー」）、他の種類のユーザ装置及びこれらの任意の適切な組合せを含むがこれらに限定されない。

【0028】

ネットワーク（例えばネットワーク１０６、１３２、１３４、１３６及び１３８のうちのいずれか）は、ローカルエリアネットワーク（ＬＡＮ）、メトロポリタン・エリア・ネットワーク（ＭＡＮ）、広域ネットワーク（ＷＡＮ）、ワイヤレス・ネットワーク、陸上移動通信網（ＰＬＭＮ）、グローバル移動体通信システム（ＧＳＭ）ネットワーク、汎用パケット無線システム（ＧＰＲＳ）ネットワーク、ユニバーサル・モバイル・テレコミュニケーション・システム（ＵＭＴＳ）ネットワーク、符号分割多重アクセス方式（ＣＤＭＡ）ネットワーク、光学ネットワーク、データ網、企業規模ネットワーク、無線パーソナル・エリア・ネットワーク（ＰＡＮ）、ホームネットワーク、電気通信ネットワーク、公衆交換電話網（ＰＳＴＮ）、広帯域ネットワーク、別の種類のネットワークあるいはこれらの任意の適切な組合せを含むがこれらに限定されない、様々な種類のネットワークのうちの何かであってもよいしこれを含んでもよい。

【0029】

ホスト企業ネットワーク１０６は、上述の種類のうちのいずれかの１つ以上のネットワーク装置を含んでいてもよく、１つ以上の無線アクセスポイント（ＡＰ）（例えば１０８）、１つ以上の認証サーバ（例えば１２０）、１つ以上の企業ユーザディレクトリ（例えば１２２）、１つ以上のゲスト・アクセス管理サーバ（例えば１２６）、１つ以上のゲスト・ユーザディレクトリ（例えば１２８）、１つ以上のファイアウォール（例えば１３０）、ホスト企業イントラネット（１３２）、他のネットワーク装置あるいはこれらの任意の適切な組合せのうちいずれを含んでもよい。

【0030】

例えばルーター、スイッチ及び／又はその組合せ（図示せず）のようなホスト企業ネットワーク１０６の１つ以上のコンポーネントが、１つ以上のＶＬＡＮを定義するように構成されてもよい。これらのＶＬＡＮ（つまりゲストＶＬＡＮ）の１つ以上は、１つ以上のゲスト・アクセス・アカウント及び１つ以上のネットワーク資源を含むように定義されてもよい。ゲストＶＬＡＮ内に含まれた１つ以上のネットワーク資源は、インターネット、ゲスト企業ネットワーク及びおそらくはホスト・ネットワーク１０６上に存在する１つ以上のネットワーク資源を含んでもよく、その結果、ゲスト・ユーザはこれらの資源のみへのアクセスに制限されている。他の１つ以上のＶＬＡＮがホスト企業ユーザー（例えば従業員と役員）に関連付けられ得る。これらのホスト企業ＶＬＡＮはゲストＶＬＡＮよりホスト企業ネットワーク１０６上のより多くの資源を含むように定義され、それにより、当該企業ネットワーク上の資源へのアクセスを与えられなくてもよいゲスト・ユーザーに比べて、企業ネットワーク上のより多くの資源に対するアクセスを企業ユーザーに提供する。例えば、ホスト企業ＶＬＡＮはホスト企業イントラネット１３２を含むように構成されてもよい。

【0031】

ＡＰ１０８は、ホスト企業ユーザ装置（例えば１０２と１２４）及びゲスト・ユーザ装

置（例えば１０４）を含むユーザ装置のために、ホスト企業ネットワーク１０６に対するワイヤレス・アクセスを提供するように構成されてもよい。ＡＰ１０８は、ユーザ装置から受け取られたユーザ証明書を認証サーバ１２０に渡すように構成されてもよい。認証サーバ１２０は、例えば企業ユーザーディレクトリー１２２へアクセスすることより、当該ユーザ証明書がホスト企業ユーザを識別するかどうか判断するように構成されてもよい。ユーザ証明書がユーザをホスト企業の許可されたユーザとして識別する場合、ユーザが属する１つ以上のＶＬＡＮにより、ユーザは、ホスト企業ネットワーク１０６の資源へのアクセスが与えられる。

【0032】

ユーザ装置によって提供されるユーザ証明書がホスト企業ユーザのものではないと認証サーバ１２０が決定すると、認証サーバ１２０は、ゲスト・アクセス管理サーバ１２６へ当該ユーザ証明書を渡してもよい。あるいは、サーバ１２６は、認証サーバ１２０を最初に通過することなく、ＡＰ１０８から証明書を受け取ってもよい。サーバ１２６は、例えばゲスト・ユーザーディレクトリー１２８へアクセスすることにより、ユーザ証明書がゲスト・ユーザを識別するかどうか判断してもよい。ユーザ証明書がユーザをゲスト・ユーザとして識別する場合、ゲスト・ユーザは、ゲストＶＬＡＮのメンバーがアクセスを許可されるネットワーク資源のみへのアクセスを提供されてもよい。

【0033】

本発明のいくつかの実施例では、ユーザ装置（例えば１０２、１０４あるいは１２４のうちのいずれか）は、例えば当該ユーザ装置の近くにあるＡＰとの通信を確立することにより、ユーザ装置の近くの任意のネットワークを発見するように構成されてもよい。例えば、ユーザ装置は、例えばユーザ装置がブートされるとき（つまり、電源が入れられたとき）にオペレーティング・システムが立ち上げられるのに応じて近傍にあるネットワークを発見するように構成されたオペレーティング・システム（例えば、後に記載するマイクロソフト・コーポレーションから市販されているオペレーティング・システムの１つ）を含んでもよい。ユーザ装置がホスト企業ユーザ装置（例えば１０２）である場合、ユーザ装置は、ユーザ装置とＡＰの間で交換された以前の通信に基づいて、ホスト企業ネットワーク１０６で情報を交換することを許可されてもよい。例えば、ホスト企業ユーザ装置のオペレーティング・システムは、接続を確立するために、以前にユーザ装置とＡＰの間で交換されたユーザ証明書を自動的に提供してもよい。

【0034】

ＡＰ及び／又はゲスト・ユーザ装置は、ゲスト・ユーザ装置が以前に認証されていない場合にそのことを認識するように構成されてもよい。そのような場合、ゲスト・ユーザ装置のオペレーティング・システムは、ゲスト・アカウント証明書（つまりゲスト・アカウントＩＤ及びパスワード）をユーザに促すように構成されてもよい。ゲスト・ユーザ装置は、単に、有効なゲスト・ユーザ証明書の提供によりホスト企業ネットワークへのアクセスを許可されてもよい。

【0035】

本発明のいくつかの実施例では、ゲスト・ユーザ装置のユーザは、ホスト企業の敷地へ到着する前に（例えば電子メール、紙メール、電話などによって）、又は当該敷地への到着の際に受付係あるいは他の管理者によって、ゲスト・アカウント証明書を提供されてもよい。例えば、到着に際して、受付係あるいは他の管理者は、ゲスト・アカウント証明書を得るため、ゲスト・アクセス管理サーバ１０６と連絡をとるために受信ユーザ装置１０５を使用してもよい。

【0036】

大量のゲスト・ユーザーがホスト企業を訪れる場合、企業の敷地への到着に先立ってゲスト・アカウント証明書を得ることが望ましいかもしれない。そのような状況では、ホスト企業のＩＴスタッフ又は管理者は、ホスト企業を訪れるすべてのゲストについて情報をインポートするために、ゲスト・アクセス管理サーバ１２６を使用することができる。そのような情報は、名前、職名、ゲスト・アクセスが必要になる時間の長さ等を含んでもよ

い。ゲスト・アクセス管理サーバ１２６は、個々の将来のゲストに対して異なるゲスト・アカウント証明書を提供してもよい。ホスト企業の敷地への到着に際して、各ゲスト・ユーザは、以前に提供されたゲスト・アカウント証明書を使用して、ＡＰ１０８あるいは別のアクセス・ポイントを介してホスト企業ネットワーク１０６にログオンすることができる。その後、ゲスト・アクセス管理サーバ１２６は、例えば当該ユーザ証明書をゲスト・ユーザーディレクトリー１２８に格納されたユーザ証明書と比較することにより、ゲスト・ユーザーの各々を認証してもよい。

【0037】

発明のいくつかの実施例では、例えばデバイス１１０等のゲスト・アカウント・アクセス・デバイスの使用を通じて、ホスト企業の敷地に到着した後、ゲスト・ユーザーはゲスト・ユーザ証明書を得る。デバイス１１０は、ユーザ出力装置１１２、ゲスト・カード・スキャナ１１４、クレジットカード・スキャナ１１６、携帯電話スキャナ１１８、他のコンポーネント、及びこれらの任意の適切な組合せのいずれを含んでもよい。ユーザ出力装置１１２、ゲスト・カード・スキャナ１１４、クレジットカード・スキャナ１１６及び携帯電話スキャナ１１８の１つ以上が、別個のゲスト・アカウント・アクセス装置上に存在してもよく、これらのコンポーネントの１つ以上が単一のコンポーネントとして統合されてもよいことが理解されるべきである。

【0038】

ユーザ出力装置１１２は、例えばモニタ、プリンタあるいはバッジ生成装置等のユーザに対して情報を表示するのに適した、又は、例えばスピーカや電話等の他の方法で（例えば音声を介して）ユーザに対して情報を示すのに適した任意の種類の出力装置の１つ以上を含んでもよい。ユーザ出力装置１１２は、ゲスト・アカウント・アクセス装置１１０の一部であることに制限されず、装置１１２と別個の異なるものでもよいことが理解されるべきである。

【0039】

ゲスト・カード・スキャナ１１４は、ゲスト・ユーザによって提供されるゲスト・カードをスキャンするように構成されてもよい。ゲスト・カードは、ゲスト・アカウント証明書を有していてもよいし、あるいは、例えば平文又は暗号化されたフォーマットでその上にエンコードされたアカウントへの値マッピングを有していてもよい。ゲスト・アクセス・カードは、磁気ストリップ、半導体メモリあるいは他の形式の媒体上に情報を格納してもよい。さらに、ゲスト・アクセス・カードは、送信機あるいは信号及び／又は情報を送信／受信するための他の手段を含んでもよい。ゲスト・アクセス・カード・スキャナ１１４は、磁気的に保存した情報を読むための１つ以上のコンポーネント（例えばヘッド）、及び／又はゲスト・カードから送信された情報を受信するための受信機又はトランシーバーで構成されてもよい。さらに、スキャナ１１４は、例えばホスト企業ネットワーク１０６の１つ以上のセグメントにわたって、ゲスト・アクセス管理サーバ１２６へ、ゲスト・アクセス・カードからスキャンされた情報を送るように構成されてもよい。

【0040】

クレジットカード・スキャナ１１６は、クレジットカードをスキャンし、かつ適切なクレジットカード会社ネットワーク（例えば１３８）に当該スキャンされた情報を送信するための１つ以上のコンポーネント（例えばヘッド）、及び／又はクレジットカード会社ネットワーク１３８に対して当該情報を送信するように構成されたホスト企業ネットワーク１０６のコンポーネント（例えばゲスト・アクセス管理サーバ１２６）で構成されてもよい。

【0041】

本発明のいくつかの実施例では、ホスト企業は、１社以上のクレジットカード会社と提携している。ホスト企業は、各会社の確認サービスにある額のお金を払ってもよい。ホスト企業がゲスト・アクセスを課す必要がある場合、クレジットカード会社はクレジットカード上のアクセスのために料金請求することができる。

【0042】

いくつかの実施例では、スキャナ１１４及び１１６が同じ装置の一部として統合されてもよいし、これらコンポーネントがゲスト・アクセス・カード及びクレジットカードから情報を読み出すのに使用されてもよいことが認識されるべきである。 そのような実施例では、スキャニング装置は、スキャンされたカードがクレジットカードであるかそれともゲスト・アクセス・カードであるかを、スキャンされた情報（例えば、それはフォーマット及び／又は内容である）から決定し、従って続行するように構成されてもよい。例えば、スキャンされたカードがゲスト・アクセス・カードであると決定した場合、スキャニング装置はゲスト・アクセス管理サーバ１２６へスキャンされた情報を送ってもよいし、そうでなければ、適切なクレジットカード・ベンダーのもとへスキャンされた情報を送ってもよい。

【0043】

携帯電話スキャナ１１８は、ゲスト・ユーザーの携帯電話から、例えばユーザーの携帯電話のＳＩＭカードから、携帯電話ユーザに関する情報を読み取るように構成されてもよい。携帯電話スキャナ１１８は、携帯電話からこの情報を電磁的に及び／又は光学的に読み取り、ユーザに関する当該情報をゲスト・アクセス管理サーバ１２６へ送るように構成されてもよい。

【0044】

ゲスト・アクセス管理サーバ１２６は、平文あるいは暗号化された形式のゲスト・アカウント証明書（例えばゲスト・アカウントＩＤ及びパスワード）、ゲスト・アカウント証明書に対応する情報、ユーザに対応する情報、他の情報又はこれらの任意の適切な組合せを受け取るように構成されてもよい。そのような情報を受信することに応答して、サーバ１２６は、ゲスト・アカウント証明書を決定し、例えばユーザ出力装置１１２等の１つ以上の他のネットワークコンポーネントにそれを提供してもよい。例えば、ゲスト・アクセス管理サーバ１２６は、クレジット会社ネットワーク１３８からユーザに関する確認情報を受信し、携帯電話スキャナ１１８から携帯電話ユーザに関する情報を受信し、及び／又はゲスト・カード・スキャナ１１４からゲスト・アカウント証明書に対応する情報についてのゲスト・アカウント証明書を受信するように構成されてもよい。

【0045】

サーバ１２６は、自身が（例えばゲスト・カード・スキャナ１１４から）受信する情報に含まれたゲスト・アカウント証明書を決定し、及び／又は、携帯電話スキャナ１１８及びクレジットカード会社ネットワーク１３８からそれぞれ受信したユーザー情報又はユーザ確認情報に応答してゲスト・アカウント証明書を作成するように構成されてもよい。ゲスト・アクセス管理サーバ１２６は、ゲスト・ユーザーディレクトリー１２８にゲスト・アカウント証明書を格納し、ゲスト・ユーザーを認証するためにこれらの証明書を使用してもよい。

【0046】

システム１００及びそのコンポーネントは、ソフトウェア（例えばＣ、Ｃ＃、Ｃ＋＋、Ｊａｖａ（登録商標）あるいはその組合せ）、ハードウェア（例えば１つ以上の特定用途向け集積回路）、ファームウェア（例えば電気的にプログラムされたメモリ）あるいはその任意の組合せを含む様々な技術のうちのいずれを使用して実施されてもよい。システム１００の１つ以上のコンポーネントは、単一装置（例えばコンピュータ）上に存在してもよいし、又は、１つ以上のコンポーネントが別個の個別の装置上に存在してもよい。さらに、各コンポーネントは、複数の装置にわたって分散されてもよいし、デバイスの１つ以上は相互に接続されてもよい。

【0047】

さらに、システム１００の１つ以上のコンポーネントを含んでいる１つ以上の装置の各々において、コンポーネントの各々は、システム上の１つ以上の位置に存在してもよい。例えば、これらのシステムのコンポーネントの異なる部分は、装置上でメモリ（例えばＲＡＭ、ＲＯＭ、ディスクなど）の異なるエリアに存在してもよい。そのような１つ以上の装置の各々は、他のコンポーネントもあるが、１つ以上のプロセッサ、記憶装置、ディス

クストレージシステム、１つ以上のネットワークインターフェース及び１つ以上のバスあるいは様々なコンポーネントを相互に連結させる他の内部通信リンクのような複数の既知のコンポーネントを含んでもよい。システム１００、及びそのコンポーネントは、図６及び７に関して下記に述べられたようなコンピュータシステムを使用して実施されてもよい。

【0048】

図２は、本発明のいくつかの実施例による、ゲスト・ユーザ（例えばゲスト・ユーザ装置１０４のユーザ）が企業ネットワーク（例えばネットワーク１０６）を介してネットワーク資源にアクセスすることを可能にする方法２００の例を説明するフローチャートである。方法２００は、ゲスト・ユーザが企業ネットワークを介してネットワーク資源へアクセスするのを可能にする方法の実例となる実施例に過ぎず、本発明の範囲を制限するようには意図されない。そのような方法の多数の他の実施例、例えば方法２００の変更のいずれも可能であって、本発明の範囲内にあるように意図される。

【0049】

ステップ２０２において、ゲスト・ユーザは、企業の敷地、例えば企業のオフィスの受付エリア又はロビーに到着する。ステップ２０４において、例えば、図３－５に関して以下に述べられるように、ユーザは１つ以上のゲスト・アカウント証明書を得てもよい。上述のように、いくつかの実施例では、ゲスト・ユーザがホスト企業の敷地に到着する前に、ゲスト・アカウント証明書が得られてもよいことが理解されるべきである。

【0050】

ステップ２０６において、ゲスト・ユーザは企業ネットワークに対してゲスト・アカウント証明書を提供してもよい。例えば、ゲスト・ユーザは、プロンプトに応じて、ユーザ装置（例えば装置１０５）を介してゲスト・アカウント証明書を入力してもよい。これらのゲスト・アカウント証明書は、例えばゲスト・アクセス管理サーバ１２６等のネットワークの認証コンポーネントに渡されてもよい。

【0051】

ステップ２０８において、企業ネットワークは、ゲスト・アカウント証明書に基づいて、企業ネットワークを介したネットワーク資源へのゲスト・ユーザのアクセスを提供してもよい。例えば、ゲスト・アカウント証明書はゲスト・アクセス管理サーバ１２６に渡されてもよく、当該サーバは、ゲスト・ユーザーディレクトリー１２８を使用して、証明書を確認してもよい。ゲスト・アカウント証明書が認証されると、ゲストは例えばインターネット１３６、ゲスト企業ネットワーク１３４及びおそらくはホスト企業ネットワーク１０６自体における資源等のネットワーク資源へのアクセスを提供される。これらのネットワーク資源へのアクセスはＶＬＡＮ技術を使用して規制されてもよい。すなわち、インターネット及びゲスト企業ネットワーク、ネットワーク１０６の制限された量の資源及び／又は１つ以上のゲスト・アカウントを含む１つ以上のＶＬＡＮが定義されてもよい。ホスト企業ネットワーク１０６上の１つ以上のコンポーネント（例えばルーター、スイッチあるいはその適切な組合せ）が、ゲスト・ユーザによって提供されるゲスト・アカウントＩＤに基づいて、１つ以上のそのようなＶＬＡＮについて定義されたネットワーク資源へのアクセスを制御するように構成されてもよい。他の技術がゲスト・ユーザ・アクセスを規制するために使用されてもよい。

【0052】

ステップ２１０において、ホスト企業ネットワークは、ゲスト・ユーザの行動、例えば、ゲスト・ユーザがアクセスするネットワーク資源及び／又はゲスト・ユーザが通信を交換するネットワーク資源を監視してもよい。ステップ２１２において、ホスト企業ネットワークは、ある行動、例えばインターネット等の特定のネットワーク資源へのアクセスについてゲスト・ユーザに料金を請求してもよい。

【0053】

ゲスト・ユーザに提供されるゲスト・アカウントは、期間を制限され、この期間中の特定の時間の間にのみ使用するように構成されてもよい。例えば、ユーザアカウントは、３

日の期間中（例えば月曜から水曜）に例えば、午前９時から午後５時の営業時間のみに使用されるように構成されてもよい。従って、ゲスト管理アクセスサーバ及びホスト企業ネットワーク上のトラフィックをルーティングする責任のあるネットワークコンポーネントは、ゲスト・アカウントの期間が終了するときに、及びゲスト・ユーザがゲスト・アクセスのために指定された特定の時間以外にネットワーク資源にアクセスすることを試みたときに、ゲスト・ユーザに対してアクセスを拒むように構成されてもよい。ゲスト・アクセス管理サーバ及びこれらの他のコンポーネントは、ログインする時及び／又はゲスト企業ネットワーク上でパケットを送信する時にゲスト・ユーザによって提供されるゲスト・アカウント証明書に基づいて、そうするように構成されてもよい。ゲスト・ユーザーディレクトリー１２８におけるゲスト・アカウントについてのエントリ（例えば記録）は、ゲスト・アクセス・アカウントのための期間及び／又は特定のアクセス時間を指定する１つ以上の情報要素を含んもよい。

【0054】

方法２００は追加のステップを含んでもよい。さらに、ステップは他の順序で実行されてもよいし、及び／又はステップの１つ以上が少なくとも部分的に順次に又は並列に実行されてもよいので、方法２００の一部として実行されるステップの順序は、図２に例示された順序に限定されない。例えば、ステップ２０４はステップ２０２の前に実行されてもよいし、ステップ２１０及び２１２は、少なくとも部分的に、並列に実行されてもよい。

【0055】

図３は、本発明のいくつかの実施例による、ゲスト・アクセス・カードを使用して企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にする方法３００の例を説明するフローチャートである。方法３００は、ゲスト・アクセス・カードを使用して企業ネットワークを介してネットワーク資源へユーザがアクセスするのを可能にする方法の実例となる実施例に過ぎず、本発明の範囲を制限するようには意図されない。そのような方法の他の実施、例えば方法３００の変更、は可能であって、本発明の範囲内にあるように意図される。

【0056】

ステップ３０２において、例えば、ゲスト・カード・スキャナ１１４に関して上述されるように、情報がユーザのゲスト・アクセス・カードから読み取られてもよい。次に、ステップ３０４において、例えば、ゲスト・アクセス管理サーバ１２６に関して上述されるように、１つ以上のゲスト・アカウント証明書がゲスト・アクセス・カードから読み取られた情報に基づいて決定されてもよい。ステップ３０６において、例えば、ユーザ出力装置１１２に関して上述されるように、１つ以上のゲスト・アカウント証明書がゲスト・ユーザに示されてもよい（例えば、表示又は音声として再生されてもよい）。方法３００は追加のステップを含んでもよい。

【0057】

図４は、本発明のいくつかの実施例による、クレジットカードを使用して、企業ネットワークを介してネットワーク資源へユーザがアクセスすることを可能にする方法４００の例を説明するフローチャートである。方法４００は、クレジットカードを使用して企業ネットワークを介してネットワーク資源へユーザがアクセスすることを可能にする方法の実例となる実施例に過ぎず、本発明の範囲を制限するようには意図されない。そのような方法の他の実施、例えば方法４００の変更は可能であり、本発明の範囲内にあるように意図される。

【0058】

ステップ４０２において、例えば、クレジットカード・スキャナ１１６に関して上述されるように、情報がゲスト・ユーザのクレジットカードから読み取られてもよい。ステップ４０４において、クレジットカードから読み取られた情報は、クレジットカード・ベンダー、例えば上述のようなクレジットカード会社ネットワーク１３８へ送られてもよく、クレジットカード会社は、ステップ４０６においてゲスト・ユーザの同一性を確認してもよい。ステップ４０８において、クレジットカード・ベンダーは、上述のように、企業ネ

ットワーク、例えばゲスト・アクセス管理サーバ１２６へ、ゲスト・ユーザに関する確認情報を送ってもよい。ステップ４１０において、１つ以上のゲスト・アカウント証明書が、例えばゲスト・アクセス管理サーバ１２６に関して上述されるように、確認情報に基づいて作成されてもよい。方法４００は追加のステップを含んでもよい。

【0059】

図５は、本発明のいくつかの実施例による、携帯電話を使用して企業ネットワークを介してネットワーク資源へのユーザ・アクセスを提供する方法５００の例を説明するフローチャートである。方法５００は、携帯電話を使用して企業ネットワークを介してネットワーク資源へのユーザ・アクセスを提供する方法の実例となる実施例に過ぎず、本発明の範囲を制限するようには意図されない。そのような方法の他の実施、例えば方法５００の変更、は可能であって、本発明の範囲内にあるように意図される。

【0060】

ステップ５０２において、例えば携帯電話スキャナ１１８に関して上述されたように、ゲスト・ユーザを識別する情報は、携帯電話から、例えば携帯電話のＳＩＭから読み取られる。ステップ５０４において、１つ以上のゲスト・アカウント証明書が、例えば、ゲスト・アクセス管理サーバ１２６に関して上述されるように、携帯電話から読み取られた情報に基づいて作成されてもよい。ステップ５０６において、例えば、ユーザ出力装置１１２に関して上述されるように、１つ以上のゲスト・アカウント証明書がゲスト・ユーザに示されてもよい（例えば、表示されてもよく、音声として再生されてもよい）。方法５００は追加のステップを含んでもよい。

【0061】

ゲスト・ユーザーのネットワーク・アクセスを提供するために本明細書に記載された実施例は、比較的単純で安全である。各々は、パートナー、顧客、ベンダー及び他の企業訪問者に対して容易なインターネットアクセスを提供する市場需要を満たす。これらのソリューションはコスト節約となり得るし、既存のネットワークインフラを使用するので、既知のソリューションと比べて、企業のＩＴ部門に付加するオーバーヘッドが小さい。ＩＴ部門は、新しいゲスト・ネットワークインフラを追加する代わりに、ゲストＶＬＡＮを維持する必要があるだけである。さらに、ゲストトラフィックと従業員トラフィックは分離することができる。さらに、ゲストの行動はログ及び監視することができ、ホスト企業に比較的セキュアなソリューションを提供する。本明細書に記述された実施例のいくつかのものは容易に料金請求する機構を提供し、企業は進んでこれらのソリューションを展開させることができる。

【0062】

方法２００－５００、これらのステップ並びにこれらの方法及びこれらのステップの様々な実施例及び変更は、個々にあるいは組合せとして、１つ以上のコンピュータ可読媒体、例えば不揮発性の記録媒体、集積回路メモリ要素、又はその組合せにおいて実態的に具体化されたコンピュータ可読信号によって定義されてもよい。コンピュータ可読媒体は、コンピュータによってアクセスすることができるあらゆる利用可能な媒体であり得る。限定ではなく例として、コンピュータ可読媒体には、コンピュータストレージ媒体と通信媒体とを含めることができる。コンピュータストレージ媒体には、コンピュータ可読命令、データ構造、プログラムモジュール、又はそれ以外のデータ等の情報の記憶のための任意の方法又は技術で実施される揮発性及び不揮発性の着脱可能及び着脱不能な媒体が含まれる。コンピュータストレージ媒体には、ＲＡＭ、ＲＯＭ、ＥＥＰＲＯＭ、フラッシュメモリ、又はそれ以外のメモリ技術、ＣＤ－ＲＯＭ、デジタル多用途ディスク（ＤＶＤ）、又はそれ以外の光ストレージ、磁気カセット、磁気テープ、磁気ディスクストレージ、又はそれ以外の磁気ストレージデバイス、それ以外のタイプの揮発性メモリ及び不揮発性メモリ、所望の情報を記憶するのに使用でき且つコンピュータがアクセスすることができるそれ以外の任意の媒体、及び上記のものの任意の適した組み合わせが含まれるが、これらに限定されるものではない。

【0063】

通信媒体は、通常、搬送波又はその他のトランスポート機構などの変調データ信号の形で、コンピュータ可読命令、データ構造、プログラム・モジュール又はその他のデータを具現化し、任意の情報配信媒体が含まれる。「変調データ信号」という用語は、信号の特性の内の１つ又は複数を、その信号内の情報を符合化するように設定又は変更した信号を意味する。一例であり、限定ではないが、通信媒体としては、有線ネットワーク又は直接配線接続（direct-wired connection）などの有線媒体、及び音響、ＲＦ、赤外線及びその他の無線媒体などの無線媒体、他の種類の通信媒体及びこれらの適切な組合せを含む。

【0064】

１つ又は複数のコンピュータ可読媒体に具体化されたコンピュータ可読信号 は、例えば、１つ又は複数のプログラムの一部として、コンピュータによる実行の結果として、そのコンピュータに、本明細書に記載の機能のうちの１つ又は複数（例えば、方法２００－５００又はその動作）及び／又は様々な実施形態、その変形形態、及び組合せを実行させる命令を定義することができる。そのような命令は、例えば、Ｊａｖａ（登録商標）、Ｊ＃、Ｖｉｓｕａｌ Ｂａｓｉｃ、Ｃ、Ｃ＃、又はＣ＋＋ 、Ｆｏｒｔｒａｎ、Ｐａｓｃａｌ、Ｅｉｆｆｅｌ、Ｂａｓｉｃ、ＣＯＢＯＬなどの、複数のプログラミング言語のいずれか又はこれらの様々な組合せのいずれかで記述することができる。そのような命令が具体化されたコンピュータ可読媒体は、本明細書に記載のシステム１００及び６００のいずれかのコンポーネントのうちの１つ又は複数に存在することができ、そのようなコンポーネントのうちの１つ又は複数に渡って分散させることができ、それらの間で移行中とすることができる。

【0065】

コンピュータ可読媒体は、可搬性のものとすることができ、それに格納された命令は、任意のコンピュータシステム資源にロードして、本明細書に記載の本発明の態様を実施することができる。さらに、上述したコンピュータ可読媒体に格納された命令が、ホストコンピュータで動作するアプリケーションプログラムの一部として具体化された命令に制限されないことを理解されたい。そうではなく、当該命令は、本発明の上述した態様を実施するようにプロセッサをプログラムするのに使用することができる任意のタイプのコンピュータコード（例えば、ソフトウェア又はマイクロコード）として具体化することができる。

【0066】

本明細書に記載の機能を実行する、例えば図１、６及び７に関して記載されるコンピュータシステムのいずれかなどの、コンピュータシステムの単一のコンポーネント又は複数のコンポーネントの集合のいずれも、一般に、そのような機能を制御する１つ又は複数のコントローラと考えることができることを理解されたい。１つ又は複数のコントローラは、専用のハードウェア及び／又はファームウェアを用いるなどして、上述の機能又は前述のものの任意の適当な組合せを実行するようにマイクロコード又はソフトウェアを使用してプログラムされたプロセッサを使用して、多数の形で実施することができる。

【0067】

本発明による様々な実施形態は、１つ又は複数のコンピュータシステムで実施することができる。これらのコンピュータシステムは、例えば、Ｉｎｔｅｌ ＰＥＮＴＩＵＭ（登録商標）タイププロセッサ、Ｍｏｔｏｒｏｌａ ＰｏｗｅｒＰＣ、Ｓｕｎ ＵｌｔｒａＳＰＡＲＣ、Ｈｅｗｌｅｔｔ－Ｐａｃｋａｒｄ ＰＡ－ＲＩＳＣプロセッサ、ＡＭＤ（Ａｄｖａｎｃｅｄ Ｍｉｃｒｏ Ｄｅｖｉｃｅｓ）社から入手可能な様々なプロセッサのいずれか、又は任意の他のタイプのプロセッサに基づくものなどの、汎用コンピュータとすることができる。任意のタイプのコンピュータシステムのうちの１つ又は複数を使用して、本発明の様々な実施形態を実施できることを理解されたい。

【0068】

本発明の一実施形態による汎用コンピュータシステムは、上で説明した機能のうちの１つ又は複数を実行するように構成されている。このシステムが他の機能を実行できること、及び本発明がいずれかの特定の機能又は機能のセットを有することに制限されないこと

を理解されたい。

【0069】

例えば、本発明の様々な態様を、図６に示されたものなどの汎用コンピュータシステム６００で実行される特殊化されたソフトウェアとして実施することができる。コンピュータシステム６００は、ディスクドライブ、メモリ、又はデータを格納する他のデバイスなどの、１つ又は複数のメモリデバイス６０４に接続されたプロセッサ６０３を含むことができる。メモリ６０４は、通常、コンピュータシステム６００の動作中にプログラム及びデータを格納するのに使用される。コンピュータシステム６００のコンポーネントを、相互接続機構６０５によって結合することができ、相互接続機構６０５は、１つ又は複数のバス（例えば、同一のマシン内で一体化されたコンポーネントの間）及び／又はネットワーク（例えば、別々の別個のマシンに存在するコンポーネントの間）を含むことができる。相互接続機構６０５は、通信（例えば、データ、命令）をシステム６００のシステムコンポーネントの間で交換できるようにする。コンピュータシステム６００は、例えば、キーボード、マウス、トラックボール、マイクロホン、タッチスクリーンなどの１つ又は複数の入力デバイス６０２、及び、例えば印刷デバイス、ディスプレイスクリーン、スピーカなどの、１つ又は複数の出力デバイス６０１も含む。さらに、コンピュータシステム６００は、コンピュータシステム６００を通信ネットワークに接続する（相互接続機構６０５に加えて又はこれの代わりに）１つ又は複数のインタフェース（図示せず）を含むことができる。

【0070】

図６により詳細に示されるストレージシステム７０６は、通常、コンピュータによって読み取り可能かつ書き込み可能な不揮発性記録媒体７０１を含み、この不揮発性記録媒体７０１に、プロセッサによって実行されるプログラムを定義する信号が格納され、あるいは、そのプログラムによって処理される情報が格納される。この媒体は、例えば、ディスク又はフラッシュメモリとすることができる。通常、動作時に、プロセッサはデータを不揮発性記録媒体７０１から別のメモリ７０２に読み取らせ、これによって、プロセッサによる情報への媒体７０１より高速のアクセスを可能にする。このメモリ７０２は、通常は、ダイナミックランダムアクセスメモリ（ＤＲＡＭ）又はスタティックメモリ（ＳＲＡＭ）などの揮発性ランダムアクセスメモリである。これは、図示のようにストレージシステム６０６に置くか、図示されていないメモリシステム６０４に置くことができる。プロセッサ６０３は、一般に、集積回路メモリ６０４及び７０２内のデータを操作し、次に、処理が完了した後にそのデータを媒体７０１にコピーする。媒体７０１と集積回路メモリ要素６０４及び７０２との間のデータ移動を管理する様々な機構が既知であり、本発明はそれに制限されない。本発明は、特定のメモリシステム６０４又はストレージシステム６０６に制限されない。

【0071】

コンピュータシステムは、例えば特定用途向け集積回路（ＡＳＩＣ）などの、特別にプログラムされた特殊目的ハードウェアを含むことができる。本発明の諸態様は、ソフトウェア、ハードウェアもしくはファームウェア、又はその任意の組合せで実施することができる。さらに、そのような方法、動作、システム、システム要素、及びそのコンポーネントは、上で説明したコンピュータシステムの一部として又は独立のコンポーネントとして実装することができる。

【0072】

コンピュータシステム６００は例として、本発明の様々な態様を実施できるコンピュータシステムの１タイプとして示されているが、本発明の諸態様が、図６に示されたコンピュータシステムで実施されることに制限されないことを理解されたい。本発明の様々な態様は、図６に示されたものと異なるアーキテクチャ又はコンポーネントを有する１つ又は複数のコンピュータで実践することができる。

【0073】

コンピュータシステム６００は、高水準コンピュータプログラミング言語を使用してプ

ログラム可能な汎用コンピュータシステムとすることができる。コンピュータシステム６００は、特別にプログラムされた特殊目的ハードウェアを使用して実施することもできる。コンピュータシステム６００内で、プロセッサ６０３は、通常、Ｉｎｔｅｌ Ｃｏｒｐｏｒａｔｉｏｎから入手可能な周知のＰｅｎｔｉｕｍ（登録商標）クラスプロセッサなどの市販プロセッサである。多数の他のプロセッサが使用可能である。そのようなプロセッサは、通常、オペレーティングシステムを実行し、オペレーティングシステムは、例えば、Ｍｉｃｒｏｓｏｆｔ（登録商標） Ｃｏｒｐｏｒａｔｉｏｎから入手可能なＷｉｎｄｏｗｓ（登録商標）９５、Ｗｉｎｄｏｗｓ（登録商標）９８、Ｗｉｎｄｏｗｓ（登録商標）ＮＴ（登録商標）、Ｗｉｎｄｏｗｓ（登録商標）２０００（Ｗｉｎｄｏｗｓ（登録商標）ＭＥ）、又はＷｉｎｄｏｗｓ（登録商標）ＸＰオペレーティングシステム、Ａｐｐｌｅ Ｃｏｍｐｕｔｅｒ社から入手可能なMAC OS System X、Ｓｕｎ Ｍｉｃｒｏｓｙｓｔｅｍｓ社から入手可能なＳｏｌａｒｉｓ Ｏｐｅｒａｔｉｎｇ Ｓｙｓｔｅｍ、様々なソースから入手可能なＬｉｎｕｘ、又は様々なソースから入手可能なＵＮＩＸ（登録商標）などとすることができる。様々な他のオペレーティングシステムのいずれであっても、使用することができる。

【0074】

プロセッサ及びオペレーティングシステムが、一緒に、高水準プログラミング言語のアプリケーションプログラムが記述されるコンピュータプラットフォームを定義する。本発明が特定のコンピュータシステムプラットフォーム、プロセッサ、オペレーティングシステム、又はネットワークに制限されないことを理解されたい。また、本発明が特定のプログラミング言語又はコンピュータシステムに制限されないこと、及び他の適当なプログラミング言語及び他の適当なコンピュータシステムも使用できることは、当業者に明白であるだろう。

【0075】

コンピュータシステムの１つ又は複数の部分を、通信ネットワークに結合された１つ又は複数のコンピュータシステム（図示せず）にわたって分散させることができる。これらのコンピュータシステムも、汎用コンピュータシステムとすることができる。例えば、本発明の様々な態様を、１つ又は複数のクライアントコンピュータにサービスを提供するように構成された１つ又は複数のコンピュータシステム（例えば、サーバ）、又は分散システムの一部として全体的なタスクを実行するように構成された１つ又は複数のコンピュータシステムの間で分散させることができる。例えば、本発明の様々な態様を、本発明の様々な実施形態に従って様々な機能を実行する１つ又は複数のサーバシステムの間で分散されたコンポーネントを含むクライアントーサーバシステムで実行することができる。これらのコンポーネントは、通信プロトコル（例えば、ＴＣＰ／ＩＰ）を使用して通信ネットワーク（例えば、インターネット）上で通信する実行可能コード、中間（ｉｎｔｅｒｍｅｄｉａｔｅ）（例えば、ＩＬ）コード、又は解釈済み（ｉｎｔｅｒｐｒｅｔｅｄ）（例えば、Ｊａｖａ（登録商標））コードとすることができる。

【0076】

本発明が特定のシステム又はシステムのグループで実行されることに制限されないこと、及び本発明が特定の分散アーキテクチャ、ネットワーク、又は通信プロトコルに制限されないことを理解されたい。

【0077】

本発明の様々な実施形態を、ＳｍａｌｌＴａｌｋ、Ｊａｖａ（登録商標）、Ｊ＃（Ｊシャープ）、Ｃ＋＋ 、Ａｄａ、又はＣ＃（Ｃシャープ）などのオブジェクト指向プログラミング言語を使用してプログラムすることができる。他のオブジェクト指向プログラミング言語も使用することができる。あるいは、機能プログラミング言語、スクリプトプログラミング言語、及び／又は論理プログラミング言語を使用することができる。本発明の様々な態様を、非プログラム式（ｎｏｎ－ｐｒｏｇｒａｍｍｅｄ）環境（例えば、ブラウザプログラムのウィンドウで表示された時に、グラフィカルユーザインタフェース（ＧＵＩ）の諸態様をレンダリングするか他の機能を実行する、ＨＴＭＬ、ＸＭＬ、又は他のフォ

ーマットで作成された文書）で実施することができる。本発明の様々な態様を、プログラム式要素又は非プログラム式要素、あるいはその任意の組合せとして実施することができる。さらに、本発明の様々な実施形態を、Ｍｉｃｒｏｓｏｆｔ（登録商標）　Ｃｏｒｐｏｒａｔｉｏｎから入手可能なＭｉｃｒｏｓｏｆｔ（登録商標）．ＮＥＴテクノロジを使用して実施することができる。

【0078】

本発明のいくつかの例示的な実施形態を説明したが、前述したものは単に例示的であって制限的ではなく、例としてのみ提示されたことが、当業者には明白であろう。多数の修正形態及び他の例示的実施形態が、当業者の範囲内であり、本発明の範囲に含まれることが意図されている。具体的には、本明細書で提示された例の多くが、方法動作又はシステム要素の特定の組合せを用いるが、これらの動作及びこれらの要素を異なる形で組み合わせて、同一の目的を達成できることを理解されたい。一実施形態に関してのみ説明された動作、要素、及び特徴は、他の実施形態における類似する役割から除外されることを意図されていない。さらに、請求項に記載の１つ又は複数の特定の機能を実行する手段の範囲の制限に関して、手段は、記載された機能を実行するための、本明細書で開示された手段に制限されることを意図されているのではなく、記載された機能を実行する、現在既知の又は後に開発される任意の同等の手段を範囲に含むことが意図されている。

【0079】

「第１の」、「第２の」、「第３の」などの順序を示す語を請求項要素を限定するために請求項において使用すること自体は、別の請求項要素に対するある請求項要素の優先、優位、又は順序、あるいは方法の動作が実行される時間的順序を暗示するのではなく、単に、ある名前を有するある請求項要素を（順序を示す単語の使用を除いて）同一の名前を有する別の要素から区別し、請求項要素を区別するための符号として使用されている。

【図面の簡単な説明】

【0080】

【図1】本発明のいくつかの実施例による、ホスト企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にするシステムの例を説明するブロック図である。

【図2】本発明のいくつかの実施例による、企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にする方法の例を説明するフローチャートである。

【図3】本発明のいくつかの実施例による、ゲスト・アクセス・カードを使用して、企業ネットワークを介してネットワーク資源へゲスト・ユーザがアクセスすることを可能にする方法の例を説明するフローチャートである。

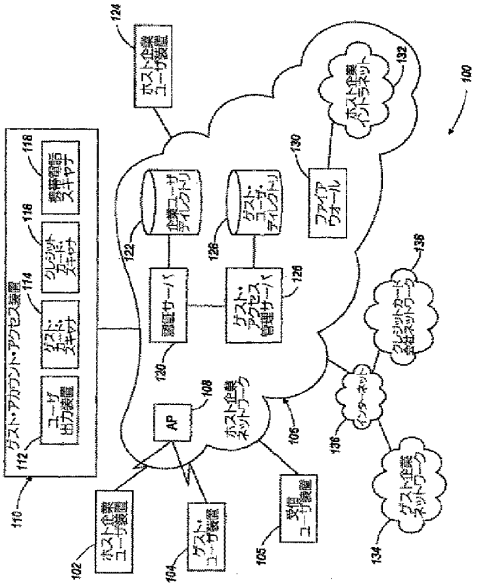
【図4】本発明のいくつかの実施例による、クレジットカードを使用して、企業ネットワークを介してネットワーク資源へユーザがアクセスすることを可能にする方法の例を説明するフローチャートである。

【図5】本発明のいくつかの実施例による、携帯電話を使用して、企業ネットワークを介してネットワーク資源へのユーザのアクセスを提供する方法の例を説明するフローチャートである。

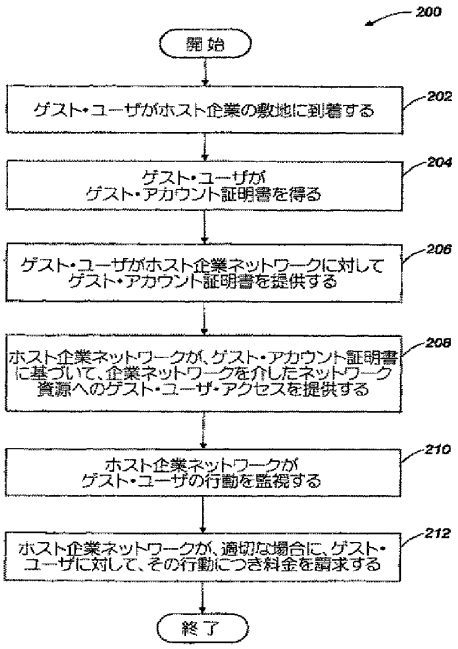
【図6】本発明のいくつかの実施例を実施することができるコンピュータ・システムの例を説明するブロック図である。

【図7】本発明のいくつかの実施例を実施するためのコンピュータ・システムの一部として使用することができるストレージ・システムの例を説明するブロック図である。

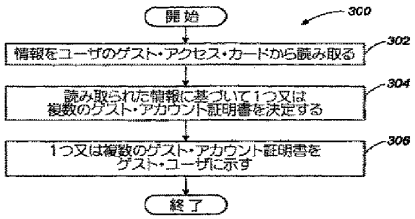
【図1】



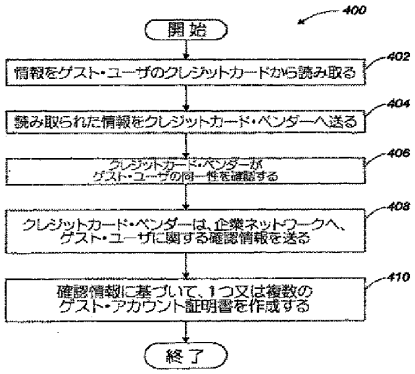
【図2】



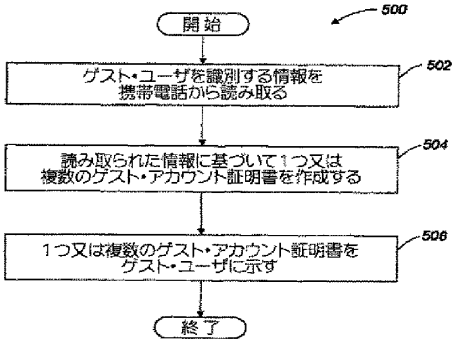
【図3】



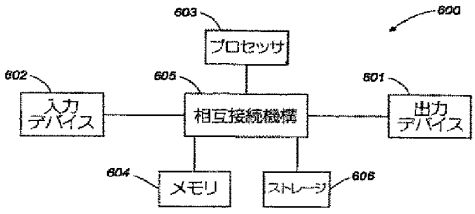
【図4】



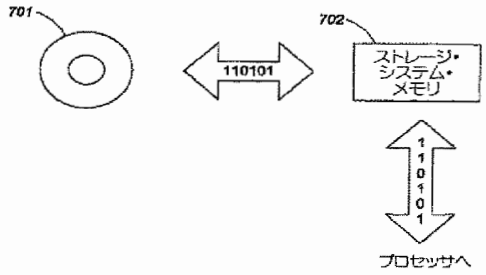
【図5】



【図6】



【図7】



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/010570

A. CLASSIFICATION OF SUBJECT MATTER

G06Q 20/00(2006.01)i, G06Q 40/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 8 G06Q 20/00; G06Q 40/00; H04L 9/08

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models since 1975.
Japanese utility models and applications for utility models since 1975.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
e-KIPASS "network resource, access control, access card, guest account credential, VLAN, virtual LAN"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 20040248557 A1 (Muratsu, Fumitake) 9 DECEMBER 2004 See Abstract; Claim 1; Figure 1	1-20
Y	US 20040210450 A1 (Atencio, Michael et al.) 21 OCTOBER 2004 See Abstract; Paragraph 0101; Figure 1a	1-20
Y	KR 1020050026624 A (Lee, Sang Joon) 15 MARCH 2005 See Abstract; Page 6, Lines 49-52; Page 8, Lines 15-16; Figures 2,7	1-20
Y	US 06577628 B1 (Hejza, Leo A) 10 JUNE 2003 See Abstract; Claims 1,11,17,20	1-20

☐ Further documents are listed in the continuation of Box C.　　☒ See patent family annex.

* Special categories of cited documents:
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
08 NOVEMBER 2007 (08.11.2007)	**08 NOVEMBER 2007 (08.11.2007)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer DOO, So Young Telephone No. 82-42-481-8378

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US20040248557A1	09.12.2004	JP2004363878A2	24.12.2004
		JP3695538B2	14.09.2005
		KR1020040104937	13.12.2004
		US2004248557A1	09.12.2004
		US7200362BB	03.04.2007
US20040210450A1	21.10.2004	NONE	
KR1020050026624A	15.03.2005	NONE	
US06577628B1	10.06.2003	NONE	

Form PCT/ISA/210 (patent family annex) (April 2007)

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１．ＧＳＭ
２．ＥＥＰＲＯＭ
３．Ｌｉｎｕｘ

(74)代理人　100147991
弁理士　鳥居　健一
(72)発明者　ハッサン，アマー・エイ
アメリカ合衆国ワシントン州９８０５２，レッドモンド，ワン・マイクロソフト・ウェイ，マイクロソフト　コーポレーション，インターナショナル・パテンツ
(72)発明者　バロン，アンドリュー・ティー
アメリカ合衆国ワシントン州９８０５２，レッドモンド，ワン・マイクロソフト・ウェイ，マイクロソフト　コーポレーション，インターナショナル・パテンツ
(72)発明者　ウイテマ，クリスチャン
アメリカ合衆国ワシントン州９８０５２，レッドモンド，ワン・マイクロソフト・ウェイ，マイクロソフト　コーポレーション，インターナショナル・パテンツ
(72)発明者　ウー，デユン
アメリカ合衆国ワシントン州９８０５２，レッドモンド，ワン・マイクロソフト・ウェイ，マイクロソフト　コーポレーション，インターナショナル・パテンツ
(72)発明者　クハディア，マハムード・エイチ
アメリカ合衆国ワシントン州９８０５２，レッドモンド，ワン・マイクロソフト・ウェイ，マイクロソフト　コーポレーション，インターナショナル・パテンツ
(72)発明者　パリク，ビシェシュ・エム
アメリカ合衆国ワシントン州９８０５２，レッドモンド，ワン・マイクロソフト・ウェイ，マイクロソフト　コーポレーション，インターナショナル・パテンツ
(72)発明者　ヤヒヤウイ，ワジ
アメリカ合衆国ワシントン州９８０５２，レッドモンド，ワン・マイクロソフト・ウェイ，マイクロソフト　コーポレーション，インターナショナル・パテンツ

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(71) Applicant *(for all designated States except US)*: **MICROSOFT CORPORATION** [US/US]; One Microsoft Way, Redmond, Washington 98052-6399 (US).

(72) Inventors: **HASSAN, Amer, A.**; c/o Microsoft Corporation, International Patents, One Microsoft Way, Redmond, Washington 98052-6399 (US). **BARON, Andrew, T.**; c/o Microsoft Corporation, nternational Patents, One Microsoft Way, Redmond, Washington 98052-6399 (US). **HUITEMA, Christian**; c/o Microsoft Corporation, International Patents, One Microsoft Way, Redmond, Washington 98052-6399 (US). **WU, Deyun**; c/o Microsoft Corporation, International Patents, One Microsoft Way, Redmond, Washington 98052-6399 (US). **KHADEER, Mahmood, H.**; c/o Microsoft Corporation, International Patents, One Microsoft Way, Redmond, Washington 98052-6399 (US). **PARIKH, Vishesh, M.**; c/o Microsoft Corporation, International Patents, One Microsoft Way, Redmond, Washington 98052-6399 (US). **YAHYAOUI, Wajih**; c/o Microsoft Corporation, International Patents, One Microsoft Way, Redmond, Washington 98052-6399 (US).

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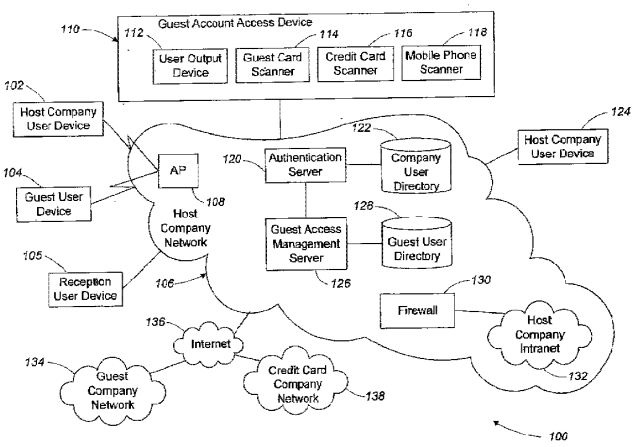
Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

[Continued on next page]

(54) Title: PROVIDING GUEST USERS ACCESS TO NETWORK RESOURCES THROUGH AN ENTERPRISE NETWORK



(57) Abstract: Guest user are enabled to access network resources through an enterprise network using a guest user account. A guest user account may be created for a guest for a limited time. Guest account credentials of the guest account may be provided to the guest to use the guest account using any of a variety of techniques described herein, for example, by scanning a guest access card, credit card or mobile telephone of guest user, and providing the guest account credentials to the user based on the information obtained. A guest access management server may be configured to generate and maintain guest accounts, authenticate guest users, and track and log guest activity. A VLAN technology may be used to separate guest traffic from host enterprise traffic on the host enterprise network. After a guest user is authenticated, communications to and from the guest user may be routed to a guest VLAN.

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PROVIDING GUEST USERS ACCESS TO NETWORK RESOURCES THROUGH AN ENTERPRISE NETWORK

BACKGROUND

In today's world, enterprises often serve as hosts to visitors, for example, vendors, partners, clients, members, colleagues, students, etc., for any of a variety of purposes. These guests often desire to access the Internet or another network (e.g., the networks of their own enterprises) using their mobile user devices, such as, for example, laptop computers, notebook computers, telephones, Blackberry™ brand devices, PCS devices, personal digital assistance (PDAs), etc. Thus, host enterprises often provide guests access to network resources through the host enterprise's network. As used herein, enterprises include, but are not limited to: companies; corporations; partnerships; sole proprietorships, other types of business entities; organizations; non-profit organizations; governmental bodies and/or agencies; educational institutions; other types of enterprises; and any suitable combination of the foregoing.

Providing guests access to network resources (e.g., a portion of the host network, the Internet, a guest enterprise network, etc.) often requires the use of dedicated hardware and/or software, and the installment and the maintenance of same. These dedicated solutions are not simple. Most require information technology (IT) support and/or the assistance of one or more administrators or receptionists. Thus, in order to provide guests with access to network resources, host enterprises typically incur the costs of dedicated hardware and/or software, IT support, and/or administrative assistance.

SUMMARY

This Summary provides an illustrative context for aspects of the invention, in a simplified form. It is not intended to be used to determine the scope of the claimed subject matter. Aspects of the invention are described more fully below in the Detailed Description.

Described herein are systems and methods enabling guests to access network resources through an enterprise network using a guest user account. A guest user account may be created for a guest for a limited time (a day, a couple days, certain times during certain days (e.g., 9:00 a.m. to 5:00 p.m.), a week, or even longer). Guest account

credentials (e.g., a guest account ID and password) of the guest account may be provided to the guest, which allow the guest to use the guest account. Any of a variety of techniques, including those described herein, may be used to provide the guest account credentials to the user. Providing the credentials may involve obtaining information from the guest user, and providing guest access credentials in response to obtaining the information. Obtaining the information about the guest user may include scanning a guest access card, credit card or mobile telephone of the guest user, receiving an email or letter, or orally in person or by telephone. A guest access management server may be configured to generate and maintain guest accounts, authenticate guest users, and track and log guest activity.

In some embodiments, virtual LAN (i.e., VLAN) technology may be used to separate guest traffic from host enterprise traffic on the host enterprise network. By using VLAN technology, the host enterprise's existing network infrastructure may be used, as opposed to having to modify the infrastructure. After a guest user is authenticated, communications to and from the guest user may be routed to a guest VLAN. Within the guest VLAN, the user may be allowed to access network resources such as the Internet or the guest enterprise's network.

In an embodiment of the invention, a guest user to enabled to access network resources through an enterprise network. Information read from an object (e.g., a credit card, a guest access card, a mobile telephone, etc.) in the possession of the guest user. is received. One or more guest account credentials for accessing the network resources through the enterprise network are determined based on the read information, and the one or more guest account credentials are indicated to the guest user.

In another embodiment, a system is provided for enabling a guest user to access network resources through an enterprise network. The system includes a guest access management server to determine, based on the information read from an object (e.g., a credit card, a guest access card, a mobile telephone, etc.) in the possession of the guest user, one or more guest account credentials for accessing the network resources through the enterprise network, and to initiate an indicating of the one or more guest account credentials to the guest user.

In yet another embodiment, a computer program product is provided, which includes a computer-readable medium and computer-readable signals stored on the computer-readable medium. The signals define instructions that, as a result of being

executed by a computer, control the computer to perform a method of a method of enabling a guest user to access network resources through an enterprise network. The method includes acts of: (a) receiving information read from a guest access card of the guest user; (b) determining, based on the read information, one or more guest account credentials for accessing the network resources through the enterprise network; and (c) indicating the one or more guest account credentials to the guest user.

In another embodiment, a guest user is enabled to access network resources through an enterprise network. Information from a credit card vendor verifying an identity of the guest user is received. One or more guest account credentials for accessing the network resources through the enterprise network are determined based on the received information, and the one or more guest account credentials are indicated to the guest user.

In another embodiment, a system is provided for enabling a guest user access to network resources through an enterprise network. The system includes a guest access management server to receive information from a credit card vendor verifying an identity of the guest user, to determine, based on the received information, one or more guest account credentials for accessing the network resources through the enterprise network, and to initiate an indication of the one or more guest account credentials to the guest user.

In yet another embodiment, a user is enabled to access network resources through an enterprise network. At a server of a credit card vendor, information read from a credit card of the user by a credit card scanner on premises of the enterprise is received. An identity of the user is verified based on the received information, and verification information about the user is sent to a guest access server of the enterprise, the guest access server being responsible for guest user access to network resources through a network of the entity.

In another embodiment, system is provided to enable a guest user to access network resources through an enterprise network. The system includes a server of a credit card vendor, operative to receive information read from a credit card of the user by a credit card scanner on premises of the enterprise, to verify an identity of the user based on the received information, and to send verification information about the user to a guest access server of the enterprise, the guest access server being responsible for guest user access to network resources through a network of the enterprise.

Other advantages, novel features, and objects of the invention, and aspects and embodiments thereof, will become apparent from the following detailed description of the invention, including aspects and embodiments thereof, when considered in conjunction with the accompanying drawings, which are schematic and which are not intended to be drawn to scale. In the figures, each identical or nearly identical component that is illustrated in various figures is represented by a single numeral. For purposes of clarity, not every component is labeled in every figure, nor is every component of each embodiment or aspect of the invention shown where illustration is not necessary to allow those of ordinary skill in the art to understand the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram illustrating an example of a system for enabling a guest user to access network resources through a host enterprise network, according to some embodiments of the invention;

Fig. 2 is a flow chart illustrating an example of a method of enabling a guest user to access network resources through an enterprise network, according to some embodiments of the invention;

Fig. 3 is a flowchart illustrating an example of a method of enabling a guest user to access network resources through an enterprise network using a guest access card, according to some embodiments of the invention;

Fig. 4 is a flowchart illustrating an example of a method of enabling a user to access network resource through an enterprise network using a credit card, according to some embodiments of the invention;

Fig. 5 is a flowchart illustrating an example of a method of providing a user access to network resources through an enterprise network using a mobile telephone, according to some embodiments of the invention;

Fig. 6 is a block diagram illustrating an example of a computer system on which some embodiments of the invention may be implemented; and

Fig. 7 is a block diagram illustrating an example of a storage system that may be used as part of the computer system to implement some embodiments of the invention.

DETAILED DESCRIPTION

Although embodiments of the invention are described below in relation to providing guest users wireless access to network resources through a host enterprise network, the invention is not so limited, but rather, may be implemented for non-wireless (e.g., wireline) access.

The function and advantage of the above embodiments and other embodiments of the present invention will be more fully understood from the examples described below. The following examples are intended to facilitate a better understanding and illustrate the benefits of the present invention, but do not exemplify the full scope of the invention.

As used herein, whether in the written description or the claims, the terms "comprising", "including", "carrying", "having", "containing", "involving", and the like are to be understood to be open-ended, i.e., to mean including but not limited to. Only the transitional phrases "consisting of" and "consisting essentially of", respectively, shall be closed or semi-closed transitional phrases, as set forth, with respect to claims, in the United States Patent Office Manual of Patent Examining Procedures (Eighth Edition, Revision 2, May 2004), Section 2111.03.

Examples

In some embodiments, a guest user is granted guest access through a host enterprise using a guest access card issued by the host enterprise. Prior to, or at the time of, the guest's arrival at the host enterprise, the guest may be provided a guest access card. The guest access card may encode (in clear text or encrypted form) guest account credentials for a guest account, such as, for example, a guest access ID and password, or may encode a value that is associated with a guest account and/or guest account credentials. Guest account credentials and/or other information may be stored on a magnetic strip or in semiconductor memory on the guest access card.

Upon arrival at the host enterprise (e.g., a lobby or reception area), the guest user may attempt to access network resources (e.g., the Internet and/or the guest's corporate network) using a user device (e.g., a laptop or PDA) and may be prompted for guest account credentials (e.g., a guest account ID and password). Prior to, during or after attempting to access network resources, the guest user may scan the guest access card (e.g., magnetically, optically or using RF technology) using a scanner on the host enterprise's premises (e.g., in a reception area or lobby), which may be specifically

designed for this purpose. A guest access management server on the host network may receive the scanned information and determine guest account credentials. This determination may be made simply by reading the guest account credentials provided by the guest access card, by decrypting encrypted account information on the card or by mapping information provided by the card to a guest account ID and password. The guest account credentials may be sent to a device capable of indicating them to the guest user, for example, a device in the vicinity of the guest user and/or scanner. Such a device may be or include any of the following: a display device (e.g., a monitor); a printer; a device that produces badges and/or ID cards, a speaker; a telephone; another type of device; or any suitable combination of the foregoing.

The guest user then may log into the host enterprise network using the guest credentials, for example, using a user device (e.g., a laptop or PDA). The host enterprise network may be configured to limit guest user access, for example, to the Internet and/or the guest's enterprise network. For example, the host enterprise network may employ virtual local area network (VLAN) technologies to limit the guest's access based on the guest access account of the guest user. The host enterprise network then may monitor the network activity of the guest and, if necessary, bill the guest user for access to particular network resources such as, for example, the Internet.

Further, the guest account may be configured to have a limited duration such as, for example, a certain (e.g., predefined) number of hours, days, weeks, months, or a combination thereof. The guest account may further be configured for use only during specific times within the limited duration, for example, from 9:00 a.m. to 5:00 p.m. over a three-day duration.

In some embodiments of the invention, rather than using a guest access card issued by the host enterprise, the guest user may use a credit card issued by a credit card vendor such as, for example, Visa, MasterCard, American Express, Discover, etc., to obtain access to network resources through a host enterprise's network. Prior to, during or after attempting to access network resources using a laptop or other user device, the guest user may scan the credit card using a scanner on the host enterprise's premises. Information resulting from the scan may be sent to a network of the credit card enterprise, which may verify the identity of the guest user. The credit card enterprise then may send verification information about the guest user to the host enterprise network, for example, to a guest access management server on the host enterprise

network. In response to receiving the verification information, a guest access management server may generate a guest account and guest account credentials, and send the credentials to a device that indicates (e.g., displays) them to the guest user (e.g., as described above). The guest user can then use the credentials to log into the host enterprise network. The guest's access to network resources may be limited and the guest's activity may be monitored and billed, for example, as described above. Further, the duration and specific times of access using the guest account also may be limited.

In some embodiments, rather than using a guest access card or existing credit card, the guest user may use a mobile telephone to obtain access to network resources through a host enterprise's network. Using a mobile telephone scanner provided on the host enterprise's site, the guest user may scan information stored on the guest's mobile telephone, for example, on a subscriber identity module (SIM) card of the mobile telephone. This information may be sent to the guest access management server, which may generate a guest account and guest account credentials in response to receiving the scanned information. The guest account credentials may be sent to a device and indicated (e.g., displayed) to the user, for example, as described above. Using a laptop or other user device, the guest user then may access the network resources through the host enterprise network by entering the guest credentials. Similar to as described above, the guest user's access may be limited to certain network resources, and to a certain duration and specific times within the duration, and the activities of the guest user may be monitored and billed as appropriate.

In some embodiments, a guest user may be provided guest account credentials before arriving at the host enterprise, or a receptionist or another administrator at the guest enterprise may provide the guest account credentials to the guest user upon the guest's arrival. In such embodiments, the guest user may simply log into the network using the guest account credentials without having to first scan a guest card, credit card, mobile telephone or other item.

Fig. 1 is a block diagram illustrating an example of a system 100 for enabling a guest user to access network resources through a host enterprise network, according to some embodiments of the invention. System 100 is merely an illustrative embodiment of a system for enabling a guest user to access network resources through a host enterprise network, and is not intended to limit the scope of the invention. Any of numerous of

implementation to such a system, for example, variations of system 100, are possible and are intended to fall within the scope of the invention.

System 100 may include any of: one or more host enterprise user devices (e.g., 102 and 124); one or more guest user devices (e.g., 104); one or more reception user devices (e.g., 105); one or more guest account access devices (e.g., 110); a host enterprise network 106; the Internet 136; one or more guest enterprise networks (e.g., 134); one or more credit card enterprise networks (e.g., 138); and any suitable combination of the foregoing.

As used herein, a "network" is a group of two or more components interconnected by one or more segments of transmission media over which communications may be exchanged between the components. Each segment may be any of a plurality of types of transmission media, including one or more electrical or optical wires or cables made of metal and/or optical fiber, air (e.g., using wireless transmission over carrier waves) or any combination of these transmission media. As used herein, "plurality" means two or more. It should be appreciated that a network may be as simple as two components connected by a single wire, bus, wireless connection, or other type of segment. Further, it should be appreciated that when a network is illustrated in a drawing of this application as being connected to an element in the drawing, the connected element itself is considered part of the network.

As used herein, a "network device" is a device operative to communicate on a network, including, but not limited to: workstations, personal computers, terminals, laptop computers, end stations, user devices, servers, gateways, registers, switches, routers, hubs, bridges, directories, transmitters, receivers, transceivers, wireless access points (APs), repeaters, and any combinations thereof. As used herein, a "user device" is a network device from/to which a user may send/receive communications, and which may serve as an endpoint to communications on a communications network. User devices include, but are not limited to: workstations; personal computers (e.g., PCs); laptop computers, notebook computers; telephones (e.g., landline or mobile); pagers; Blackberry™ brand devices, PCS devices, personal digital assistants (PDAs), smartphones, two-way radios (e.g., "walkie-talkies"), other types of user devices, and any suitable combination of the foregoing.

A network (e.g., any of networks 106, 132, 134, 136 and 138) may be or include any of a variety of types of networks including, but not limited to, a local area network

(LAN), a metropolitan area network (MAN), a wide-area network (WAN), a wireless network, a Public Land Mobile Network (PLMN), a Global System for Mobile Communications (GSM) network, a General Packet Radio Service (GPRS) network, a Universal Mobile Telecommunications System (UMTS) network, a Code-Division Multiple Access (CDMA) network, an optical network, a data network, an enterprise-wide network, a wireless personal area network (PAN), a home network, a telecommunications network, a public switched telephone network (PSTN), a broadband network, another type of network, or any suitable combination of the foregoing.

Host enterprise network 106 may include one or more network devices of any of the types described above and may include any of: one or more wireless access points (APs) (e.g., 108), one or more authentication servers (e.g., 120); one or more enterprise user directories (e.g., 122); one or more guest access management servers (e.g., 126); one or more guest user directories (e.g., 128); one or more firewalls (e.g., 130); a host enterprise Intranet (132); other network devices; or any suitable combination of the foregoing.

One or more components of host enterprise network 106 such as, for example, routers, switches and/or combination thereof (not shown) may be configured to define one or more VLANs. One or more of these VLANs (i.e., a guest VLAN) may be defined to include one or more guest access accounts and one or more network resources. The one or more network resources included within a guest VLAN may include the Internet, a guest enterprise network and perhaps one or more network resources residing on host network 106, so that guest users are limited to accessing only these resources. One or more other VLANs may be associated with host enterprise users (e.g., employees and officers). These host enterprise VLANs should be defined to include more resources on host enterprise network 106 than guest VLANs, thus providing enterprise users access to more resources on the enterprise network than guest users, who may be given access to no resources on the enterprise network. For example, the host enterprise VLAN may be configured to include host enterprise Intranet 132.

AP 108 may be configured to provide wireless access to host enterprise network 106 for user devices, including host enterprise user devices (e.g., 102 and 124) and guest user devices (e.g., 104). AP 108 may be configured to pass user credentials received from a user device to authentication server 120. Authentication server 120 may be configured to determine whether the user credentials identify a host enterprise user, for

example, by accessing enterprise user directory 122. If the user credentials identify a user as an authorized user of a host enterprise, the user may be given access to resources of host enterprise network 106, according to one or more VLANs to which the user belongs.

If the authentication server 120 determines that user credentials provided by a user device are not those of a host enterprise user, the authentication server 120 may pass the user credentials to guest access management server 126. Alternatively, server 126 may receive the credentials from AP 108 without first going through authentication server 120. Server 126 may determine whether the user credentials identify a guest user, for example, by accessing guest user directory 128. If the user credentials identify the user as a guest user, the guest user may be provided access only to those network resources to which members of the guest VLAN are permitted access.

In some embodiments of the invention, a user device (e.g., any of 102, 104 or 124) may be configured to discover any networks in the vicinity of the user device, for example, by establishing communications with an AP in the vicinity of the user device. For example, a user device may include an operating system (e.g., one of the operating systems available from Microsoft Corporation, specified below) configured to discover networks in its vicinity, e.g., in response to the operating system being launched when the user device is booted (i.e., powered on). If the user device is a host enterprise user device (e.g., 102), then the user device may be permitted to exchange information with host enterprise network 106 based on previous communications exchanged between the user device and an AP. For example, the operating system of the host enterprise user device may automatically provide user credentials previously exchanged between the user device and the AP to establish connectivity.

The AP and/or the guest user device may be configured to recognize when a guest user device has not previously been authenticated. In such cases, the operating system of the guest user device may be configured to prompt the user for guest account credentials (i.e., a guest account ID and a password). The guest user device may only be permitted access to the host enterprise network by providing valid guest user credentials.

In some embodiments of the invention, the user of the guest user device may be provided guest account credentials prior to arriving on the premises of the host enterprise (e.g., by email, paper mail, telephone, etc.), or upon arrival on the premises by a receptionist or other administrator. For example, upon arrival, a receptionist or other

administrator may use reception user device 105 to contact guest access management server 106 to obtain guest account credentials.

Obtaining guest account credentials prior to arrival on the enterprise premises may be desirable when a large amount of guest users will be visiting the host enterprise. In such situations, an IT staff or administrator from the host enterprise can use the guest access management server 126 to import information for all of the guests who will be visiting the host enterprise. Such information may include names, job titles, the length of time for which guest access will be necessary, etc.. The guest access management server 126 may provide different guest account credentials for each future guest. Upon arrival on the host enterprise premises, each guest user may log onto the host enterprise network 106 through AP 108 or another access point, using the previously provided guest account credentials. The guest access management server 126 then may authenticate each of the guest users, for example, by comparing the user credentials provided with those stored in guest user directory 128.

In some embodiments of the invention, guest users acquire guest user credentials after they arrive on the host enterprise premises, for example, through the use of a guest account access device such as device 110. Device 110 may include any of: user output device 112; guest card scanner 114; credit card scanner 116; mobile telephone scanner 118; other components; and any suitable combination of the foregoing. It should be appreciated that one or more of user output device 112, guest card scanner 114, credit card scanner 116 and mobile telephone scanner 118 may reside on separate guest account access devices, and that one or more of these components may be integrated as a single component.

User output device 112 may include one or more of any type of output device suitable to display information to a user, for example, a monitor, printer or badge-generating device, or to indicate information to the user in some other manner (e.g., through audio), for example, a speaker or telephone. It should be appreciated that user output device 112 is not limited to being part of guest account access device 110, but may be separate and distinct from device 112.

Guest card scanner 114 may be configured to scan a guest card provided by a guest user. A guest card may have guest account credentials, or a value mapping to an account encoded thereon, for example, in clear text or encrypted format. The guest access card may store information on a magnetic strip, a semiconductor memory or on

some other form of media. Further, the guest access card may include a transmitter or other means for transmitting/receiving signals and/or information. The guest access card scanner 114 may be configured with one or more components (e.g., heads) to read magnetically-stored information and/or with a receiver or transceiver for receiving information transmitted from a guest card. Further, scanner 114 may be configured to send information scanned from a guest access card to guest access management server 126, for example, across one or more segments of host enterprise network 106.

Credit card scanner 116 may be configured with one or more components (e.g., heads) to scan a credit card and send the scanned information to the appropriate credit card enterprise network (e.g., 138) and/or a component of host enterprise network 106 (e.g., guest access management server 126) configured to send the information along to the credit card enterprise network 138.

In some embodiments of the invention, the host enterprise has a partnership with one or more credit card enterprises. The host enterprise may pay a certain amount of money for each enterprise's validation service. If the host enterprise needs to charge the guest access, a credit card enterprise can charge for access on the credit card.

It should be appreciated that, in some embodiments, scanners 114 and 116 may be integrated as part of a same device, and the same components may be used to read information from guest access cards and credit cards. In such embodiments, the scanning device may be configured to determine from the scanned information (e.g., it's format and/or content) whether the card scanned is a credit card or a guest access card, and to proceed accordingly. For example, the scanning device may send the scanned information to the guest access management server 126 if it determines the card scanned is a guest access card, and may send the scanned information to the appropriate credit card vendor otherwise.

Mobile telephone scanner 118 may be configured to read information about a mobile telephone user from a guest user's mobile telephone, for example, from a SIM card of a user's mobile telephone. The mobile telephone scanner 118 may be configured to read this information electromagnetically and/or optically from the mobile telephone, and to send the information about the user to the guest access management server 126.

Guest access management server 126 may be configured to receive: guest account credentials (e.g., a guest account ID and password) in clear text or encrypted form; information corresponding to guest account credentials; information corresponding

to a user, other information, or any suitable combination of the foregoing. In response to receiving such information, server 126 may determine guest account credentials and provide them to one or more other network components such as, for example, user output device 112. For example, guest access management server 126 may be configured to receive verification information about a user from credit enterprise network 138, information about a mobile telephone user from mobile telephone scanner 118 and/or guest account credentials for information corresponding to guest account credentials from guest card scanner 114.

Server 126 may be configured to determine guest account credentials included in information it receives (e.g., from guest card scanner 114) and/or create guest account credentials in response to user information or user verification information it receives from mobile telephone scanner 118 and credit card enterprise network 138, respectively. The guest access management server 126 may store guest account credentials in guest user directory 128, and use these credentials to authenticate guest users.

System 100, and components thereof, may be implemented using any of a variety of technologies, including software (e.g., C, C#, C++, Java, or a combination thereof), hardware (e.g., one or more application-specific integrated circuits), firmware (e.g., electrically-programmed memory) or any combination thereof. One or more of the components of system 100 may reside on a single device (e.g., a computer), or one or more components may reside on separate, discrete devices. Further, each component may be distributed across multiple devices, and one or more of the devices may be interconnected.

Further, on each of the one or more devices that include one or more components of system 100, each of the components may reside in one or more locations on the system. For example, different portions of the components of these systems may reside in different areas of memory (e.g., RAM, ROM, disk, etc.) on the device. Each of such one or more devices may include, among other components, a plurality of known components such as one or more processors, a memory system, a disk storage system, one or more network interfaces, and one or more busses or other internal communication links interconnecting the various components. System 100, and components thereof, may be implemented using a computer system such as that described below in relation to Figs. 6 and 7.

Fig. 2 is a flow chart illustrating an example of a method 200 of enabling a guest user (e.g., a user of guest user device 104) to access network resources through an enterprise network (e.g., network 106), according to some embodiments of the invention. Method 200 is merely an illustrative embodiment of a method of enabling a guest user to access network resources through an enterprise network, and is not intended to limit the scope of the invention. Any of numerous other implementations of such a method, for example, variations of method 200, are possible and are intended to fall within the scope of the invention.

In Act 202, a guest user arrives at the premises of an enterprise, for example, in the reception area or a lobby of the enterprise offices. In Act 204, the user may acquire one or more guest account credentials, for example, as described below in relation to Figs. 3-5. It should be appreciated that, in some embodiments, the guest account credentials may be acquired before the guest user arrives on the premises of the host enterprise, as described above.

In Act 206, the guest user may provide the guest account credentials to an enterprise network. For example, the guest user may enter the guest account credentials through a user device (e.g., device 105), for example, in response to prompts. These guest account credentials may be passed to an authentication component of the network such as, for example, guest access management server 126.

In Act 208, the enterprise network may provide the guest user access to network resources through the enterprise network based on the guest account credentials. For example, the guest account credentials may be passed to the guest access management server 126, which may verify the credentials using guest user directory 128. If the guest account credentials are authenticated, the guest may be provided access to network resources such as, for example, the Internet 136, the guest enterprise network 134, and perhaps resources on host enterprise network 106 itself. Access to these network resources may be regulated using VLAN technologies. That is, one or more VLANs may be defined that include the Internet and the guest enterprise network, a limited amount of resources of network 106, and/or one or more guest accounts. One or more components on host enterprise network 106 (e.g., routers, switches, or suitable combinations thereof) may be configured to control access to network resources defined for one or more such VLANs based on the guest account ID provided by a guest user. Other technologies may be used to regulate guest user access.

In Act 210, the host enterprise network may monitor activities of the guest user, for example, the network resources that it accesses and/or with which it exchanges communications. In Act 212, the host enterprise network may bill the guest user for certain activities, for example, accessing particular network resources such as, for example, Internet.

The guest account provided for the guest user may be configured to be of limited duration and for use only during specific times during this duration. For example, the user account may be configured to be for use during a three day period (e.g., Monday-Wednesday) only during business hours, e.g., 9:00 am - 5:00 pm. Accordingly, the guest management access server and the network components responsible for routing traffic on the host enterprise network may be configured to deny access to the guest user when the duration of the guest account expires and when the guest user attempts to access network resources outside of the specific times designated for guest access. The guest access management server and these other components may be configured to do so based on the guest account credentials provided by the guest user when logging in and/or when transmitting packets on the guest enterprise network. An entry (e.g. record) for the guest account in guest user directory 128 may include one or more information elements that specify the duration and/or specific access times for a guest access account.

Method 200 may include additional acts. Further, the order of the acts performed as part of method 200 is not limited to the order illustrated in Fig. 2, as the acts may be performed in other orders and/or one or more of the acts may be performed in series or in parallel, at least partially. For example, Act 204 may be performed before Act 202 and Acts 210 and 212 may be performed in parallel, at least partially.

Fig. 3 is a flowchart illustrating an example of a method 300 of enabling a guest user to access network resources through an enterprise network using a guest access card, according to some embodiments of the invention. Method 300 is merely an illustrative embodiment of a method of enabling a user to access network resources through an enterprise network using a guest access card, and is not intended to limit the scope of the invention. Other implementations of such a method, for example, variations of method 300, are possible and are intended to fall within the scope of the invention.

In Act 302, information may be read from a guest access card of the user, for example, as described above in relation to guest card scanner 114. Next, in Act 304, based on the information read from the guest access card, one or more guest account

credentials may be determined, for example, as described above in relation to guest access management server 126. In Act 306, the one or more guest account credentials may be indicated (e.g., displayed or played as audio) to the guest user, for example, as described above in relation to user output device 112. Method 300 may include additional acts.

Fig. 4 is a flowchart illustrating an example of a method 400 of enabling a user to access network resources through an enterprise network using a credit card, according to some embodiments of the invention. Method 400 is merely an illustrative embodiment of a method of enabling a user to access network resources through an enterprise network using a credit card, and is not intended to limit the scope of the invention. Other implementations of such a method, for example, variations of method 400 are possible and are intended to fall within the scope of the invention.

In Act 402, information may be read from the credit card of the guest user, for example, as described above in relation to credit card scanner 116. In Act 404, the information read from the credit card may be sent to the credit card vendor, for example, credit card enterprise network 138 as described above, and the credit card enterprise may verify the identify of the guest user in Act 406. In Act 408, the credit card vendor may send verification information about the guest user to the enterprise network, for example, to guest access management server 126 as described above. In Act 410, one or more guest account credentials may be created based on the verification information, for example, as described above in relation to guest access management server 126. Method 400 may include additional acts.

Fig. 5 is a flowchart illustrating an example of a method 500 of providing a user access to network resources through an enterprise network using a mobile telephone, according to some embodiments of the invention. Method 500 is merely an illustrative embodiment of a method of providing a user access to network resources through an enterprise network using a mobile telephone, and is not intended to limit the scope of the invention. Other implementations of such a method, for example, variations of method 500 are possible and are intended to fall within the scope of the invention.

In Act 502, information that identifies the guest user is read from the mobile telephone, for example, from the SIM of the mobile telephone, e.g., as described above in relation to mobile telephone scanner 118. In Act 504, one or more guest account credentials may be created based on the information read from the mobile telephone, for

example, as described above in relation to guest access management server 126. In Act 506, the one or more guest account credentials may be indicated (e.g., displayed or played as audio) to the guest user, for example, as described above in relation to user output device 112. Method 500 may include additional acts.

The embodiments described herein for providing guest users network access are relatively simple and secure. Each meets the market demands of providing easy Internet access to partners, customers, vendors and other enterprise visitors. These solutions may be cost saving, and add less overhead to an enterprise's IT department than known solutions because they use existing network infrastructure. The IT department may only need to maintain a guest VLAN instead of adding a new guest network infrastructure. Further, guest traffic and employee traffic may be separated. Also, guest activities may be logged and monitored, providing a relatively secure solution for the host enterprise. Several of the embodiments described herein provide easy billing mechanisms, and enterprises may be willing to deploy these solutions.

Methods 200-500, and acts thereof, and various embodiments and variations of these methods and these acts, individually or in combination, may be defined by computer-readable signals tangibly embodied on one or more computer-readable media, for example, non-volatile recording media, integrated circuit memory elements, or a combination thereof. Computer readable media can be any available media that can be accessed by a computer. By way of example, and not limitation, computer readable media may comprise computer storage media and communication media. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions, data structures, program modules or other data. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, other types of volatile and non-volatile memory, any other medium which can be used to store the desired information and which can accessed by a computer, and any suitable combination of the foregoing.

Communication media typically embodies computer-readable instructions, data structures, program modules or other data in a modulated data signal such as a carrier wave or other transport mechanism and includes any information delivery media. The

term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes wired media such as a wired network or direct-wired connection, wireless media such as acoustic, RF, infrared and other wireless media, other types of communication media, and any suitable combination of the foregoing.

Computer-readable signals embodied on one or more computer-readable media may define instructions, for example, as part of one or more programs, that, as a result of being executed by a computer, instruct the computer to perform one or more of the functions described herein (e.g., methods 200-500 or any acts thereof), and/or various embodiments, variations and combinations thereof. Such instructions may be written in any of a plurality of programming languages, for example, Java, J#, Visual Basic, C, C#, or C++, Fortran, Pascal, Eiffel, Basic, COBOL, etc., or any of a variety of combinations thereof. The computer-readable media on which such instructions are embodied may reside on one or more of the components of any of systems 100, 600 and 600 described herein, may be distributed across one or more of such components, and may be in transition therebetween.

The computer-readable media may be transportable such that the instructions stored thereon can be loaded onto any computer system resource to implement the aspects of the present invention discussed herein. In addition, it should be appreciated that the instructions stored on the computer-readable medium, described above, are not limited to instructions embodied as part of an application program running on a host computer. Rather, the instructions may be embodied as any type of computer code (e.g., software or microcode) that can be employed to program a processor to implement the above-discussed aspects of the present invention.

It should be appreciated that any single component or collection of multiple components of a computer system, for example, any of the computer systems described in relation to Figs. 1, 6 and 7, that perform the functions described herein can be generically considered as one or more controllers that control such functions. The one or more controllers can be implemented in numerous ways, such as with dedicated hardware and/or firmware, using a processor that is programmed using microcode or software to perform the functions recited above or any suitable combination of the foregoing.

Various embodiments according to the invention may be implemented on one or more computer systems. These computer systems, may be, for example, general-purpose computers such as those based on Intel PENTIUM-type processor, Motorola PowerPC, Sun UltraSPARC, Hewlett-Packard PA-RISC processors, any of a variety of processors available from Advanced Micro Devices (AMD) or any other type of processor. It should be appreciated that one or more of any type of computer system may be used to implement various embodiments of the invention.

A general-purpose computer system according to one embodiment of the invention is configured to perform one or more of the functions described above. It should be appreciated that the system may perform other functions and the invention is not limited to having any particular function or set of functions.

For example, various aspects of the invention may be implemented as specialized software executing in a general-purpose computer system 600 such as that shown in Fig. 6. The computer system 600 may include a processor 603 connected to one or more memory devices 604, such as a disk drive, memory, or other device for storing data. Memory 604 is typically used for storing programs and data during operation of the computer system 600. Components of computer system 600 may be coupled by an interconnection mechanism 605, which may include one or more busses (e.g., between components that are integrated within a same machine) and/or a network (e.g., between components that reside on separate discrete machines). The interconnection mechanism 605 enables communications (e.g., data, instructions) to be exchanged between system components of system 600. Computer system 600 also includes one or more input devices 602, for example, a keyboard, mouse, trackball, microphone, touch screen, and one or more output devices 601, for example, a printing device, display screen, speaker. In addition, computer system 600 may contain one or more interfaces (not shown) that connect computer system 600 to a communication network (in addition or as an alternative to the interconnection mechanism 605).

The storage system 706, shown in greater detail in Fig. 6, typically includes a computer readable and writeable nonvolatile recording medium 701 in which signals are stored that define a program to be executed by the processor or information stored on or in the medium 701 to be processed by the program. The medium may, for example, be a disk or flash memory. Typically, in operation, the processor causes data to be read from the nonvolatile recording medium 701 into another memory 702 that allows for faster

access to the information by the processor than does the medium 701. This memory 702 is typically a volatile, random access memory such as a dynamic random access memory (DRAM) or static memory (SRAM). It may be located in storage system 606, as shown, or in memory system 604, not shown. The processor 603 generally manipulates the data within the integrated circuit memory 604, 702 and then copies the data to the medium 701 after processing is completed. A variety of mechanisms are known for managing data movement between the medium 701 and the integrated circuit memory element 604, 702, and the invention is not limited thereto. The invention is not limited to a particular memory system 604 or storage system 606.

The computer system may include specially-programmed, special-purpose hardware, for example, an application-specific integrated circuit (ASIC). Aspects of the invention may be implemented in software, hardware or firmware, or any combination thereof. Further, such methods, acts, systems, system elements and components thereof may be implemented as part of the computer system described above or as an independent component.

Although computer system 600 is shown by way of example as one type of computer system upon which various aspects of the invention may be practiced, it should be appreciated that aspects of the invention are not limited to being implemented on the computer system shown in Fig. 6. Various aspects of the invention may be practiced on one or more computers having a different architecture or components that that shown in Fig. 6.

Computer system 600 may be a general-purpose computer system that is programmable using a high-level computer programming language. Computer system 600 also may be implemented using specially-programmed, special-purpose hardware. In computer system 600, processor 603 is typically a commercially available processor such as the well-known Pentium class processor available from the Intel Corporation. Many other processors are available. Such a processor usually executes an operating system which may be, for example, the Windows® 95, Windows® 98, Windows NT®, Windows® 2000 (Windows® ME) or Windows® XP operating systems available from the Microsoft Corporation, MAC OS System X available from Apple Computer, the Solaris Operating System available from Sun Microsystems, Linux available from various sources or UNIX available from various sources. Any of a variety of other operating systems may be used.

The processor and operating system together define a computer platform for which application programs in high-level programming languages are written. It should be understood that the invention is not limited to a particular computer system platform, processor, operating system, or network. Also, it should be apparent to those skilled in the art that the present invention is not limited to a specific programming language or computer system, and that other appropriate programming languages and other appropriate computer systems could also be used.

One or more portions of the computer system may be distributed across one or more computer systems (not shown) coupled to a communications network. These computer systems also may be general-purpose computer systems. For example, various aspects of the invention may be distributed among one or more computer systems configured to provide a service (e.g., servers) to one or more client computers, or to perform an overall task as part of a distributed system. For example, various aspects of the invention may be performed on a client-server system that includes components distributed among one or more server systems that perform various functions according to various embodiments of the invention. These components may be executable, intermediate (e.g., IL) or interpreted (e.g., Java) code which communicate over a communication network (e.g., the Internet) using a communication protocol (e.g., TCP/IP).

It should be appreciated that the invention is not limited to executing on any particular system or group of systems, and that the invention is not limited to any particular distributed architecture, network, or communication protocol.

Various embodiments of the present invention may be programmed using an object-oriented programming language, such as SmallTalk, Java, J# (J-Sharp), C++, Ada, or C# (C-Sharp). Other object-oriented programming languages may also be used. Alternatively, functional, scripting, and/or logical programming languages may be used. Various aspects of the invention may be implemented in a non-programmed environment (e.g., documents created in HTML, XML or other format that, when viewed in a window of a browser program, render aspects of a graphical-user interface (GUI) or perform other functions). Various aspects of the invention may be implemented as programmed or non-programmed elements, or any combination thereof. Further, various embodiments of the invention may be implemented using Microsoft®.NET technology available from Microsoft Corporation.

Having now described some illustrative embodiments of the invention, it should be apparent to those skilled in the art that the foregoing is merely illustrative and not limiting, having been presented by way of example only. Numerous modifications and other illustrative embodiments are within the scope of one of ordinary skill in the art and are contemplated as falling within the scope of the invention. In particular, although many of the examples presented herein involve specific combinations of method acts or system elements, it should be understood that those acts and those elements may be combined in other ways to accomplish the same objectives. Acts, elements and features discussed only in connection with one embodiment are not intended to be excluded from a similar role in other embodiments. Further, for the one or more means-plus-function limitations recited in the following claims, the means are not intended to be limited to the means disclosed herein for performing the recited function, but are intended to cover in scope any equivalent means, known now or later developed, for performing the recited function.

Use of ordinal terms such as "first", "second", "third", etc., in the claims to modify a claim element does not by itself connote any priority, precedence, or order of one claim element over another or the temporal order in which acts of a method are performed, but are used merely as labels to distinguish one claim element having a certain name from another element having a same name (but for use of the ordinal term) to distinguish the claim elements.

What is claimed is:

CLAIMS

1. A method of enabling a guest user to access network resources through an enterprise network, comprising acts of:

(a) receiving information read from an object in the possession of the guest user;

(b) determining, based on the read information, one or more guest account credentials for accessing the network resources through the enterprise network; and

(c) indicating the one or more guest account credentials to the guest user.

2. The method of claim 1, wherein the object is a guest access card.

3. The method of claim 1, wherein the object is a credit card.

4. The method of claim 1, wherein the object is a mobile telephone.

5. The method of claim 1, further comprising acts of:

(d) receiving the one or more guest account credentials from a user device of the guest user; and

(e) providing the guest user access to the network resources through the enterprise network based on the one or more guest account credentials.

6. The method of claim 5, wherein a guest account corresponding to the guest account credentials is configured to have a duration of a limited time, the method further comprising:

(f) denying the guest user access to the network resources after an expiration of the limited time.

7. The method of claim 5, wherein a guest account corresponding to the guest account credentials is configured to allow the guest user access to network resources only during one or more specific time intervals, the method further comprising an act of:

(f) denying the guest user access to the network resources outside of the one or more specific time intervals.

8. The method of claim 5, wherein the enterprise network is configured to define a plurality of virtual local area networks, including a first virtual local area network for guest users, and

wherein the act (e) comprises providing the guest user access to only network resources defined as part of the first virtual local area network.

9. The method of claim 8, wherein the first virtual local area network is defined to include the Internet.

10. The method of claim 1, wherein the act (b) comprises determining a guest account identity and password based on the read information, and

wherein the act (c) comprises indicating the guest account identity and password to the guest user.

11 The method of claim 10, wherein the act (a) comprises receiving the guest account identity and the password, which were read from the guest access card.

12. The method of claim 1, further comprising an act of:

(d) reading the information from the guest access card.

13. The method of claim 1, wherein the act (c) comprises displaying the one or more guest account credentials to the guest user.

14. A system for enabling a guest user to access network resources through an enterprise network, comprising:

a guest access management server to determine, based on the information read from an object in the possession of the guest user, one or more guest account credentials for accessing the network resources through the enterprise network, and to initiate an indicating of the one or more guest account credentials to the guest user.

15. The system of claim 14, wherein the object is one of the following: a guest access card; a credit card, or a mobile telephone.

16. The system of claim 14, further comprising:

a guest access account device to receive the information read from the object.

17. The system of claim 16, further comprising:

a user output device to indicate the one or more guest account credentials to the guest user.

18. The system of claim 14, wherein the guest access management server is operative to receive the one or more guest account credentials from a user device of the guest user, and to authorize access for the guest user access to the network resources through the enterprise network based on the one or more guest account credentials.

19. A computer program product comprising:

a computer-readable medium; and

computer-readable signals, stored on the computer-readable medium, that define instructions that, as a result of being executed by a computer, control the computer to perform a method of a method of enabling a guest user to access network resources through an enterprise network, the method comprising acts of:

(a) receiving information read from a guest access card of the guest user;

(b) determining, based on the read information, one or more guest account credentials for accessing the network resources through the enterprise network; and

(c) indicating the one or more guest account credentials to the guest user.

20. The computer-readable medium of claim 19, wherein the method further comprises acts of:

(d) receiving the one or more guest account credentials from a user device of the guest user; and

(e) providing the guest user access to the network resources through the enterprise network based on the one or more guest account credentials.

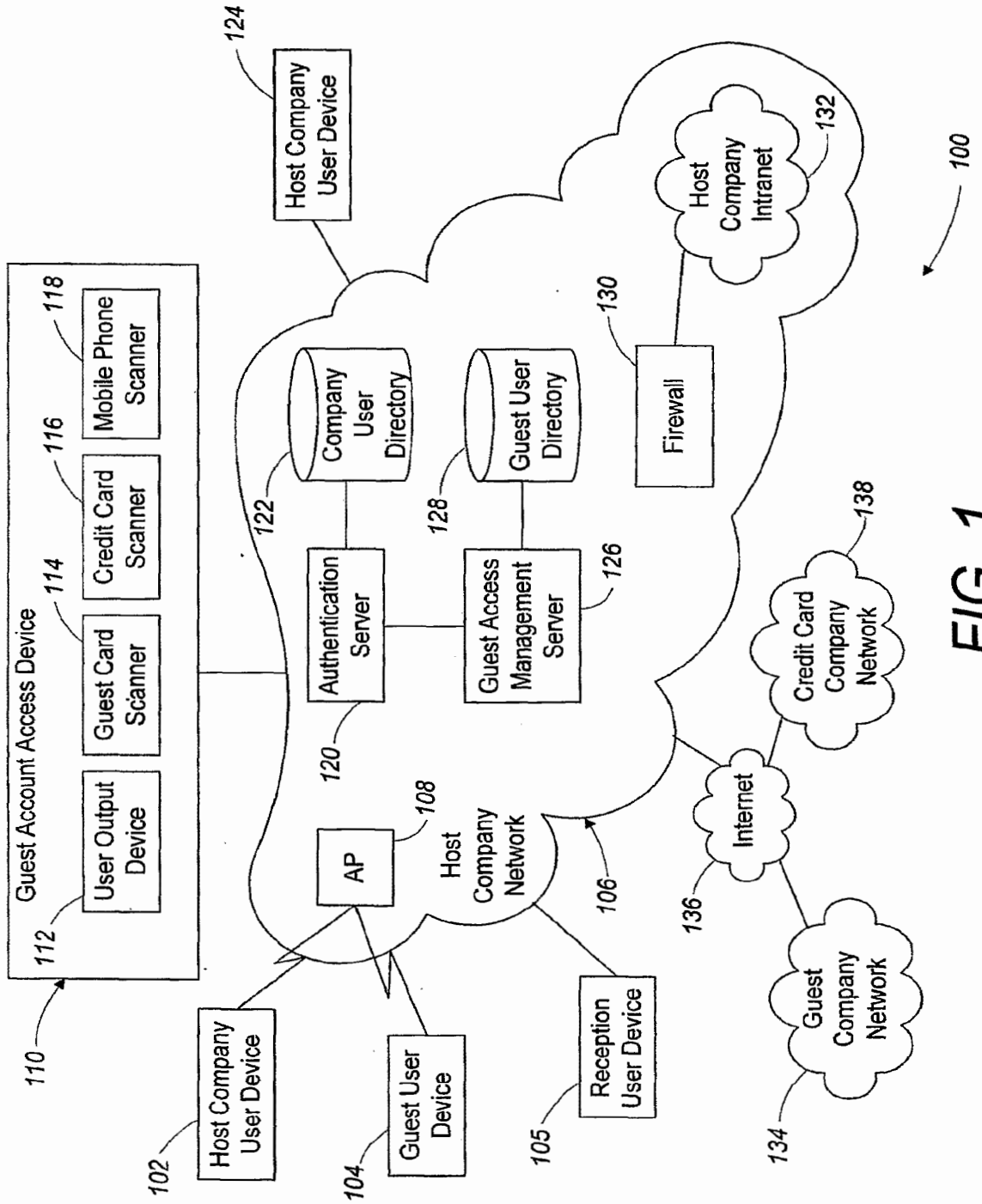

Guest Account Access Device
User Output Device
Guest Card Scanner
Credit Card Scanner
Mobile Phone Scanner
110
112
114
116
118
Host Company User Device
102
Guest User Device
104
AP
108
Host Company Network
106
Reception User Device
105
Authentication Server
120
Company User Directory
122
Guest Access Management Server
126
Guest User Directory
128
Firewall
130
Host Company Intranet
132
Internet
136
Credit Card Company Network
138
Guest Company Network
134
124
100

FIG. 1

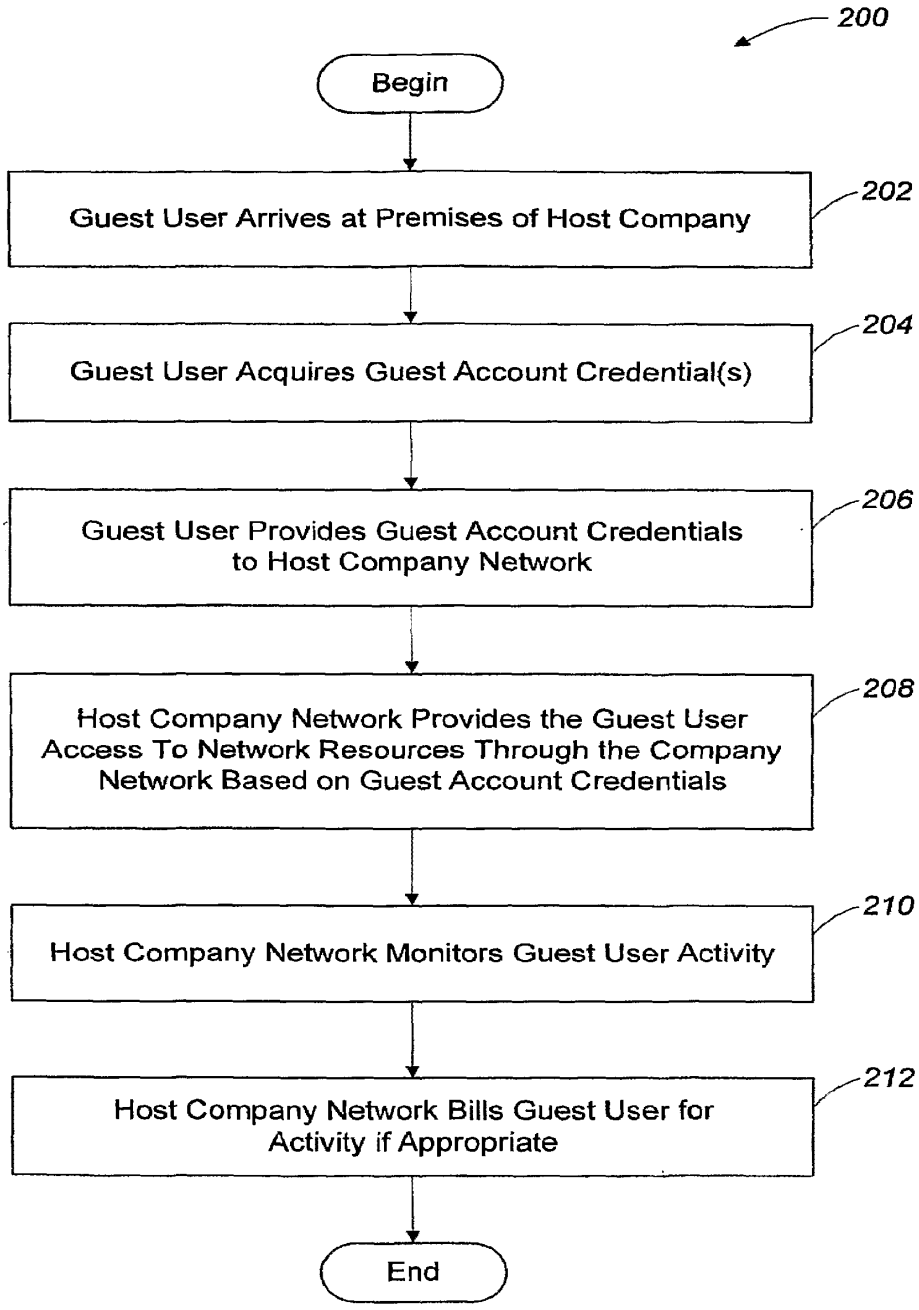

200
Begin
Guest User Arrives at Premises of Host Company
202
Guest User Acquires Guest Account Credential(s)
204
Guest User Provides Guest Account Credentials to Host Company Network
206
Host Company Network Provides the Guest User Access To Network Resources Through the Company Network Based on Guest Account Credentials
208
Host Company Network Monitors Guest User Activity
210
Host Company Network Bills Guest User for Activity if Appropriate
212
End

FIG. 2

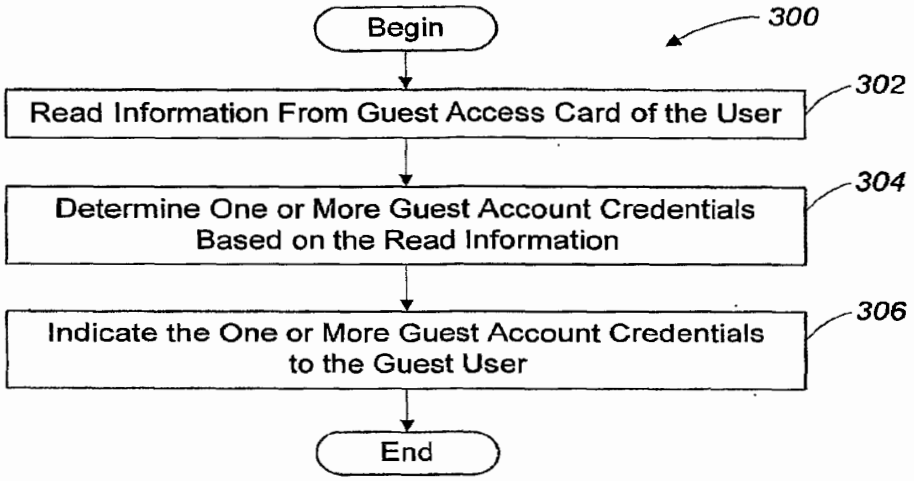

Begin
300
Read Information From Guest Access Card of the User
302
Determine One or More Guest Account Credentials Based on the Read Information
304
Indicate the One or More Guest Account Credentials to the Guest User
306
End

FIG. 3

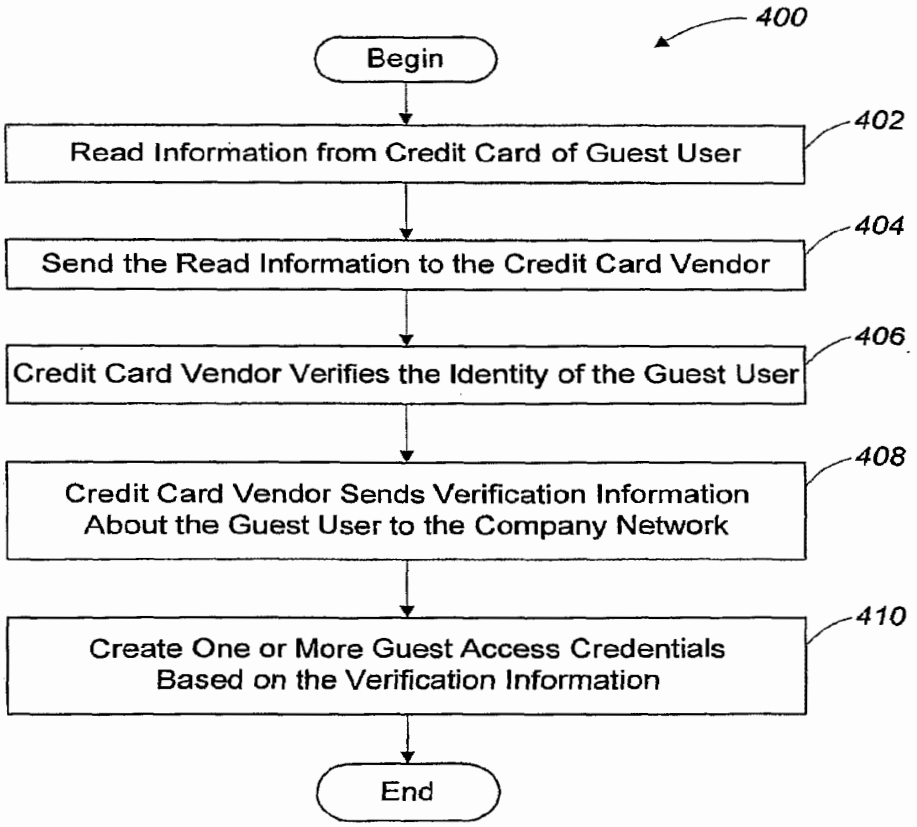

400
Begin
Read Information from Credit Card of Guest User
402
Send the Read Information to the Credit Card Vendor
404
Credit Card Vendor Verifies the Identity of the Guest User
406
Credit Card Vendor Sends Verification Information About the Guest User to the Company Network
408
Create One or More Guest Access Credentials Based on the Verification Information
410
End

FIG. 4

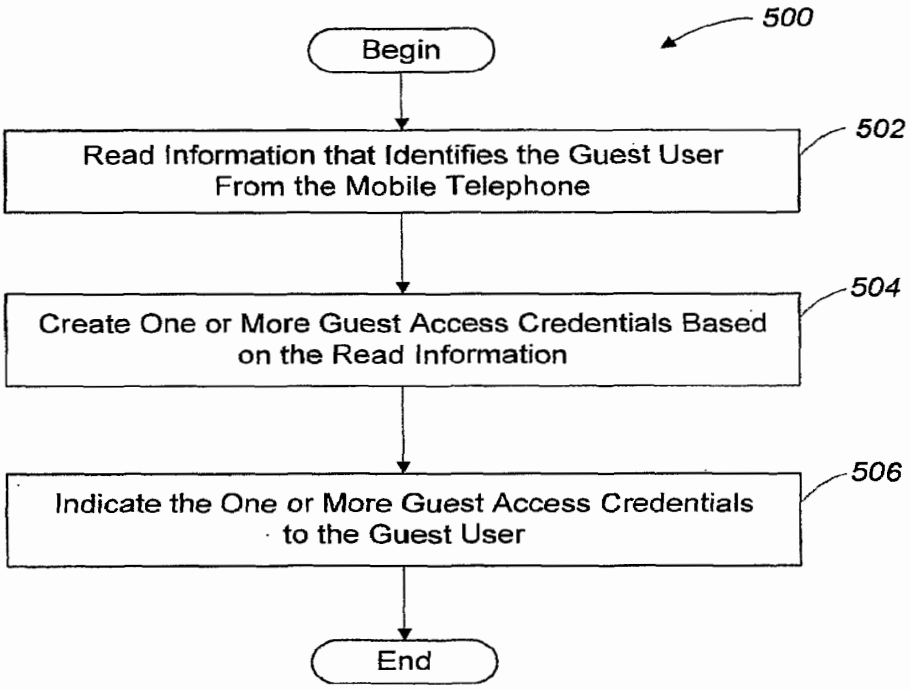

500
Begin
Read Information that Identifies the Guest User From the Mobile Telephone
502
Create One or More Guest Access Credentials Based on the Read Information
504
Indicate the One or More Guest Access Credentials to the Guest User
506
End

FIG. 5

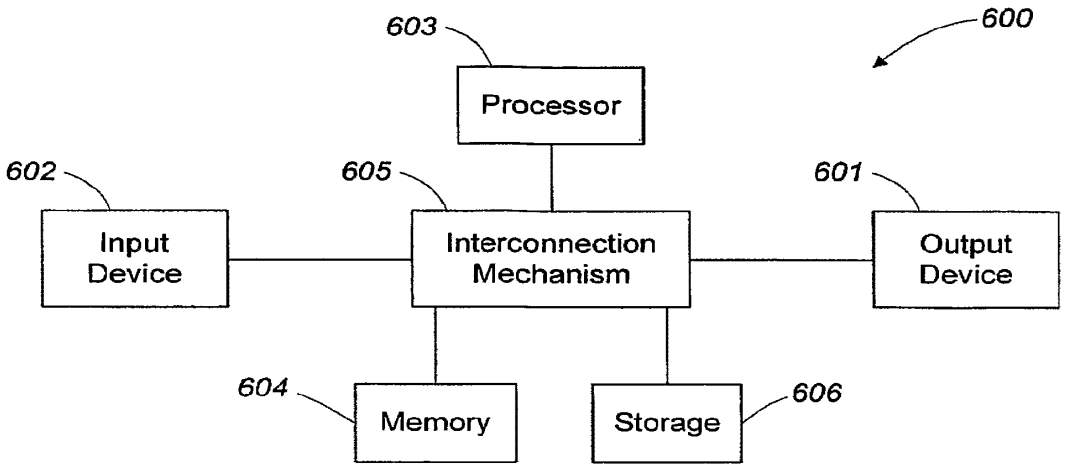

603
600
Processor
602
605
601
Input Device
Interconnection Mechanism
Output Device
604
606
Memory
Storage

FIG. 6

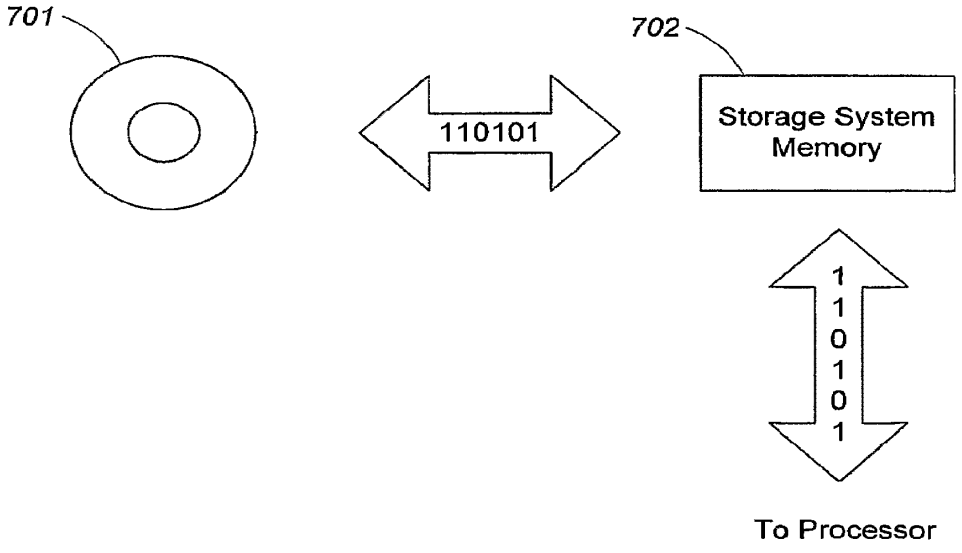

701
702
110101
Storage System Memory
1 1 0 1 0 1
To Processor

FIG. 7

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(71) Applicant *(for all designated States except US)*: **SONY ERICSSON MOBILE COMMUNICATIONS AB** [SE/SE]; SE-221 88 Lund (SE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **DE LEON, David** [SE/SE]; Arkivgatan 24 A, SE-223 59 Lund (SE). **SPARRE, Erik** [SE/SE]; Vallgatan 7A, SE-234 32 Lomma (SE). **GRANSTRÖM, Martin** [SE/SE]; Repslagaregatan, SE-211 21 Malmö (SE).

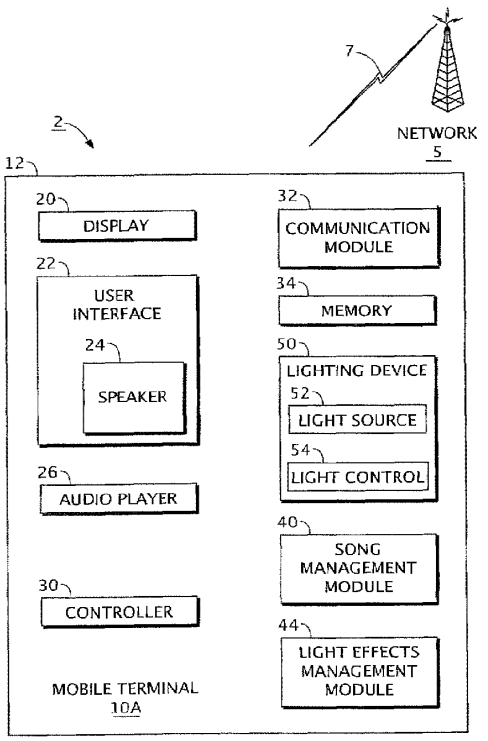
(74) Agent: **HAGSTRÖM, Lena**; Box 7086, SE-103 87 Stockholm (SE).

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[Continued on next page]

(54) Title: MOBILE WIRELESS COMMUNICATION TERMINALS, SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR MANAGING PLAYBACK OF SONG FILES



(57) Abstract: A mobile wireless communication terminal includes a wireless communication module that is configured to communicate with other communication terminals over a wireless interface, and a controller. The controller is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, to receive from the at least one participant wireless communication terminal an identification of a compliant song file stored on the at least one participant wireless communication terminal and having a metadata tag associated therewith indicating that the compliant song file is classified in a prescribed song file category, and to execute playback of the compliant song file.

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MOBILE WIRELESS COMMUNICATION TERMINALS, SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR MANAGING PLAYBACK OF SONG FILES

FIELD OF THE INVENTION

[001] The present invention relates to electronic devices and, more particularly, to electronic devices, methods and computer program products for playing song files.

BACKGROUND OF THE INVENTION

[002] Mobile electronic devices, such as wireless communication terminals (*e.g.*, cellular telephones), are widely used to store and playback song files. A user may wish to play a song file on another device such as a media center (*e.g.*, a PC or laptop, a television, an audio receiver, etc.) or another wireless communication terminal. This may be accomplished by connecting the electronic device to the other device via a cable or a wireless link (*e.g.*, a Bluetooth connection) if the other device is equipped with a suitable communication module, which may be an integrated module or an auxiliary (*e.g.*, plug- in) module. Song files may be sent, one by one, from one or more mobile electronic devices to the playback device(s).

SUMMARY OF THE INVENTION

[003] According to some embodiments of the present invention, a mobile wireless communication terminal includes a wireless communication module that is configured to communicate with other communication terminals over a wireless interface, and a controller. The controller is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, to receive from the at least one participant wireless communication terminal an identification of a compliant song file stored on the at least one participant wireless communication terminal and having a metadata tag associated therewith indicating that the compliant song file is classified in a prescribed song file category, and to execute playback of the compliant song file.

[004] The controller may be configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to receive identifications of compliant songs from at least two of the plurality of participant wireless communication terminals.

[005] According to some embodiments, the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to execute playback of the compliant song file simultaneously on the plurality of participant wireless communication terminals.

[006] The controller may be configured to retrieve the compliant song file from the at least one participant wireless communication terminal for playback.

[007] According to some embodiments of the present invention, the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface, and the controller is configured to establish the connection with the at least one participant wireless communication terminal via the wireless communication module via the direct point-to-point wireless interface, and to receive the identification of a compliant song file from the at least one participant wireless communication terminal via the direct point-to-point wireless interface. The wireless communication module may comprise a Bluetooth transmitter. The wireless communication terminal may include a cellular telephone.

[008] According to further embodiments of the present invention, a mobile wireless communication terminal includes a wireless communication module that is configured to communicate with other communication terminals over a wireless interface, and a controller. The controller is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, to maintain a list of nominated song files, to receive at least one vote message from the at least one participant wireless communication terminal, to determine an elected song file from the list of nominated song files based on the at least one vote message, and to execute playback of the elected song file.

[009] According to some embodiments, the controller is configured to receive an identification of a nominated song file from the at least one participant wireless communication terminal, and to add the identification of the nominated song file to the list of nominated song files.

[010] According to some embodiments, the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to receive vote messages from at least two of the plurality of participant wireless communication terminals.

[011] The controller may be configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to execute playback of the elected song file simultaneously on the plurality of participant wireless communication terminals.

[012] The controller may be configured to retrieve the elected song file from the at least one participant wireless communication terminal for playback.

[013] According to some embodiments of the present invention, the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface, and the controller is configured to establish the connection with the at least one participant wireless communication terminal via the wireless communication module via the direct point-to-point wireless interface, and to receive the at least one vote message from the at least one participant wireless communication terminal via the direct point-to-point wireless interface. The wireless communication module may comprise a Bluetooth transmitter. The wireless communication terminal may include a cellular telephone.

[014] According to further embodiments of the present invention, a mobile wireless communication terminal includes a wireless communication module that is configured to communicate with other communication terminals over a wireless interface, and a controller. The controller is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, and to send at least one light effect signal to the at least one participant wireless communication terminal instructing the at least one participant wireless communication terminal to control at least one lighting device of the at least one participant wireless communication terminal in correspondence with playback of a song file.

[015] According to some embodiments, the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to send light effect signals to each of the plurality of participant wireless communication terminals instructing each of the plurality of

participant wireless communication terminals to control a lighting device thereof in correspondence with playback of the song file.

[016] According to some embodiments, the controller may be configured to send light effect signals to each of the plurality of participant wireless communication terminals instructing the plurality of participant wireless communication terminals to control the lighting devices thereof differently from one another.

[017] The controller may be configured to send light effect signals to each of the plurality of participant wireless communication terminals so as to cause the plurality of participant wireless communication terminals to display on respective displays thereof an image that moves over time from the display of a first of the plurality of participant wireless communication terminals to the display of a second of the plurality of participant wireless communication terminals.

[018] According to some embodiments, the controller is configured to send light effect signals to each of the plurality of participant wireless communication terminals so as to cause a lighting device of a first of the plurality of participant wireless communication terminals to respond to audio signals in a first audio frequency range and to cause a lighting device of a second of the plurality of participant wireless communication terminals to respond to audio signals in a second audio frequency range different from the first audio frequency range.

[019] The controller may be configured to execute playback of the song file simultaneously on the plurality of participant wireless communication terminals.

[020] According to some embodiments, the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface, and the controller is configured to establish the connection with the at least one participant wireless communication terminal via the wireless communication module via the direct point-to-point wireless interface, and to send the at least one light effect signal to the at least one participant wireless communication terminal via the direct point-to-point wireless interface. The wireless communication module may comprise a Bluetooth transmitter. The wireless communication terminal may include a cellular telephone.

[021] Further features, advantages and details of the present invention will be appreciated by those of ordinary skill in the art from a reading of the figures and the

detailed description of the preferred embodiments that follow, such description being merely illustrative of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[022] **Figure 1** is a schematic diagram of a mobile wireless communication terminal according to some embodiments of the present invention and an exemplary base station transceiver.

[023] **Figure 2** is a flowchart illustrating methods in accordance with some embodiments of the present invention.

[024] **Figure 3** is a schematic diagram of a song file playback system according to some embodiments of the present invention including the mobile wireless communication terminal of **Figure 1**.

[025] **Figure 4** is a schematic diagram of a song file playback system according to further embodiments of the present invention including the mobile wireless communication terminal of **Figure 1**.

[026] **Figure 5** is a schematic diagram of a song file playback system according to further embodiments of the present invention including the mobile wireless communication terminal of **Figure 1**.

[027] **Figure 6** is a schematic diagram illustrating a display of the mobile wireless communication terminal of **Figure 1** in accordance with some embodiments of the present invention.

[028] **Figure 7** is a flow chart illustrating methods in accordance with further embodiments of the present invention.

[029] **Figure 8** is a flow chart illustrating methods in accordance with further embodiments of the present invention.

[030] **Figure 9** is a schematic diagram of a song file playback system according to further embodiments of the present invention.

[031] **Figures 10A-C** are schematic diagrams of a system according to embodiments of the present invention illustrating an animation sequence displayed on three mobile wireless communication terminals of the system.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[032] The present invention now will be described more fully with reference to the accompanying drawings, in which embodiments of the invention are shown. However, this invention should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

[033] As used herein, the term "comprising" or "comprises" is open-ended, and includes one or more stated features, integers, elements, steps, components or functions but does not preclude the presence or addition of one or more other features, integers, elements, steps, components, functions or groups thereof.

[034] As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

[035] As used herein, the common abbreviation "*e.g.*", which derives from the Latin phrase "exempli gratia," may be used to introduce or specify a general example or examples of a previously mentioned item, and is not intended to be limiting of such item. If used herein, the common abbreviation "*i.e.*", which derives from the Latin phrase "id est," may be used to specify a particular item from a more general recitation.

[036] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise.

[037] Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

[038] It will be understood that when an element is referred to as being "coupled" or "connected" to another element, it can be directly coupled or connected to the other element or intervening elements may also be present. In contrast, when an element is referred to as being "directly coupled" or "directly connected" to another element, there

are no intervening elements present. Furthermore, "coupled" or "connected" as used herein may include wirelessly coupled or connected.

[039] Well-known functions or constructions may not be described in detail for brevity and/or clarity.

[040] The present invention may be embodied as methods, electronic devices, and/or computer program products. Accordingly, the present invention may be embodied in hardware and/or in software (including firmware, resident software, micro-code, *etc.*), which may be generally referred to herein as a "circuit" or "module". Furthermore, the present invention may take the form of a computer program product on a computer-usable or computer-readable storage medium having computer-usable or computer-readable program code embodied in the medium for use by or in connection with an instruction execution system. In the context of this document, a computer-usable or computer-readable medium may be any medium that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

[041] Embodiments according to the present invention are described with reference to block diagrams and/or operational illustrations of methods and communication terminals. In this regard, each block may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s). It is to be understood that each block of the block diagrams and/or operational illustrations, and combinations of blocks in the block diagrams and/or operational illustrations, can be implemented by radio frequency, analog and/or digital hardware, and/or program instructions. These program instructions may be provided to a controller, which may include one or more general purpose processors, special purpose processors, ASICs, and/or other programmable data processing apparatus, such that the instructions, which execute via the controller and/or other programmable data processing apparatus, create means for implementing the functions/acts specified in the block diagrams and/or operational block or blocks. In some alternate implementations, the functions/acts noted in the blocks may occur out of the order noted in the operational illustrations. For example, two blocks shown in succession may in fact be executed substantially concurrently or the blocks may sometimes be executed in the reverse order, depending upon the functionality/acts involved.

[042] These computer program instructions may also be stored in a computer-usable or computer-readable memory that may direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer usable or computer-readable memory produce an article of manufacture including instructions that implement the function specified in the flowchart and/or block diagram block or blocks.

[043] The computer-usable or computer-readable medium may be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-readable medium include the following: hard disks, optical storage devices, a transmission media such as those supporting the Internet or an intranet, magnetic storage devices, an electrical connection having one or more wires, a portable computer diskette, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or Flash memory), an optical fiber, and a compact disc read-only memory (CD-ROM).

[044] Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language and/or a lower level assembler language. It will be further appreciated that the functionality of any or all of the program modules may also be implemented using discrete hardware components, one or more application specific integrated circuits (ASICs), or a programmed digital signal processor or microcontroller.

[045] As used herein, "electronic component" means an active device as contrasted with a passive electrical connector or the like. An electronic component may include a processor.

[046] As used herein, "streamed" or "streaming" means that a file, such as an audio or song file, is continuously sent via a digital signal to a receiving device where the audio or song file is concurrently played via a suitable receiving application. The digital signal is typically buffered.

[047] As used herein, a "communication terminal" includes, but is not limited to, a terminal that is configured to receive/transmit communication signals via a wireline connection, such as via a public-switched telephone network (PSTN), digital subscriber

line (DSL), digital cable, or another data connection/network, and/or via a wireless interface with, for example, a cellular network, a satellite network, a wireless local area network (WLAN), and/or another communication terminal.

[048] When the communication terminal is configured to communicate over a wireless interface, it is referred to herein as a "wireless communication terminal" or a "wireless terminal." Examples of wireless terminals include, but are not limited to, a cellular telephone, personal data assistant (PDA), pager, and/or a computer that is configured to communicate data over a wireless communication interface that can include a cellular telephone interface, a Bluetooth interface, a wireless local area network interface (*e.g.*, 802.11), another RF communication interface, and/or an optical/infra-red communication interface.

[049] As used herein, "mobile terminals" may be portable, transportable, installed in a vehicle (aeronautical, maritime, or land-based), or situated and/or configured to operate locally and/or in a distributed fashion at any other location(s) on earth and/or in space.

[050] Referring now to **Figure 1**, an exemplary mobile wireless communication terminal **10A** in accordance with some embodiments of the present invention is illustrated. The wireless terminal **10A** is configured to communicate data with one or more other wireless terminals over a direct wireless communication interface therebetween, over another wireless communication interface through one or more cellular base stations, and/or over another wireless communication interface through a wireless local area network (WLAN) router.

[051] The wireless terminal **10A** may be a mobile radiotelephone forming a part of a radiotelephone communication system **2** as illustrated in **Figure 1**. The system **2** includes the mobile wireless communication terminal **10A** and a base station transceiver, which is part of a wireless communications network **5**. In some embodiments of the present invention, the network **5** includes a base station transceiver that includes the radio transceiver(s) that define an individual cell in a cellular network and communicates with the mobile terminal **10A** (via an interface **7**) and other mobile terminals in the cell using a radio-link protocol. It will be understood that, in some embodiments of the present invention, many base station transceivers may be connected through, for example, a mobile switching center and other devices to define the wireless communications network **5**.

[052] The mobile terminal **10A** in the illustrated embodiments includes a portable housing assembly **12**, a display **20**, a user interface **22** (*i.e.*, a man machine interface (MMI)) including a speaker **24** (*i.e.*, a sound transducer), an audio player **26**, a controller **30**, a communication module **32**, a memory **34**, and a lighting device **50**. The foregoing components of the mobile terminal **10A** may be included in many conventional mobile terminals and their functionality is generally known to those skilled in the art. The mobile terminal **10A** further includes a song management module **40** and a light effects management module **44**, which may be stored in the memory **34**. The mobile terminal **10A** is capable of processing and playing song files (*e.g.*, MP3 files).

[053] The display **20** may be any suitable display screen assembly. For example, the display screen **28** may be a liquid crystal display (LCD) with or without auxiliary lighting (*e.g.*, a lighting panel).

[054] The user interface **22** may include any suitable input device(s) including, for example, a touch activated or touch sensitive device (*e.g.*, a touch screen), a joystick, a keyboard/keypad, a dial, a directional key or keys, and/or a pointing device (such as a mouse, trackball, touch pad, etc.). The speaker **24** generates sound responsive to an input audio signal. The user interface **22** can also include a microphone coupled to an audio processor that is configured to generate an audio data stream responsive to sound incident on the microphone.

[055] The controller **30** may support various functions of the mobile terminal **10A**. The controller **30** can be any commercially available or custom microprocessor, for example. In use, the controller **30** of the mobile terminal **10A** generates a display image on the display **20**. The controller **30** may control the audio player **26** and various other components of the mobile terminal **10A**.

[056] The memory **34** is configured to store digital information signals and data such as a digital audio signal and/or digital audio files.

[057] The communication module **32** is configured to communicate data over one or more wireless interfaces (*e.g.*, wireless interfaces **7**, **112**, **114**, **116**, **122**, and **134** as discussed herein (**Figures 1** and **3**)) to another remote wireless terminal as discussed herein. The communication module **32** can include a cellular communication module, a direct point-to-point connection module, and/or a WLAN module.

[058] With a cellular communication module, the wireless terminal **10A** can communicate via the base station(s) of the network **5** using one or more cellular

communication protocols such as, for example, Advanced Mobile Phone Service (AMPS), ANSI-136, Global Standard for Mobile (GSM) communication, General Packet Radio Service (GPRS), enhanced data rates for GSM evolution (EDGE), code division multiple access (CDMA), wideband-CDMA, CDMA2000, and Universal Mobile Telecommunications System (UMTS). The cellular base stations may be connected to a Mobile Telephone Switching Office (MTSO) wireless network, which, in turn, can be connected to a PSTN and/or another network.

[059] A direct point-to-point connection module may include a direct RF communication module or a direct IR communication module. The direct RF communication module may include a Bluetooth module. With a Bluetooth module, the wireless terminal **10A** can communicate via an ad-hoc network through a direct point-to-point interface.

[060] With a WLAN module, the wireless terminal **10A** can communicate through a WLAN (*e.g.*, a router **120** (**Figure 3**)) using a communication protocol that may include, but is not limited to, 802.11a, 802.11b, 802.11e, 802.11g, and/or 802.11i.

[061] The communication module **32** can include a transceiver typically having a transmitter circuit and a receiver circuit, which respectively transmit outgoing radio frequency signals (*e.g.*, to the network **5**, a router or directly to another terminal) and receive incoming radio frequency signals (*e.g.*, from the network **5**, a router or directly to another terminal), such as voice and data signals, via an antenna. The communication module **32** may include a short range transmitter and receiver, such as a Bluetooth transmitter and receiver. The antenna may be an embedded antenna, a retractable antenna or any antenna known to those having skill in the art without departing from the scope of the present invention. The radio frequency signals transmitted between the mobile terminal **10A** and the network **5**, router or other terminal may include both traffic and control signals (*e.g.*, paging signals/messages for incoming calls), which are used to establish and maintain communication with another party or destination. The radio frequency signals may also include packet data information, such as, for example, cellular digital packet data (CDPD) information. In addition, the transceiver may include an infrared (IR) transceiver configured to transmit/receive infrared signals to/from other electronic devices via an IR port.

[062] The mobile terminal **10A** may also be configured to electrically couple with another terminal via a wireline or cable for the transmission of digital communication

signals therebetween. The mobile terminal **10A** may include further components such as a camera device configured to generate a still image and/or video data stream based on incident light.

[063] According to some embodiments, the mobile terminal **10A** is a handheld mobile terminal. By "handheld mobile terminal," it is meant that the outer dimensions of the mobile terminal are adapted or configured and suitable for use by a typical operator using one hand. According to some embodiments, the total volume of the handheld mobile terminal **10A** is less than about 200 cc. According to some embodiments, the total volume of the handheld terminal **10A** is less than about 100 cc. According to some embodiments, the total volume of the handheld mobile terminal **10A** is between about 50 and 100 cc. According to some embodiments, no dimension of the handheld mobile terminal **10A** exceeds about 200 mm.

[064] A method for selecting and playing back a song file using mobile wireless communication terminals (*e.g.*, mobile terminals **10A-E**) according to embodiments of the present invention will now be described in reference to the flowchart of **Figure 2**. The method includes establishing a wireless connection between a host wireless communication terminal and at least one participant wireless communication terminal (**Block 280**). The host terminal maintains a list of nominated song files (**Block 282**). The host terminal receives at least one vote message from the at least one participant terminal (**Block 284**). The host terminal determines an elected song file from the list of nominated song files based on the at least one vote message (**Block 286**). The host terminal executes playback of the elected song file (**Block 288**). According to some embodiments, the host terminal also receives a song nomination from the at least one participant terminal and adds the song nomination to the list of nominated song files. The various method steps and operations as described herein for selecting and playing back nominated song files may be enabled and executed by the suitably configured controller **30** and song management module **40** of the implementing mobile terminal(s).

[065] According to some embodiments, connections are established between the host wireless communication terminal and a plurality of participant wireless communication terminals, and the host wireless communication terminal receives a plurality of vote messages from the plurality of participant wireless communication terminals and determines the elected song based on the plurality of vote messages.

[066] According to some embodiments, communication between the host wireless communication terminal and the participant wireless communication terminal is accomplished via a direct point-to-point interface, such as a Bluetooth wireless RF connection. According to some embodiments, communication between the host wireless communication terminal and the participant wireless communication terminal is accomplished via an indirect interface, such as through a WLAN or cellular-based system. Further aspects and embodiments of the present invention will be apparent from the following descriptions of further embodiments.

[067] With reference to **Figure 3**, an exemplary song file playback system **100A** according to embodiments of the present invention is shown therein. The system **100A** includes the mobile wireless communication terminal **10A** (also referred to herein as the "host wireless communication terminal" or "host terminal"), a plurality of additional participant wireless communication terminals **10B**, **10C**, **10D**, and **10E** (also referred to herein as the "participant wireless communication terminals" or "participant terminals"), and a media center **130**. The media center **130** includes apparatus adapted or configured to convert an audio signal (*e.g.*, a digital audio signal) to corresponding sound. The media center **130** may include, for example, a PC or laptop, a television, an audio receiver, stereo equipment, etc. The illustrated media center **130** includes a wireless communication module **132** and sound transducers (speakers) **136**. The wireless communication module **132** may be integrated with the media center **130** or may be an auxiliary or plug-in wireless communication module such as the Bluetooth Media Viewer MMV-100 module or Bluetooth Media Viewer MMV-200 module, each available from Sony Ericsson of Sweden. The terminals **10B-E** may be configured as described above with regard to the terminal **10A**. The terminals **10B-E** each include a wireless communication module **32** and a song management module **40**. However, the respective song management modules **40** may be differently configured for each terminal **10A-E** depending on the intended functionality of the device. According to some embodiments, all or some of the terminals **10B-E** are mobile wireless communication terminals. According to some embodiments, all or some of the terminals **10A-E** are handheld mobile wireless communication terminals.

[068] Referring now to **Figure 4**, a further exemplary system **100B** according to embodiments of the present invention is shown therein including the host terminal **10A** and the participant terminals **10B-E**. The system **100B** differs from the system **100A**

(**Figure 3**) in that the media center **130** is omitted and playback of the song files from the song play list **156** is conducted via the speaker **24** of the host terminal **10A**.

[069] Referring now to **Figure 5**, a further exemplary system **100C** according to embodiments of the present invention is shown therein including the host terminal **10A** and the participant terminals **10B-E**. The system **100C** differs from the system **100B** (**Figure 5**) in that playback of the song files from the song play list **156** is conducted via the speaker **24** of the host terminal **10A** and, additionally, through the respective speakers of the participant terminals **10B-E** and/or through one or more headsets (*e.g.*, in-ear stereo headsets) operatively connected to the terminals **10A-E**. More particularly, the controller **30** of the host terminal **10A** plays each song file thereon and also sends the song file to the participant terminals **10B-E** for simultaneous playback. According to some embodiments, the playback is synchronized between the mobile terminals **10A-E**.

[070] Various combinations and aspects of the exemplary systems **100A**, **100B**, **100C** may be employed and the host terminal **10A** may be configured to allow the user to selectively choose the device or combination of devices for playback from the various options discussed above. For example, the host terminal **10A** may be configured to execute playback via only the speaker **24** of the host terminal **10A**, via the speakers of the participant terminals **10B-E** but not the host terminal **10A**, via the speakers of the participant terminals **10B-E** and the media center **130**, etc. It will be appreciated that, when the song files are played back via the speakers of the terminals **10A-E**, the user of a given one of the participant terminals may disable the speaker thereof and/or may relay the song file for playback on another device (*e.g.*, an associated further media center or the like).

[071] Mobile terminals, methods and systems in accordance with embodiments of the present invention will now be described using an illustrative example of use. The host terminal **10A** is chosen to be the master or host terminal and the participant terminals **10B-E** are each designated as slave or participant terminals. The controller **30** of the host terminal **10A** establishes a wireless connection (*i.e.*, communicatively couples) with each of the participant terminals **10B-E**. According to some embodiments, the wireless connection is a direct wireless communication interface connection, according to some embodiments, a direct RF connection and, according to some embodiments, a Bluetooth connection. The connections may be established in known manner. For example, in the case of Bluetooth connections, the participant (slave) terminals **10B-E** may be set to a

searchable/discoverable state and the host (master) terminal **10A** emits an inquiry to identify the available participant (slave) terminals **10B-E** to form a piconet or personal area network.

[072] As illustrated, in the system **100A** (**Figure 3**) the host terminal **10A** communicates with the participant terminals **10B**, **10C** and **10D** via direct point-to-point wireless interfaces or links **112**, **114** and **116**, respectively, and with the participant terminal **10E** via wireless interfaces or links **118**, **122** through a WLAN router **120**. In the systems **100B** (**Figure 4**) and **100C** (**Figure 5**), the host terminal **10A** communicates with the participant terminals **10B-E** via direct point-to-point links **112**, **114**, **116**, **119**. In the case of the system **100A**, the host terminal **10A** is also communicatively coupled to the media center **130** to provide wireless song data signals via a wireless interface or link **134** to the communication module **132**. Alternatively, the host terminal **10A** can be connected to the media center **130** using a wireline or signal cable. It will be appreciated that, according to some embodiments, the interfaces may be various combinations of wireless interfaces that are direct (*e.g.*, Bluetooth) or indirect (*e.g.*, via a WLAN router or a cellular network **5**). According to some contemplated embodiments, all of the signals provided between the host terminal **10A** and the participant terminals **10B-E** to execute the song sharing procedure are provided via direct point-to-point wireless interfaces. According to some contemplated embodiments, all of the signals provided between the host terminal **10A** and the participant terminals to execute the song sharing procedure are provided via direct wireless radio frequency (RF) interfaces such as Bluetooth interfaces.

[073] Before or after establishing the connections, the host terminal **10A** may identify and designate valid participant terminals by any suitable method. According to some embodiments, the host terminal **10A** will poll or send an invitation to all or a selected group of potential participant terminals (*e.g.*, those within operational range of the host terminal's Bluetooth signal). The potential participant terminals may then opt in by replying with an acceptance of the invitation. Alternatively or additionally, the host terminal **10A** may accept unsolicited requests from participant terminals to participate. The host terminal **10A** may be used to define specific groups such as a listing of the potential participant terminals that will be permitted to participate (*e.g.*, to contribute song nominations and/or votes).

[074] Each song management module **40** provides a display **150** on the associated terminal **10A-E** as shown in **Figure 4**. The display provided on the host terminal **10A**

may differ from the display provided on the participant terminals **10B-E**. For example, the portions of the display **150** related to management functionality may be omitted from the participant terminal displays. Alternatively, the song management module **40** may provide no display on the participant terminals **10B-E**.

[075] Once the connections are established between the host terminal **10A** and the participant terminals **10B-E**, the host terminal **10A** may send a request to the participant terminals **10B-E** for song file nominations. For example, the host may actuate a "NOMINATIONS" button (**Figure 6**) on the display **150**. Each participant may use his or her respective participant terminal to send a nominee song identification to the host terminal **10A**. The nominee song identification designates a song file the participant wishes to add to the nominated song list. The nominee song identification may designate a song file stored on the participant's terminal **10B-E**. The song management module **40** of the sending participant terminal **10B-E** may provide a user interface to facilitate the selection and sending of the nominee song identification(s). For example, the module **40** may generate a list of the available stored songs and check boxes for selecting the song(s) to send to the host terminal **10A**. Additionally or alternatively, the nominated song list may comprise song identifications designating song files stored on the host terminal **10A**. According to some embodiments, only the host terminal **10A** may nominate song files. According to some embodiments, the host terminal **10A** and/or the participant terminals **10B-E** can nominate song files stored on mobile terminals other than themselves. The nominated song files constitute the nominated song list.

[076] The host terminal **10A** receives the nominee song identifications from the participant terminals **10B-E**. The song management module **40** of the host terminal **10A** creates and maintains a host nominated song list of these song identifications. The host nominated song list represents song files that are candidates to be played.

[077] According to some embodiments, the host terminal **10A** compiles the nominated song list and sends the nominated song list to the participant terminals **10B-E** for display thereon. According to some embodiments, each of the participant terminals **10B-E** receives nominations from other participant terminals (and, if applicable, the host terminal **10A**) and itself compiles and displays the nominated song list.

[078] In the illustrated embodiment, the display **150** includes a play list field **152** and control buttons **154** (*e.g.*, soft keys). The control buttons **154** will typically only be displayed on the host terminal display. The nominated song list **156** is displayed in the

play list field **152**. The nominated song list **156** includes a row-by-row series of song identifications **156A**, each corresponding to a respective song file. As illustrated, each song identification includes a song artist, a song name, and a song play time corresponding to the associated song file, as well as an identification of the participant that has submitted the song identification as a nominee. It will be appreciated that more, less and/or different information may be provided as well. A vote counter field **156B** may also be provided for each nominated song identification **156A**.

[079] The host may initiate an election by actuating an "ELECTION" button (**Figure 6**) on the display **150**, for example. The election may be initiated for a single selected song, for a slate of songs less the full nominated song list, or for a slate including all of the nominated songs. The participants can vote on the nominated song(s) using their mobile terminals **10B-E**. The votes are sent as vote messages by the participant terminals **10B-E** to the host terminal **10A**. The host may also be enabled to vote using his or her mobile terminal **10A**. The host terminal **10A** counts or tallies the vote messages and determines the "winning" or "elected" song file or files (*i.e.*, the nominated song file or files receiving the most votes).

[080] In some cases, only a single song file is elected for playback. In other cases, a plurality of nominated song files may be elected and placed in a play list in vote rank order for playback. According to some embodiments, the host terminal **10A** may originally configure a play list that is thereafter reordered by voting of the participant terminals **10B-E** (and, optionally, the host terminal **10A**).

[081] The host may selectively manage play of the songs represented by the song list **156** using the control buttons **154**, for example. For example, the "PLAY" and "STOP" buttons may be used to start and stop transmission of the song files to the media center **130** and/or the audio players of the mobile terminals **10A-E**. The "MOVE" button may be used to prioritize or change the order of the song identifications **156A** in the play list **156** (*i.e.*, to change the order in which the associated song files will be played). The "DELETE" button may be used to delete a song identification **156A** from the play list **156**. The "DETAILS" button may be used to delete a song identification **156A** from the play list **156** so that the associated song file will not be played. The "RANDOM MIX" button may be used to cause the host terminal **10A** to execute playback of the song files (*i.e.*, send the song files to the media center **130**) in a random or other non-sequential order.

Typically, the host terminal **10A** will execute playback of the song files in the listed sequence unless the random or other non-sequential mode is in effect.

[082] When the host terminal **10A** is in play mode, the controller **30** of the host terminal **10A** will identify the elected song identification **156A** that is to be played. The host terminal **10A** will then execute playback of the elected song file. The host terminal **10A** may execute playback by any suitable method.

[083] According to some embodiments, the host terminal **10A** will execute playback of the elected song by sending a song file request to the participant terminal **10B-E** that nominated the song identification to retrieve the song file corresponding to the song identification. The corresponding participant terminal will then send a copy of the identified song file (which is stored on the participant terminal) to the host terminal **10A**. According to some embodiments, the participant terminal sends the song file to the host terminal **10A** as a copy of the song file that is then temporarily stored on the host terminal **10A** (*e.g.*, in the memory **34**). According to other embodiments, the participant terminal sends the song file to the host terminal **10A** as a streaming song file. According to some embodiments, the request and song file signals between the host terminal and the participant terminal are sent wirelessly and, according to some embodiments, via a direct wireless RF connection such as Bluetooth.

[084] The controller **30** of the host terminal **10A** then executes playback of the retrieved song file by sending the song file to the media center **130** and/or the mobile terminals **10B-E**. The song file may be stored on the media center **130** and/or the mobile terminals **10B-E** for playback. Alternatively, the song file may be streamed to the media center **130** and/or the mobile terminals **10B-E**, for example, as the song file is streamed from the originating participant terminal to the host terminal **10A**. It may be preferable or necessary to stream the song file from the participant terminal to the host terminal and/or from the host terminal to the media center **130** and/or the mobile terminals **10B-E** if the allocated memory space on the host terminal **10A** is insufficient and/or storage of the song file on the host terminal **10A** is prevented or illegal. According to some embodiments, the song file, whether streamed or stored in whole, will be automatically erased (*i.e.*, without user intervention) from the host terminal **10A** during or after playback.

[085] Additionally or alternatively, the host terminal **10A** may execute playback of the song file by instructing the participant terminal on which the selected song file is

stored to play the selected song file and/or distribute the selected song file to other devices (*e.g.*, the other mobile terminals **10A-E** and/or the media center **130**) for playback.

[086] The controller **30** of the host terminal **10A** may execute the foregoing steps for each song identification **156A** in turn and automatically (*i.e.*, without user intervention). As the host terminal **10A** runs through the song list **156** in this fashion, the host may modify the play list **156** as desired. Also, according to some embodiments, the participant terminals **10B-E** can add new nominated song identifications to the song list **156** and vote on the nominated songs as the controller **30** of the host terminal **10A** runs through the play list **156**. According to some embodiments, new participant terminals can join the group and submit nominee song identifications and votes as the host terminal **10A** runs through the play list **156**.

[087] According to some embodiments, the host terminal may request nominations and/or only add to the nominated song list nominations of song files in a prescribed song file category or categories (*i.e.*, song files having associated therewith appropriate metadata tags as described herein). For example, the host terminal may request and limit the nominated song list to song files bearing a "disco" metadata tag.

[088] Various further modifications to the methods and apparatus may be made in accordance with embodiments of the present invention. According to some embodiments, some participant terminals can vote on nominated song files but cannot nominate song files. According to some embodiments, some participant terminals can nominate song files, but cannot vote on the nominated song files. According to some embodiments, some participant terminals can nominate and/or vote, but cannot play back the elected song files (*i.e.*, do not receive the song file from the host terminal or the originating participant terminal). According to some embodiments, some participant terminals can play back the elected song files, but cannot nominate or vote.

[089] Other functionality could also be provided. For example, the host terminal **10A** may allow the user to change the order of the song identifications **156A** according to one or more selected attributes (*e.g.*, contributing participant, song length, etc.). The host terminal **10A** may be configured to designate which of the participant terminals **10B-E** are permitted to add song identifications to the play list **156**. The participant terminals **10B-E** may be enabled to edit or modify the song list **156** in addition to adding song identifications. In this case, the host terminal **10A** may be configured to allow the host to select which of the participant terminals **10B-E** are and are not authorized to modify the

song play list **156** (*i.e.*, enable and disable the play list edit capability of the participant terminals).

[090] The mobile terminals, systems, and methods as described herein can provide a convenient and enjoyable mechanism for enabling a group of people to select and play back songs. The mobile terminals, systems, and methods can provide playback execution functionality and also allow the host terminal (and, in some cases, the participant terminals) to create, coordinate, control and/or manage a song play list. In practice, for example, partygoers can add songs from their own participant terminals to a nominated song list maintained on a host terminal (*e.g.*, the party host's own mobile terminal). If their song is elected, when their song's turn arrives in the playback sequence, a copy of the song file will automatically be sent to the host terminal and played. Thus, the partygoer need not take any further action. When, in accordance with some embodiments, the request and song transfer signals are communicated between the host terminal and the participant terminal via a direct wireless connection (*e.g.*, an RF interface such as a Bluetooth connection), the partygoer may simply place his or her participant terminal in a pocket or handbag. Participants may be added and removed as the procedure is executed. For example, when a participant leaves the Bluetooth range, his or her songs may be deleted from or moved down the play list.

[091] With reference to **Figure 7**, according to further embodiments of the present invention, mobile wireless communications terminals, methods, systems and computer program products are provided that enable selection and playback of files according to prescribed classifications or categories. Such mobile wireless communication terminals, methods, systems and computer program products may be employed with voting functionality and/or light effects functionality as described herein or independently thereof. The mobile terminal, etc., may be configured as otherwise discussed above with reference to the mobile terminals **10A-E** with suitable modifications to the song management module(s) **40** of the mobile terminals **10A-E** to enable the mobile terminals **10A-E** to function as described herein.

[092] A method for selecting and playing back a song file using mobile wireless communications terminals (*e.g.*, the mobile terminals **10A-E**) according to some embodiments of the present invention will now be described with reference to **Figure 7**. The method includes establishing a wireless connection between a host wireless communication terminal and at least one participant wireless communication terminal

(**Block 310**). The host terminal receives from the at least one participant terminal an identification of a song file that is stored on the at least one participant terminal and also has a metadata tag associated therewith that indicates the song file (with may be referred to a "compliant song file") is classified in a prescribed song file category (**Block 312**). The host terminal thereafter executes playback of the compliant song file (**Block 314**).

[093] The various method steps and operations as described herein for selecting and playing back compliant song files may be enabled and executed by the suitably configured controller **30** and song management module **40** of the implementing mobile terminal(s) **10A-E**.

[094] According to some embodiments, the host terminal establishes a wireless connection with a plurality of participant wireless communication terminals, requests identification of compliant songs from the plurality of participant terminals, and executes playback of one or more of the compliant songs on the plurality of participant terminals.

[095] According to some embodiments, the wireless connections is/are direct wireless communication interface connections, according to some embodiments, direct RF connections and, according to some embodiments, Bluetooth connections, as described herein. According to some embodiments, all of the signals provided between the host terminal and the participant terminal(s) to execute the compliant song identification procedure are provided via direct wireless RF interfaces such as Bluetooth interfaces. Similarly, according to some embodiments, the execution of playback of the compliant song files is accomplished by transferring the song files via direct wireless RF connections such as Bluetooth. More particularly, the communications between the terminals and song file transfers may be executed using the various apparatus methods and techniques described above with regard to the playlist management and playback function.

[096] According to more particular embodiments, a host terminal **10A** is designated and the controller **30** of the host terminal **10A** establishes wireless connections with one or more participant terminals such as the participant terminals **10B-E** as described above. At least some of the participant terminals **10B-E** have song files stored thereon. At least some of the participant song files include metadata tags assigned thereto. The metadata tag or tags correspond to some aspect of the associated song file by which the song file may be classified or categorized. Examples of aspects of song files and metadata tags are provided below.

[097] The host terminal **10A** selects or designates a song file category for playback. The designated category corresponds with a metadata tag or tags. The host terminal **10A** sends a message to the participant terminals **10B-E** requesting an identification of the song files on the participant terminals **10B-E** that have the designated metadata tag associated therewith (*i.e.*, the compliant song files).

[098] The participant terminals **10B-E** send response messages to the host terminal **10A** each including a respective listing of song files stored on the respective responding participant terminal having the prescribed metadata tag. According to some embodiments, the participant can modify the reply list to include only a compliant song file or files that the participant wishes to offer.

[099] The host terminal **10A** selects or is used by the host to select a compliant song file from the compliant song file identifications received from the participant terminals **10B-E**. The host terminal **10A** may select the song file manually or according to further criteria (*e.g.*, using the voting functionality described hereinbelow), for example. The selected song file may be added to a play list on the host terminal **10A** if one is maintained.

[0100] The host terminal **10A** then executes playback of the selected compliant song. The host terminal **10A** may execute playback by any suitable method as those disclosed herein above with regard to the voting function. According to some embodiments, the host terminal **10A** retrieves and plays the selected song file on its own speaker **24** and/or the host terminal **10A** retrieves and distributes the selected compliant song file for playback on one or more of the participant terminals **10B-E** and/or the media center **130**, for example. According to some embodiments, the host terminal **10A** distributes the compliant song file for simultaneous (and, optionally, synchronized) playback on a plurality of the participant terminals **10B-E**. Additionally or alternatively, the host terminal **10A** may instruct the participant terminal on which the selected song file is stored to play the selected song file and/or distribute the selected song file to another device (*e.g.*, the other mobile terminals and/or the media center) for playback.

[0101] The host terminal **10A** may request and/or accept song catalog listings from one or more participant terminals as discussed above. According to some embodiments, the song catalog listings include metadata tag data. The song file catalogs may include compliant and non-compliant song files. According to some embodiments, the host terminal controller **30** searches the received song catalogs to identify and list the compliant

song files. The host terminal **10A** may thereafter select a compliant song file for playback as described herein.

[0102] The metadata tag may take any suitable form and may be associated with the song files in any suitable manner. For example, the metadata tags can be embedded in, attached to or assigned to the song files by the originator of the song file (*e.g.*, a party or entity such as a music media vendor which constructed or configured the song file prior to distribution of the song file to the participant terminal). The metadata tag may be assigned to the song file by the participant (*e.g.*, using the participant terminal or otherwise).

[0103] As discussed above, the metadata tag indicates that the compliant song file is classified in a prescribed song file category. The prescribed song file category may be any suitable category. According to some embodiments, the metadata tag indicates that the song file includes a song of a particular genre (*e.g.*, rock, techno, country/western, alternative country, disco, R&B, Hip Hop, World, Religious, Punk, Classical, Acoustic, Folk, etc.). According to some embodiments, the metadata tag indicates that the song file includes a song of a particular type (*e.g.*, mood, meditation, light music, background music, etc.). According to some embodiments, the metadata tag indicates that the song file includes a song for a particular occasion or event (*e.g.*, dance party, dinner party, birthday, wedding, graduation, etc.). According to some embodiments, the metadata tag indicates that the song file includes a song by a specified musician or artist (*e.g.*, the compliant songs are all songs by The Beatles). According to some embodiments, the metadata tag indicates that the song file includes a song having a tempo in a particular range (*e.g.*, slow, medium, fast). According to some embodiments, the metadata tag indicates that the song file includes a song that has received or is assigned a particular certification or rating (*e.g.*, a "parental advisory" rating or, alternatively, a non-parental advisory rating). The metadata tag may indicate an operational or usage status of the song file. The operational or usage status may be determined by the actual use of the song file. By way of example and in accordance with some embodiments, the metadata tag may indicate that a song file has previously won votes (as discussed herein, for example), has been played at least a prescribed number of times previously, or has been played less than a prescribed number of times (*e.g.*, never been played back within a prescribed timeframe such as the current session). Thus, for example, a play list could be constructed of popular songs or songs that have never been played.

[0104] The search and selection criteria employed to identify and select compliant songs for playback may be suitably modified or augmented. Multiple search or request parameters can be set. For example, the host may request via the host terminal **10A** an identification of all song files having both a "dance party" metadata tag and also a "non-parental advisory" metadata tag. By way of further example, the host may request via the host terminal **10A** an identification of all song files having, in combination for each song file, a metadata tag indicating the song has not been played back in the current session, a "disco" metadata tag, and a metadata tag indicating the song file has received votes. The search or request parameters may indicate negative criteria, such as a request for all songs not having a "parental advisory rating" metadata tag.

[0105] With reference to **Figure 8** according to further embodiments of the present invention, mobile wireless communications terminals, methods, systems and computer program products are provided that provide light effects corresponding to playback of a song file. In particular, the mobile terminals, methods, systems and computer program products may provide distributed light effects. Such mobile wireless communication terminals, methods, systems, and computer program products may be employed with the play list, metadata tag, voting or other functionality as described herein or independently thereof. The mobile terminal, etc., may be configured as otherwise described above with respect to the mobile terminals **10A-E** with suitable modifications to enable the mobile terminals **10A-E** to function as described herein.

[0106] A method for providing light effects on at least one participant wireless communication terminal and in correspondence with playback of a song file according to some embodiments of the present invention will now be described with reference to **Figure 8**. The method includes establishing a wireless connection between a host wireless communication terminal and at least one participant wireless communication terminal (**Block 410**). The host wireless communication terminal sends at least one light effect signal to the at least one participant wireless communication terminal instructing the at least one participant wireless communication terminal to control at least one lighting device of the at least on participant wireless communication terminal in correspondence with playback of a song file (**Block 412**). The various method steps and operations as described herein for providing light effects may be enabled and executed by the suitably configured controller **30** and the light effects management module **44** (**Figure 1**) of the implementing mobile terminals.

[0107] According to some embodiments, the host terminal establishes a wireless connection with a plurality of participant wireless communication terminals, and sends light effect signals to each of the plurality of participant terminals.

[0108] According to some embodiments, the wireless connection is/are direct wireless communication interface connections, according to some embodiments, direct RF connections and, according to some embodiments, Bluetooth connections, as described herein. According to some embodiments, all of the signals provided between the host terminal and the participant terminal(s) to execute the light effects thereon are provided via direct wireless RF interfaces such as Bluetooth interfaces. Similarly, according to some embodiments, the execution of playback of the song files is accomplished by transferring the song files via direct wireless RF connections such as Bluetooth. More particularly, the communications between the terminals and song file transfers may be executed using the various apparatus methods and techniques described above with regard to the playlist management and playback function.

[0109] According to more particular embodiments and with reference to **Figure 9**, there may be provided a system **400** including a host wireless communication terminal such as the mobile terminal **10A** and one or more participant wireless communications terminals such as the mobile terminals **10B-E** each having a respective lighting device or devices **50**. According to some embodiments, multiple participant wireless communication terminals **10B-E** are employed each having lighting devices **50**. The host wireless communication terminal **10A** may likewise include a lighting device **50**. With reference to **Figure 1**, each such lighting device **50** includes light source **52** and a light control **54** and is configured to selectively provide two different, mutually distinguishable light states. The light source **52** may include a suitable light source such as a light emitting diode (LED), a liquid crystal display (LCD), an incandescent lamp, or a phosphorescent material. For example, according to some embodiments, the light sources **52** include keypad LEDs and/or LCD displays of the mobile terminals **10A-E**. The light control **54** is adapted to selectively control the lighting device **50**. The light control **54** may itself be controlled by the controller **30** or the like of the associated terminal. The light control **54** may be an electrical switch or circuit capable of selectively actuating and deactuating the light source **52**, or a moveable element such as a shutter or a lens. The at least two light states may include different light intensities (including on/off or varying (continuous or step wise) degrees of intensity) and/or different colors.

[0110] In use during playback of a song file from or via the host terminal **10A**, the host terminal **10A** sends light effect orders or signals **422**, **424**, **426**, and **428** to each of the participant terminals **10B-E**, respectively. The light effect signals embody or represent light control orders or instructions from the host terminal **10A**. The light effect signals are dependent on, based on or correspond with the playback of the song file.

[0111] The participant terminals **10B-E** receive the light effect signals **422**, **424**, **426**, and **428** and the respective light controls **54** of the participant terminals **10B-E** operate the associated light sources **52** in accordance therewith. Accordingly, the host terminal **10A** governs the light effects displayed on the participant terminals **10B-E**. For example, the light effect signals **422**, **424**, **426**, and **428** from the host terminal **10A** may cause the light sources **52** to turn on and off. According to some embodiments, the participant terminals **10B-E** receiving the light effect signals **422**, **424**, **426**, and **428** and displaying the light effects also simultaneously playback the audio of the song file. According to some embodiments, the accompanying audio signals trigger the light effects so that the light effects are synchronized and dependent on the audio signals.

[0112] The host terminal may dynamically control the light effects on a given participant terminal or may order or instruct the participant terminal to enter an appropriate mode after which the participant terminal's own controller **30** executes a corresponding light effects program. For example, the host terminal may send a series of light effect signals that directly order or cause the participant terminal to blink a light source **52** on and off. Alternatively, the host terminal may instruct the participant terminal to enter a mode wherein the participant terminal's light effect management module **44** causes its light source **52** to blink or the like in synchrony with the audio signal.

[0113] The light effects may be any suitable light actuation, modulation, display, etc. According to some embodiments, the light effects include blinking or pulsing of one more light sources **52** and, according to some embodiments, blinking or pulsing of one or more LEDs. According to some embodiments, the light effects include video or animation. In particular, the light effects may include video or animation displayed on the participant terminal's display **20** (*e.g.*, an LCD). The video or animation may be generated from a video file pre-stored on the participant mobile terminal or a video file transmitted (*e.g.*, streamed) from the host terminal **10A**.

[0114] The host terminal **10A** may also govern the distribution of light effects across the participant terminals **10B-E**. According to some embodiments, the host

terminal **10A** sends different light effect signals to different participant terminals. Thus, over the course of playback of a given song file the light source **52** of the participant terminal **10B** may turn on and off at different times than the light source **52** of the participant terminal **10C**, for example. The host terminal **10A** may thereby cause the participant terminals **10B-E** to simultaneously display synchronized light effects in dynamic patterns that differ from one another. For example, the distributed light effects on the multiple mobile terminals may provide a disco light effect.

[0115] According to some embodiments, the host terminal sends light effect signals to one or more participant terminals that cause their lighting devices to actuate (*e.g.*, pulse on and off) in response to audio frequencies of the song file in a first range (*e.g.*, a high frequency range) and sends light effect signals to one or more other participant terminals that cause their lighting devices **50** to actuate (*e.g.*, pulse on and off) in response to audio frequencies of the song file in a second range (*e.g.*, low audio frequency range) different from the first range.

[0116] According to some embodiments, the host terminal causes the participant terminals to playback the song file in multi-channel audio with different audio channels being played on different participant terminals. For example, a first set of participant terminals (*e.g.*, the participant terminals **10B** and **10C**) receive from the host terminal **10A** and play back a first audio channel (*e.g.*, a left stereo channel) of the song file, and a second set of the participant terminals (*e.g.*, the participant terminals **10D** and **10E**) receive from the host terminal **10A** and play back a second, different audio channel (*e.g.*, a right stereo channel) of the song file. According to some embodiments, the light effect signals sent to the first set of participant terminals are paired with or correspond to the first audio channel and the light effect signals sent to the second set of participant terminals are paired with or correspond to the second audio channel. For example, the lighting devices **50** of the first set of participant terminals may blink in tempo or cadence with the first audio channel while the lighting devices **50** of the second set of participant terminals may blink in tempo or cadence with the second audio channel.

[0117] According to further embodiments, the multi-channel audio song file includes more than two audio channels and more than two separate channels are simultaneously respectively played back on different participant terminals. For example, the song file may be played back in a surround sound mode with three or more participant

terminals playing different channels and displaying different corresponding light effects from one another.

[0118] According to some embodiments, the relative positions or locations of the host terminal and/or the participant terminals are determined and the host terminal assigns the light effects to the participant terminals in accordance with their relative locations. Any suitable techniques can be used to distribute audio channels and determine the relative spatial locations of the terminals. According to some embodiments, the multi-channel audio playback distribution is accomplished as described in Applicant's European Patent Application No. 04103212.9, filed July 7, 2004, published as EP 1615464A1 on January 11, 2006, the disclosure of which is incorporated herein by reference. Moreover, the relative positions of the host terminal and the participant terminals may be determined and utilized as described in European Patent Application No. 0403312.9. Additionally, calibration may be accomplished as described in European Patent Application No. 04033129 or using any other suitable techniques to compensate for radio link delays.

[0119] According to some embodiments, the light effects coordinated or governed by the host terminal **10A** include a dynamic pattern that travels from mobile terminal to mobile terminal. For example, a light source (*e.g.*, an LED or an LCD display) may be pulsed on each mobile terminal **10A-E** in series so that the light pulse appears to travel along (*e.g.*, up and down) a row of the mobile terminals **10A-E**. To facilitate such operations, the relative spatial locations of the mobile terminals **10A-E** may be determined as discussed above and the light effects assigned to the several mobile terminals **10A-E** in accordance with their determined positions.

[0120] According to further embodiments, the dynamic patterned light effects include video or animation displayed on multiple mobile terminals **10A-E** such that it appears to travel from display screen **20** (*e.g.*, LCD) to display screen **20** of the mobile terminals **10A-E**. For example, in **Figure 10A**, three participant terminals **10B-D** are shown having respective display screens **20** at a first point in time to provide a collective or combined image **448A**. The displays **20** are controlled such that, at a later time, the respective images **442A**, **444A**, **446A** are replaced with new images **442B**, **444B**, **446B** as shown in **Figure 10B** to provide a new combined image **448B**, and, at a still later time, the images **442B**, **44B**, **446B** are replaced with new images **442C**, **444C**, **446C** to provide a new combined image **448C** (**Figure 10C**) giving the appearance that the objects in the combined images **448A**, **448B**, **448C** have traveled over time along the displays **20**

between the mobile terminals **10B-D**. Thus, in the embodiment of **Figures 10A-C**, the light effects are distributed across the several mobile terminals **10B-D** in a dynamic pattern that gives the impression of an animated person walking from display screen **20** to display screen **20** of the mobile terminals **10B-D**. This operation may be paired with and facilitated by determining the relative spatial positions of the mobile terminals as discussed above.

[0121] The light effects as controlled by the host terminal may also include use of the screens or displays of multiple mobile terminals without screen-to-screen traveling animation. For example, the screens **20** may be used as a collective screen to display a still image.

[0122] Various of the invention embodiments disclosed herein can be used with or independently of other invention embodiments as disclosed herein. For example, a song file or song files may be selected for playback using the metadata tag procedure or voting procedure described herein, with the song files being played back one at a time without creation of a song file play list. According to some embodiments, the host terminal may only coordinate selection of song files for playback and instruct selected participant terminals to send song files (*e.g.*, via streaming or as a complete file) to one or more playback device(s) (*e.g.*, other participant terminals, the host terminal, or the media player) or to play the song file on the originating participant terminal only. According to some embodiments, the "host" status may shift among the mobile terminals **10A-E**.

[0123] The application programs described herein, including the song management module **40** and the light effects management module **44**, are illustrative of programs that implement various features according to embodiments of the present invention. It will be appreciated that other and/or additional application programs may be employed in accordance with embodiments of the present invention.

[0124] Although **Figure 1** illustrates an exemplary hardware/software architecture that may be used in mobile terminals and/or other electronic devices for management and playback of song files, it will be understood that the present invention is not limited to such a configuration but is intended to encompass any configuration capable of carrying out operations described herein. For example, although the memory **34** is illustrated as separate from the controller **30**, the memory **34** or portions thereof may be considered as a part of the controller **30**. More generally, while particular functionalities are shown in particular blocks by way of illustration, functionalities of different blocks and/or portions

thereof may be combined, divided, and/or eliminated. Moreover, the functionality of the hardware/software architecture of **Figure 1** may be implemented as a single processor system or a multi-processor system in accordance with various embodiments of the present invention.

[0125] Many alterations and modifications may be made by those having ordinary skill in the art, given the benefit of present disclosure, without departing from the spirit and scope of the invention. Therefore, it must be understood that the illustrated embodiments have been set forth only for the purposes of example, and that it should not be taken as limiting the invention as defined by the following claims. The following claims, therefore, are to be read to include not only the combination of elements which are literally set forth but all equivalent elements for performing substantially the same function in substantially the same way to obtain substantially the same result. The claims are thus to be understood to include what is specifically illustrated and described above, what is conceptually equivalent, and also what incorporates the essential idea of the invention.

CLAIMS

1. A mobile wireless communication terminal comprising:

a wireless communication module that is configured to communicate with other communication terminals over a wireless interface; and

a controller that is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, to receive from the at least one participant wireless communication terminal an identification of a compliant song file stored on the at least one participant wireless communication terminal and having a metadata tag associated therewith indicating that the compliant song file is classified in a prescribed song file category, and to execute playback of the compliant song file.

2. The wireless communication terminal according to claim 1, wherein the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to receive identifications of compliant songs from at least two of the plurality of participant wireless communication terminals.

3. The wireless communication terminal according to any of the claims 1-2, wherein the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to execute playback of the compliant song file simultaneously on the plurality of participant wireless communication terminals.

4. The wireless communication terminal according to any of the claims 1-3, wherein the controller is configured to retrieve the compliant song file from the at least one participant wireless communication terminal for playback.

5. The wireless communication terminal according to any of the claims 1-4, wherein:

the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface; and

the controller is configured to establish the connection with the at least one participant wireless communication terminal via the wireless communication module via the direct point-to-point wireless interface, and to receive the identification of a compliant song file from the at least one participant wireless communication terminal via the direct point-to-point wireless interface.

6. The wireless communication terminal according to any of the claims 1-5, wherein the wireless communication module comprises a Bluetooth transmitter.

7. The wireless communication terminal according to any of the claims 1-6, wherein the wireless communication terminal includes a cellular telephone.

8. A mobile wireless communication terminal comprising:

a wireless communication module that is configured to communicate with other communication terminals over a wireless interface; and

a controller that is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, to maintain a list of nominated song files, to receive at least one vote message from the at least one participant wireless communication terminal, to determine an elected song file from the list of nominated song files based on the at least one vote message, and to execute playback of the elected song file.

9. The wireless communication terminal according claim 8, wherein the controller is configured to receive an identification of a nominated song file from the at least one participant wireless communication terminal, and to add the identification of the nominated song file to the list of nominated song files.

10. The wireless communication terminal according to any of the claims 8-9, wherein the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to receive vote messages from at least two of the plurality of participant wireless communication terminals.

11. The wireless communication terminal according to any of the claims 8-10, wherein the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to execute playback of the elected song file simultaneously on the plurality of participant wireless communication terminals.

12. The wireless communication terminal according to any of the claims 8-11, wherein the controller is configured to retrieve the elected song file from the at least one participant wireless communication terminal for playback.

13. The wireless communication terminal according to any of the claims 8-12, wherein:

the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface; and

the controller is configured to establish the connection with the at least one participant wireless communication terminal via the wireless communication module via the direct point-to-point wireless interface, and to receive the at least one vote message from the at least one participant wireless communication terminal via the direct point-to-point wireless interface.

14. The wireless communication terminal according to any of the claims 8-13, wherein the wireless communication module comprises a Bluetooth transmitter.

15. The wireless communication terminal according to any of the claims 8-14, wherein the wireless communication terminal includes a cellular telephone.

16. A mobile wireless communication terminal comprising:

a wireless communication module that is configured to communicate with other communication terminals over a wireless interface; and

a controller that is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, and to send at least one light effect signal to the at least one participant wireless communication terminal instructing the at least one participant wireless communication terminal to control at least

one lighting device of the at least one participant wireless communication terminal in correspondence with playback of a song file.

17. The wireless communication terminal according claim 16, wherein the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, and to send light effect signals to each of the plurality of participant wireless communication terminals instructing each of the plurality of participant wireless communication terminals to control a lighting device thereof in correspondence with playback of the song file.

18. The wireless communication terminal according to claim 17, wherein the controller is configured to send light effect signals to each of the plurality of participant wireless communication terminals instructing the plurality of participant wireless communication terminals to control the lighting devices thereof differently from one another.

19. The wireless communication terminal according to claim 18, wherein the controller is configured to send light effect signals to each of the plurality of participant wireless communication terminals so as to cause the plurality of participant wireless communication terminals to display on respective displays thereof an image that moves over time from the display of a first of the plurality of participant wireless communication terminals to the display of a second of the plurality of participant wireless communication terminals.

20. The wireless communication terminal according to any of the claims 18-19, wherein the controller is configured to send light effect signals to each of the plurality of participant wireless communication terminals so as to cause a lighting device of a first of the plurality of participant wireless communication terminals to respond to audio signals in a first audio frequency range and to cause a lighting device of a second of the plurality of participant wireless communication terminals to respond to audio signals in a second audio frequency range different from the first audio frequency range.

21. The wireless communication terminal according to any of the claims 17-20, wherein the controller is configured to execute playback of the song file simultaneously on the plurality of participant wireless communication terminals.

22. The wireless communication terminal according to any of the claims 16-21, wherein:

the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface; and

the controller is configured to establish the connection with the at least one participant wireless communication terminal via the wireless communication module via the direct point-to-point wireless interface, and to send the at least one light effect signal to the at least one participant wireless communication terminal via the direct point-to-point wireless interface.

23. The wireless communication terminal according to any of the claims 16-22, wherein the wireless communication module comprises a Bluetooth transmitter.

24. The wireless communication terminal according to any of the claims 16-23, wherein the wireless communication terminal includes a cellular telephone.

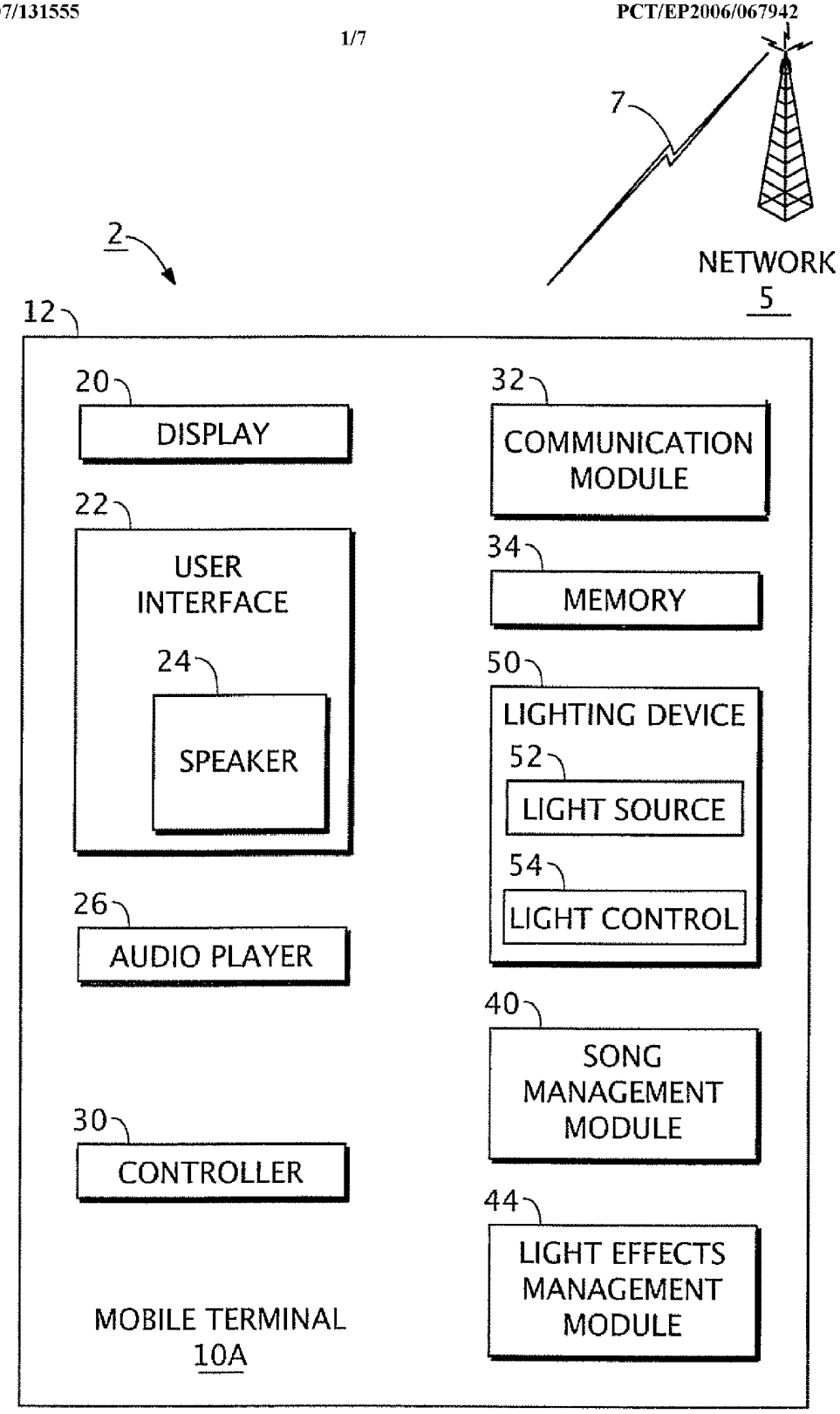

7
NETWORK
5
2
12
20
DISPLAY
22
USER INTERFACE
24
SPEAKER
26
AUDIO PLAYER
30
CONTROLLER
MOBILE TERMINAL
10A
32
COMMUNICATION MODULE
34
MEMORY
50
LIGHTING DEVICE
52
LIGHT SOURCE
54
LIGHT CONTROL
40
SONG MANAGEMENT MODULE
44
LIGHT EFFECTS MANAGEMENT MODULE

FIG. 1

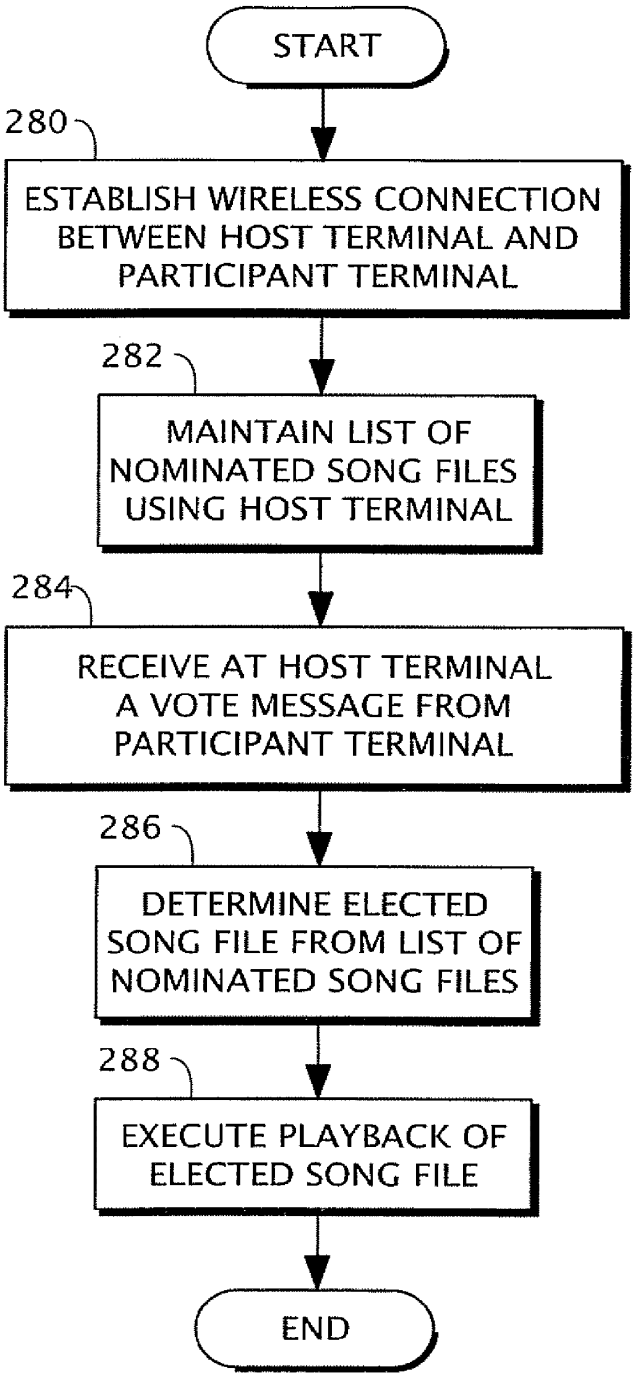

START
280
ESTABLISH WIRELESS CONNECTION BETWEEN HOST TERMINAL AND PARTICIPANT TERMINAL
282
MAINTAIN LIST OF NOMINATED SONG FILES USING HOST TERMINAL
284
RECEIVE AT HOST TERMINAL A VOTE MESSAGE FROM PARTICIPANT TERMINAL
286
DETERMINE ELECTED SONG FILE FROM LIST OF NOMINATED SONG FILES
288
EXECUTE PLAYBACK OF ELECTED SONG FILE
END

FIG. 2

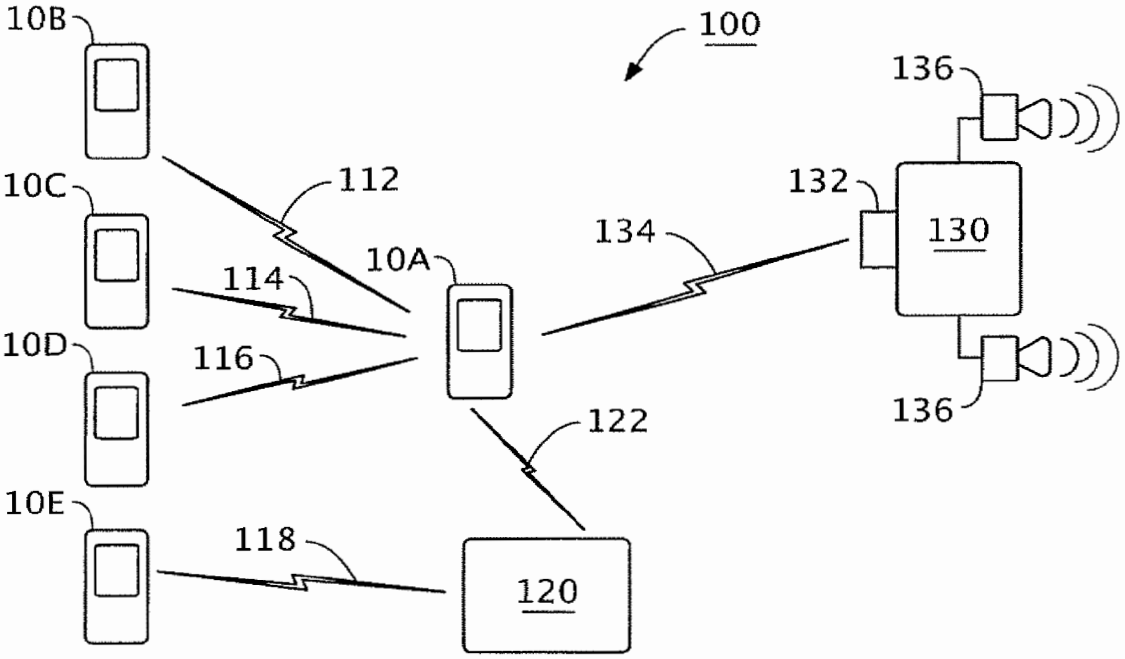

10B
100
136
10C
112
132
134
10A
130
114
10D
116
122
136
10E
118
120

FIG. 3

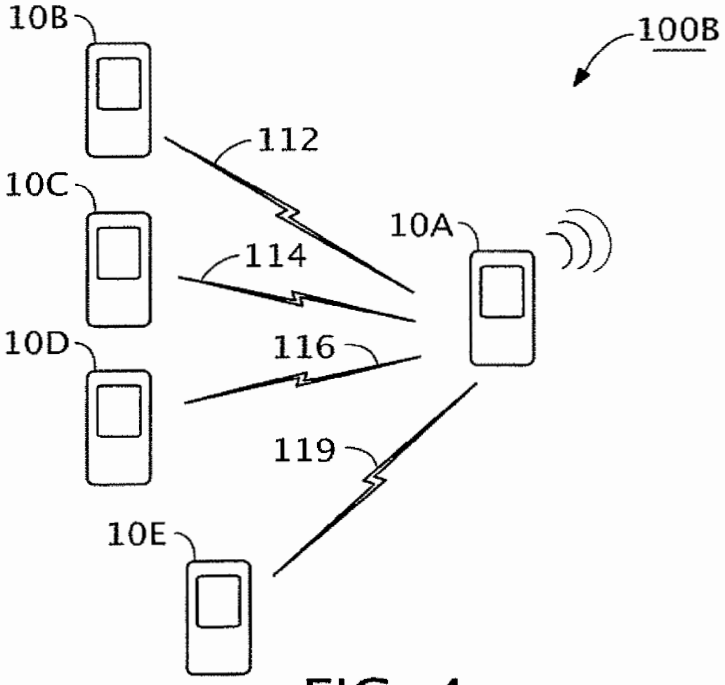

10B
100B
112
10C
10A
114
10D
116
119
10E

FIG. 4

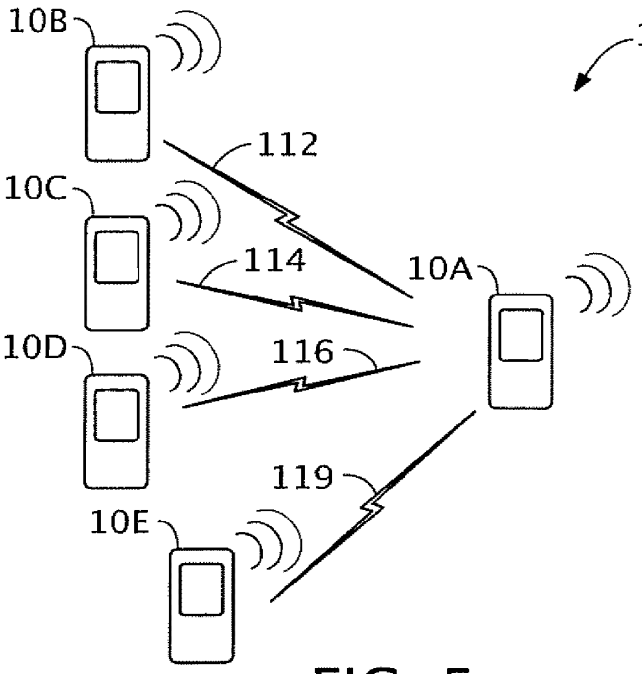

10B
100C
112
10C
114
10A
10D
116
119
10E

FIG. 5

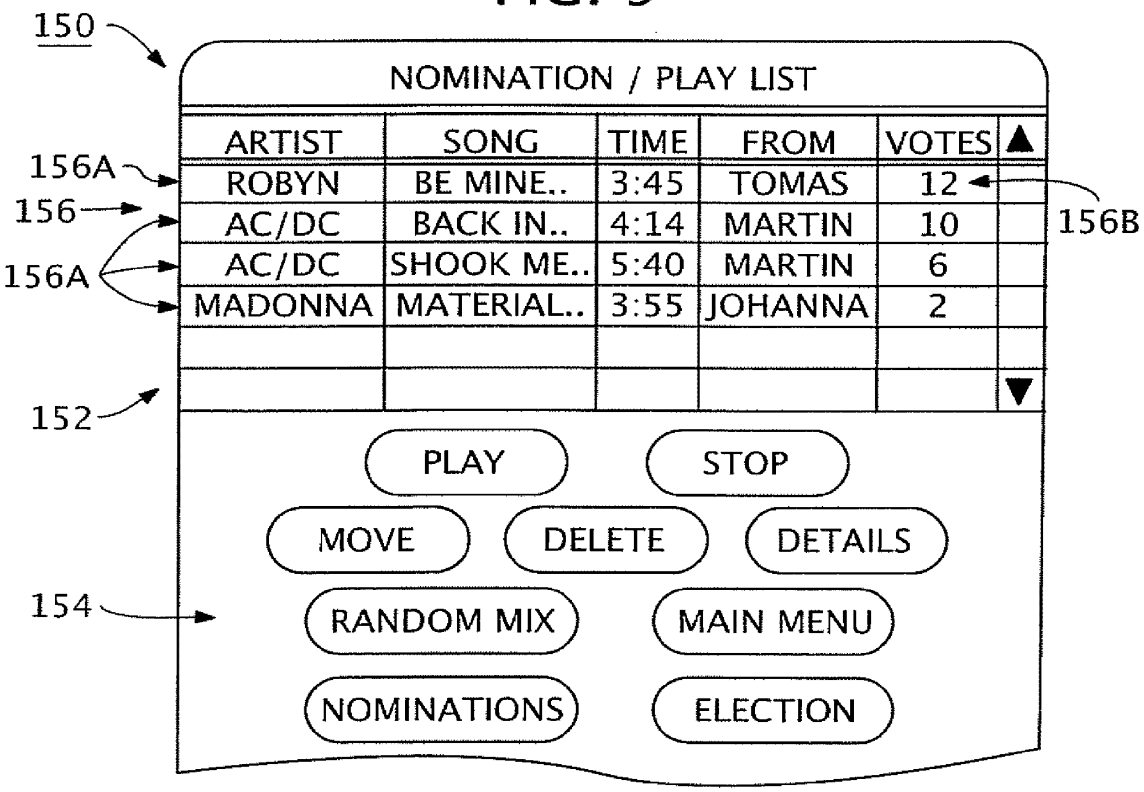

150
NOMINATION / PLAY LIST
ARTIST
SONG
TIME
FROM
VOTES
156A
ROBYN
BE MINE..
3:45
TOMAS
12
156
AC/DC
BACK IN..
4:14
MARTIN
10
156B
156A
AC/DC
SHOOK ME..
5:40
MARTIN
6
MADONNA
MATERIAL..
3:55
JOHANNA
2
152
PLAY
STOP
MOVE
DELETE
DETAILS
154
RANDOM MIX
MAIN MENU
NOMINATIONS
ELECTION

FIG. 6

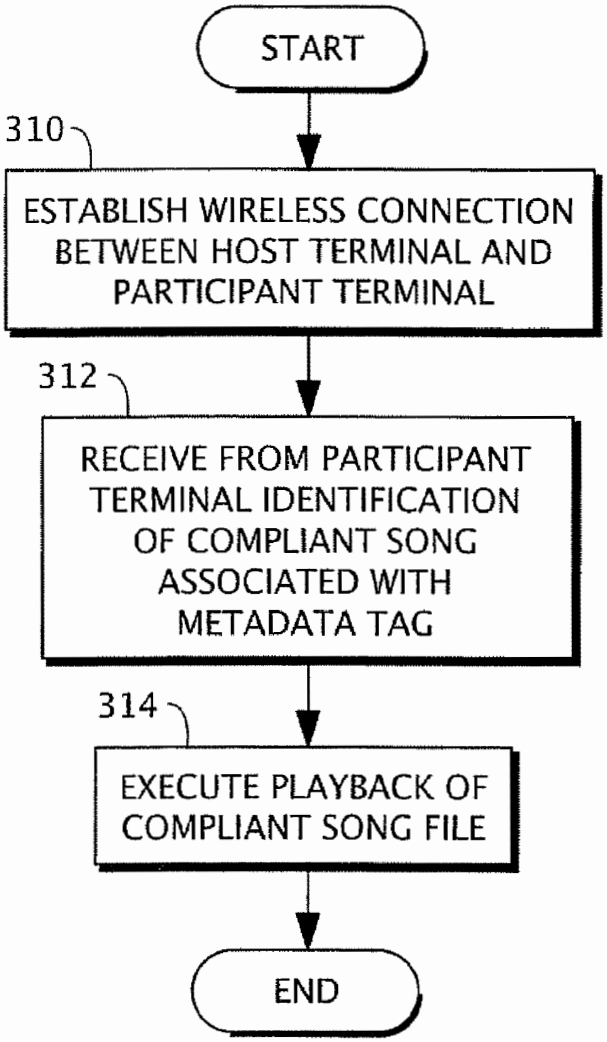

START
310
ESTABLISH WIRELESS CONNECTION BETWEEN HOST TERMINAL AND PARTICIPANT TERMINAL
312
RECEIVE FROM PARTICIPANT TERMINAL IDENTIFICATION OF COMPLIANT SONG ASSOCIATED WITH METADATA TAG
314
EXECUTE PLAYBACK OF COMPLIANT SONG FILE
END

FIG. 7

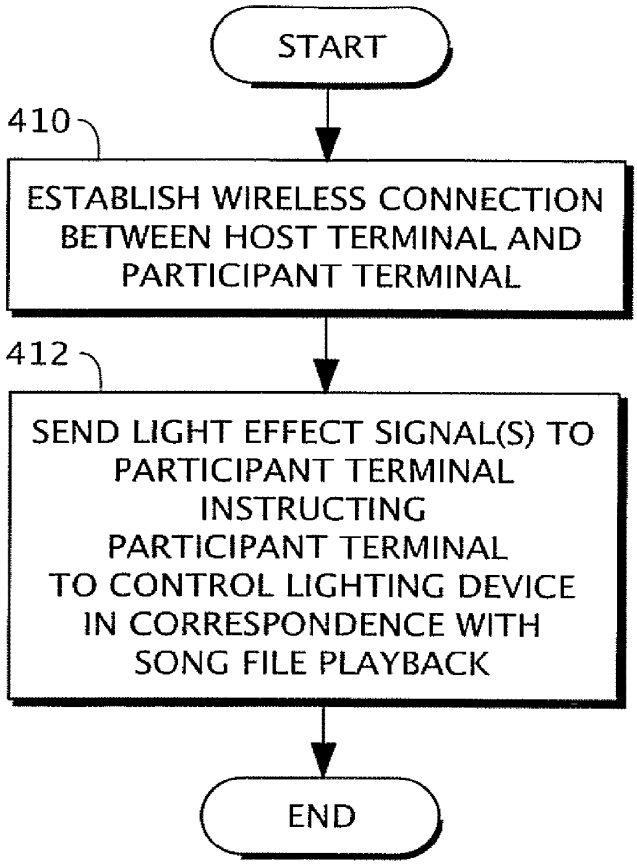

START
410
ESTABLISH WIRELESS CONNECTION BETWEEN HOST TERMINAL AND PARTICIPANT TERMINAL
412
SEND LIGHT EFFECT SIGNAL(S) TO PARTICIPANT TERMINAL INSTRUCTING PARTICIPANT TERMINAL TO CONTROL LIGHTING DEVICE IN CORRESPONDENCE WITH SONG FILE PLAYBACK
END

FIG. 8

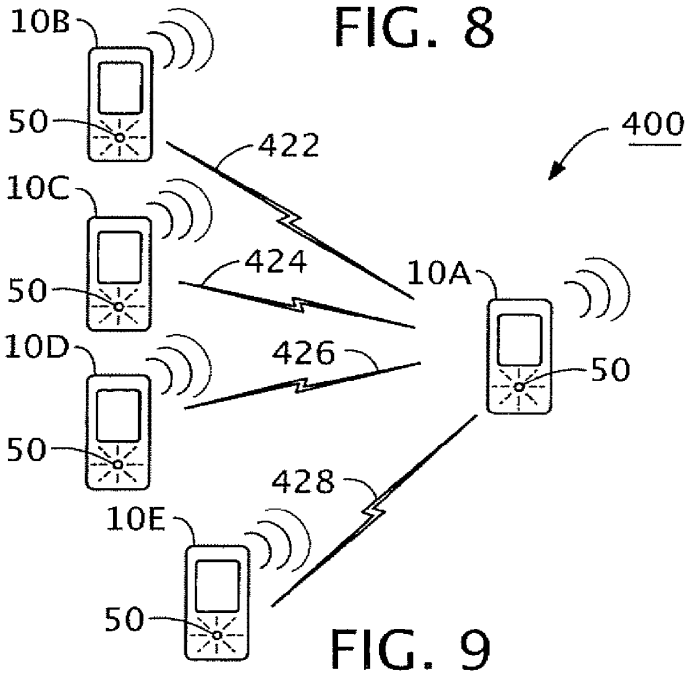

10B
50
422
400
10C
50
424
10A
10D
426
50
50
428
10E
50

FIG. 9

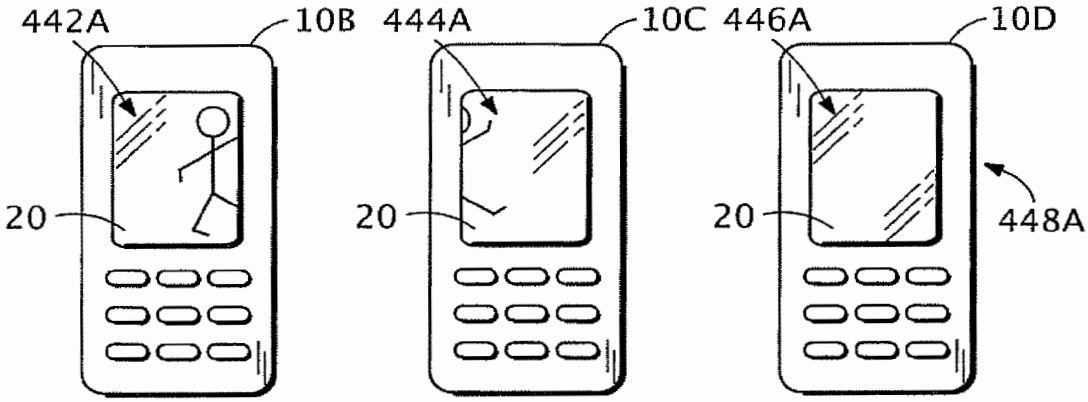


FIG. 10A

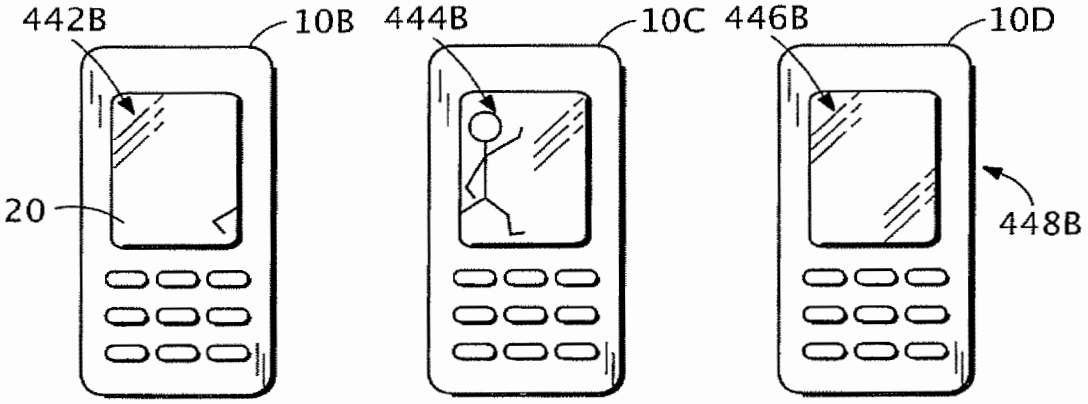


FIG. 10B

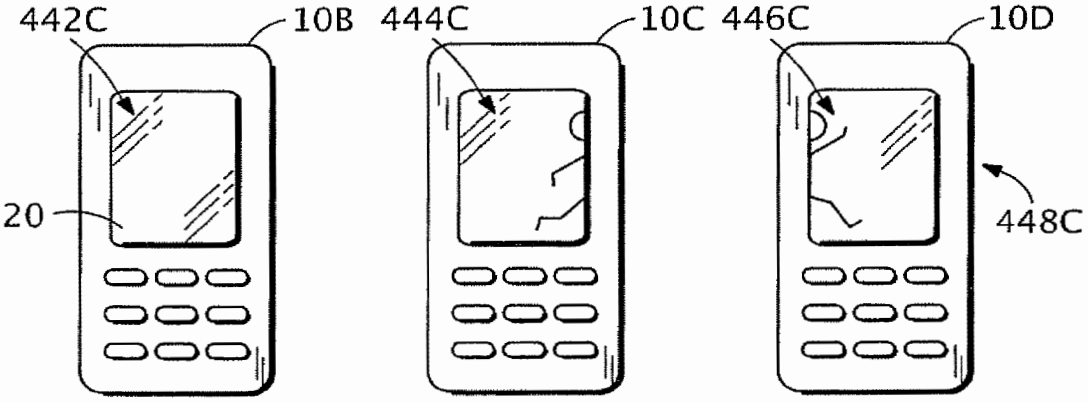


FIG. 10C

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/067942

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/06 H04L12/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/075169 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]; PHILIPS CORP [US]; VAN DE SLUIS B) 2 September 2004 (2004-09-02) abstract page 1, line 14 - line 30	1,2,4-7
Y	page 11, line 21 - line 27 page 16, line 13 - line 26 page 21, line 8 - page 22, line 11	3
Y	US 2002/168938 A1 (CHANG CHIN-CHI [TW]) 14 November 2002 (2002-11-14) abstract page 1, paragraphs 9,10 page 2, paragraph 24	3,11

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 April 2007	26/04/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	BLANCO CARDONA, P

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/067942

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/032419 A1 (SHIBASAKI HIROAKI [JP] ET AL) 13 February 2003 (2003-02-13) abstract page 9, paragraphs 138,139 page 10, paragraphs 145,149 page 11, paragraphs 158,159	1
X Y	US 2003/037157 A1 (PESTONI FLORIAN [US] ET AL) 20 February 2003 (2003-02-20) abstract page 1, paragraphs 3,4,11 page 2, paragraphs 21,35,36 page 4, paragraphs 51,59 page 5, paragraphs 67,68 page 6, paragraphs 78,80,85,87	8-10, 12-15 11
X A	US 2005/160270 A1 (GOLDBERG DAVID [US] ET AL) 21 July 2005 (2005-07-21) abstract page 2, paragraph 18 page 3, paragraph 33 page 12, paragraph 172 page 29, paragraph 330-333 page 30, paragraph 340 page 34, paragraphs 377,378	16-18, 20-24 19

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2006/067942

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

   Mobile terminal executing playback of a song file simultaneously on a plurality of wireless terminals

   ---

2. claims: 8-15

   Mobile terminal receiving vote messages for nominated song files

   ---

3. claims: 16-24

   Mobile terminal sending a signal to other wireless terminals instructing to control a lighting device in correspondence with the playback of a song file

   ---

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2006/067942

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004075169 A2	02-09-2004	EP 1597895 A2	23-11-2005
		JP 2006518507 T	10-08-2006
		KR 20050104382 A	02-11-2005
US 2002168938 A1	14-11-2002	US 2004248601 A1	09-12-2004
US 2003032419 A1	13-02-2003	EP 1303077 A2	16-04-2003
		JP 2003050589 A	21-02-2003
US 2003037157 A1	20-02-2003	NONE	
US 2005160270 A1	21-07-2005	NONE	

Form PCT/ISA/210 (patent family annex) (April 2005)

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(43) International Publication Date
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PCT/US2013/046386

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18 June 2013 (18.06.2013)

(25) Filing Language: English

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(30) Priority Data:
13/533,105 26 June 2012 (26.06.2012) US

(71) Applicant: **SONOS, INC.** [US/US]; 223 East De La Guerra Street, Santa Barbara, California 93101 (US).

(72) Inventors: **BATES, Paul**; 1512 Castillo Street, Santa Barbara, California 93101 (US). **KEYSER-ALLEN, Lee**; 25 First Street, Suite 300, Cambridge, Massachusetts 02141 (US). **LANG, Jonathan, P.**; 1147 West Valerio Street, Santa Barbara, California 93101 (US). **ROBERTS, Diane**; 25 First Street, Suite 300, Cambridge, Massachusetts 02141 (US).

(74) Agent: **JASPER, Joseph, T.**; Hanley, Flight & Zimmerman, LLC, 150 S. Wacker Drive, Suite 2100, Chicago, Illinois 60606 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Published:

— *with international search report (Art. 21(3))*

(54) Title: SYSTEMS, METHODS, APPARATUS, AND ARTICLES OF MANUFACTURE TO PROVIDE A CROWD-SOURCED PLAYLIST WITH GUEST ACCESS

(57) Abstract: Systems and methods are provided to offer a restricted playback mode playlist mode to allow one or more participating users to access a host's media playback system and interact with a reduced subset of functions in that system. An example method includes providing, via a local media playback system, a restricted playback mode open to a plurality of participating users, the restricted playback mode providing a subset of playback functions from the local media playback system to the participating users, the subset including addition of content to a playlist for playback via the local media playback system. The example method includes facilitating addition of content to the playlist by at least one participating user. The example method includes facilitating playback of content from the playlist in the restricted playback mode.

WO 2014/004182 A1

TITLE: SYSTEMS, METHODS, APPARATUS, AND ARTICLES OF MANUFACTURE TO PROVIDE A CROWD-SOURCED PLAYLIST WITH GUEST ACCESS

FIELD OF THE DISCLOSURE

[0001] The disclosure is related to consumer goods and, more particularly, to systems, products, features, services, and other items directed to media playback or some aspect thereof.

BACKGROUND

[0002] Technological advancements have increased the accessibility of music content, as well as other types of media, such as television content, movies, and interactive content. For example, a user can access audio, video, or both audio and video content over the Internet through an online store, an Internet radio station, a music service, a movie service, and so on, in addition to the more traditional avenues of accessing audio and video content. Demand for audio, video, and both audio and video content inside and outside of the home continues to increase.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Features, aspects, and advantages of the presently disclosed technology are better understood with regard to the following description, appended claims, and accompanying drawings where:

[0011] Figure 1 shows an illustration of an example system in which embodiments of the methods and apparatus disclosed herein can be implemented;

[0012] Figure 2A shows an illustration of an example zone player having a built-in amplifier and speakers;

[0013] Figure 2B shows an illustration of an example zone player having a built-in amplifier and connected to external speakers;

[0014] Figure 2C shows an illustration of an example zone player connected to an A/V receiver and speakers;

[0015] Figure 3 shows an illustration of an example controller;

[0016] Figure 4 shows an internal functional block diagram of an example zone player;

[0017] Figure 5 shows an internal functional block diagram of an example controller;

[0018] Figure 6 depicts an example shared listening zone group including multiple zones in which multiple users, via multiple controllers can control music played in the zone group via a plurality of media playback devices;

[0019] Figure 7 illustrates a flow diagram of an example method to implement a party playlist mode in a media playback system;

[0020] Figure 8 illustrates a flow diagram of an example method to facilitate addition of content to a party playlist.

[0021] Figures 9-15 illustrate example user interfaces facilitating content selection, playback and configuration in a party playlist mode.

[0022] In addition, the drawings are for the purpose of illustrating example embodiments, but it is understood that the present disclosure is not limited to the arrangements and instrumentality shown in the drawings.

DETAILED DESCRIPTION

I. Overview

[0023] Listening to audio content out loud can be a social activity that involves family, friends, or both. Audio content may include, for instance, music, talk radio, books, audio from television, and other audible material. For example, in a household, people may play music out loud at parties and other social gatherings. In such an environment, people may wish to play the music in one listening zone or multiple listening zones simultaneously, such that the music in each listening zone may be synchronized, without audible echoes or glitches. Such an experience may be further enriched when people, for example, browse audio sources, add a music track to a playback queue, learn more about a music track (such as track title or track artists), or view what music track is next in the playback queue.

[0024] Listening to audio content out loud can also be an individual experience. For example, an individual may play music out loud for themselves in the morning before work, in the evening during dinner, or at other times throughout the day at home, work, or on the road. For these individual experiences, the individual may choose to either use headphones, or limit the out loud playback of audio content to a single zone or area.

[0025] Discovery of audio can also be an important element of the experience. By way of illustration, discovery may involve friends sharing their latest favorite new song, artist, or playlist with each other. In some cases, discovery may involve browsing music magazines and periodicals that regularly review the latest releases. In addition, some online music services, radio stations, and disc jockeys are also means for people to share and discover new music or audio.

[0026] Example systems, methods, apparatus, and articles of manufacture disclosed herein provide for configuration of a playback system in a restricted access mode (e.g., a party playlist mode) in which authorized or other participating users can access and interact with a certain specified set of content and system function. For example, an authorized user can view a library of available content for playback and select content to be added to the playlist (e.g., perhaps subject to approval of the host/moderator and/or a vote of other participants). Example systems and methods disclosed and described herein may be advantageously used to provide improved

usability and configurability for varied playback of media content (e.g., audio and/or video) in a network environment.

[0027] Many other embodiments are provided and described herein.

II. An Example Operating Environment

[0028] Referring now to the drawings, in which like numerals can refer to like parts throughout the figures, Figure 1 shows an example system 100 in which one or more embodiments disclosed herein can be practiced or implemented.

[0029] By way of illustration, system 100 represents a home presently configured with multiple zones, though the home could have been configured with only one zone. Each zone in the home, for example, may represent a different room or space, such as an office, bathroom, bedroom, kitchen, dining room, family room, home theater room, utility or laundry room, and patio. A single zone might also include multiple rooms if so configured. One or more of zone players 102-124 are shown in each respective zone of the home. A zone player 102-124, also referred to as a playback device, multimedia unit, speaker, player, and so on, provides audio, video, and/or audiovisual output. Controller 130 provides control to system 100. Controller 130 may be fixed to a zone, or alternatively, mobile such that it can be moved about the zones. System 100 may also include more than one controller 130. System 100 illustrates an example whole house audio system, though it is understood that the technology described herein is not limited to its particular place of application or to an expansive system like a whole house audio system 100 of Figure 1.

a. Example zone players

[0030] Figures 2A, 2B, and 2C show example types of zone players. Zone players 200, 202, and 204 of Figures 2A, 2B, and 2C, respectively, can correspond to any of the zone players 102-124 of Figure 1, for example. In some embodiments, audio is reproduced using only a single zone player, such as by a full-range player. In some embodiments, audio is reproduced using two or more zone players, such as by using a combination of full-range players or a combination of full-range and specialized players. In some embodiments, zone players 200-204 may also be referred to as a "smart speaker," because they contain processing capabilities beyond the reproduction of audio, more of which is described below.

[0031] Figure 2A illustrates zone player 200 that includes sound producing equipment 208 capable of reproducing full-range sound. The sound may come from an audio signal that is received and processed by zone player 200 over a wired or wireless data network. Sound producing equipment 208 includes one or more built-in amplifiers and one or more speakers. A built-in amplifier is described more below with respect to Figure 4. A speaker or acoustic transducer can include, for example, any of a tweeter, a mid-range driver, a low-range driver, and a subwoofer. In some embodiments, zone player 200 can be statically or dynamically configured to play stereophonic audio, monaural audio, or both. In some embodiments, zone player 200 is configured to reproduce a subset of full-range sound, such as when zone player 200 is grouped with other zone players to play stereophonic audio, monaural audio, and/or surround audio or when the audio content received by zone player 200 is less than full-range.

[0032] Figure 2B illustrates zone player 202 that includes a built-in amplifier to power a set of detached speakers 210. A detached speaker can include, for example, any type of loudspeaker. Zone player 202 may be configured to power one, two, or more separate loudspeakers. Zone player 202 may be configured to communicate an audio signal (e.g., right and left channel audio or more channels depending on its configuration) to the detached speakers 210 via a wired path.

[0033] Figure 2C illustrates zone player 204 that does not include a built-in amplifier, but is configured to communicate an audio signal, received over a data network, to an audio (or "audio/video") receiver 214 with built-in amplification.

[0034] Referring back to Figure 1, in some embodiments, one, some, or all of the zone players 102 to 124 can retrieve audio directly from a source. For example, a zone player may contain a playlist or queue of audio items to be played (also referred to herein as a "playback queue"). Each item in the queue may comprise a uniform resource identifier (URI) or some other identifier. The URI or identifier can point the zone player to the audio source. The source might be found on the Internet (e.g., the cloud), locally from another device over data network 128, the controller 130, stored on the zone player itself, or from an audio source communicating directly to the zone player. In some embodiments, the zone player can reproduce the audio itself, send it to another zone player for reproduction, or both where the audio is played by the zone player and one or more additional zone players in synchrony. In some embodiments, the zone player can

play a first audio content (or not play at all), while sending a second, different audio content to another zone player(s) for reproduction.

[0035] By way of illustration, SONOS, Inc. of Santa Barbara, California presently offers for sale zone players referred to as a "PLAY:5," "PLAY:3," "CONNECT:AMP," "CONNECT," and "SUB." Any other past, present, and/or future zone players can additionally or alternatively be used to implement the zone players of example embodiments disclosed herein. Additionally, it is understood that a zone player is not limited to the particular examples illustrated in Figures 2A, 2B, and 2C or to the SONOS product offerings. For example, a zone player may include a wired or wireless headphone. In yet another example, a zone player might include a sound bar for television. In yet another example, a zone player can include or interact with a docking station for an Apple IPOD™ or similar device.

b. Example controllers

[0036] Figure 3 illustrates an example wireless controller 300 in docking station 302. By way of illustration, controller 300 can correspond to controlling device 130 of Figure 1. Docking station 302, if provided, may be used to charge a battery of controller 300. In some embodiments, controller 300 is provided with a touch screen 304 that allows a user to interact through touch with the controller 300, for example, to retrieve and navigate a playlist of audio items, control operations of one or more zone players, and provide overall control of the system configuration 100. In certain embodiments, any number of controllers can be used to control the system configuration 100. In some embodiments, there can be a limit set on the number of controllers that can control the system configuration 100. The controllers might be wireless like wireless controller 300 or wired to data network 128.

[0037] In some embodiments, if more than one controller is used in system 100, then each controller may be coordinated to display common content, and may all be dynamically updated to indicate changes made from a single controller. Coordination can occur, for instance, by a controller periodically requesting state information directly or indirectly from one or more zone players; the state information may provide information about system 100, such as current zone group configuration, what is playing in one or more zones, volume levels, and other items of interest. The state information may be passed around on data network 128 between zone players (and controllers, if so desired) as needed or as often as programmed.

[0038] In addition, an application running on any network-enabled portable device, such as an IPHONE™, IPAD™, ANDROID™ powered phone, or any other smart phone or network-enabled device can be used as controller 130. An application running on a laptop or desktop personal computer (PC) or MAC™ can also be used as controller 130. Such controllers may connect to system 100 through an interface with data network 128, a zone player, a wireless router, or using some other configured connection path. Example controllers offered by SONOS, Inc. of Santa Barbara, California include a "Controller 200," "SONOS® CONTROL," "SONOS® Controller for IPHONE™," "SONOS® Controller for IPAD™," "SONOS® Controller for ANDROID™, "SONOS® Controller for MAC or PC."

c. Example data connection

[0039] Zone players 102 to 124 of Figure 1 are coupled directly or indirectly to a data network, such as data network 128. Controller 130 may also be coupled directly or indirectly to data network 128 or individual zone players. Data network 128 is represented by an octagon in the figure to stand out from other representative components. While data network 128 is shown in a single location, it is understood that such a network is distributed in and around system 100. Particularly, data network 128 can be a wired network, a wireless network, or a combination of both wired and wireless networks. In some embodiments, one or more of the zone players 102-124 are wirelessly coupled to data network 128 based on a proprietary mesh network. In some embodiments, one or more of the zone players 102-124 are wirelessly coupled to data network 128 using a non-mesh topology. In some embodiments, one or more of the zone players 102-124 are coupled via a wire to data network 128 using Ethernet or similar technology. In addition to the one or more zone players 102-124 connecting to data network 128, data network 128 can further allow access to a wide area network, such as the Internet.

[0040] In some embodiments, connecting any of the zone players 102-124, or some other connecting device, to a broadband router, can create data network 128. Other zone players 102-124 can then be added wired or wirelessly to the data network 128. For example, a zone player (e.g., any of zone players 102-124) can be added to the system configuration 100 by simply pressing a button on the zone player itself (or perform some other action), which enables a connection to be made to data network 128. The broadband router can be connected to an Internet Service Provider (ISP), for example. The broadband router can be used to form another

data network within the system configuration 100, which can be used in other applications (e.g., web surfing). Data network 128 can also be used in other applications, if so programmed. An example, second network may implement SonosNet protocol, developed by SONOS, Inc. of Santa Barbara. Sonsonate represents a secure, AES-encrypted, peer-to-peer wireless mesh network. Alternatively, in certain embodiments, the data network 128 is the same network, such as a traditional wired or wireless network, used for other applications in the household.

d. Example zone configurations

[0041] A particular zone can contain one or more zone players. For example, the family room of Figure 1 contains two zone players 106 and 108, while the kitchen is shown with one zone player 102. In another example, the home theater room contains additional zone players to play audio from a 5.1 channel or greater audio source (e.g., a movie encoded with 5.1 or greater audio channels). In some embodiments, one can position a zone player in a room or space and assign the zone player to a new or existing zone via controller 130. As such, zones may be created, combined with another zone, removed, and given a specific name (e.g., "Kitchen"), if so desired and programmed to do so with controller 130. Moreover, in some embodiments, zone configurations may be dynamically changed even after being configured using controller 130 or some other mechanism.

[0042] In some embodiments, if a zone contains two or more zone players, such as the two zone players 106 and 108 in the family room, then the two zone players 106 and 108 can be configured to play the same audio source in synchrony, or the two zone players 106 and 108 can be paired, allowing the separate audio channels to be played by different players, for example. In other words, the stereo effects of a sound can be reproduced or enhanced through the two zone players 106 and 108, one for the left sound and the other for the right sound. In certain embodiments, paired zone players (also referred to as "bonded zone players") can play audio in synchrony with other zone players in the same or different zones.

[0043] In some embodiments, two or more zone players can be sonically consolidated to form a single, consolidated zone player. A consolidated zone player (though made up of multiple, separate devices) can be configured to process and reproduce sound differently than an unconsolidated zone player or zone players that are paired, because a consolidated zone player will have additional speaker drivers from which sound can be passed. The consolidated zone

player can further be paired with a single zone player or yet another consolidated zone player. Each playback device of a consolidated playback device can be set in a consolidated mode, for example.

[0044] According to some embodiments, one can continue to do any of: group, consolidate, and pair zone players, for example, until a desired configuration is complete. The actions of grouping, consolidation, and pairing are preferably performed through a control interface, such as using controller 130, and not by physically connecting and re-connecting speaker wire, for example, to individual, discrete speakers to create different configurations. As such, certain embodiments described herein provide a more flexible and dynamic platform through which sound reproduction can be offered to the end-user.

e. Example audio sources

[0045] In some embodiments, each zone can play from the same audio source as another zone or each zone can play from a different audio source. For example, someone can be grilling on the patio and listening to jazz music via zone player 124, while someone is preparing food in the kitchen and listening to classical music via zone player 102. Further, someone can be in the office listening to the same jazz music via zone player 110 that is playing on the patio via zone player 124. In some embodiments, the jazz music played via zone players 110 and 124 is played in synchrony. Synchronizing playback amongst zones allows for someone to pass through zones while seamlessly (or substantially seamlessly) listening to the audio. Further, zones can be put into a "party mode" such that all associated zones will play audio in synchrony.

[0046] Sources of audio content to be played by zone players 102-124 are numerous. In some embodiments, music on a zone player itself may be accessed and a played. In some embodiments, music from a personal library stored on a computer or networked-attached storage (NAS) may be accessed via the data network 128 and played. In some embodiments, Internet radio stations, shows, and podcasts can be accessed via the data network 128. Music or cloud services that let a user stream and/or download music and audio content can be accessed via the data network 128. Further, music can be obtained from traditional sources, such as a turntable or CD player, via a line-in connection to a zone player, for example. Audio content can also be accessed using a different protocol, such as AIRPLAY™, which is a wireless technology by Apple, Inc., for example. Audio content received from one or more sources can be shared

amongst the zone players 102 to 124 via data network 128 and/or controller 130. The above-disclosed sources of audio content are referred to herein as network-based audio information sources. However, network-based audio information sources are not limited thereto.

[0047] In some embodiments, the example home theater zone players 116, 118, 120 are coupled to an audio information source such as a television 132. In some examples, the television 132 is used as a source of audio for the home theater zone players 116, 118, 120, while in other examples audio information from the television 132 can be shared with any of the zone players 102-124 in the audio system 100.

III. Zone Players

[0048] Referring now to Figure 4, there is shown an example block diagram of a zone player 400 in accordance with an embodiment. Zone player 400 includes a network interface 402, a processor 408, a memory 410, an audio processing component 412, one or more modules 414, an audio amplifier 416, and a speaker unit 418 coupled to the audio amplifier 416. Figure 2A shows an example illustration of such a zone player. Other types of zone players may not include the speaker unit 418 (e.g., such as shown in Figure 2B) or the audio amplifier 416 (e.g., such as shown in Figure 2C). Further, it is contemplated that the zone player 400 can be integrated into another component. For example, the zone player 400 could be constructed as part of a television, lighting, or some other device for indoor or outdoor use.

[0049] In some embodiments, network interface 402 facilitates a data flow between zone player 400 and other devices on a data network 128. In some embodiments, in addition to getting audio from another zone player or device on data network 128, zone player 400 may access audio directly from the audio source, such as over a wide area network or on the local network. In some embodiments, the network interface 402 can further handle the address part of each packet so that it gets to the right destination or intercepts packets destined for the zone player 400. Accordingly, in certain embodiments, each of the packets includes an Internet Protocol (IP)-based source address as well as an IP-based destination address.

[0050] In some embodiments, network interface 402 can include one or both of a wireless interface 404 and a wired interface 406. The wireless interface 404, also referred to as a radio frequency (RF) interface, provides network interface functions for the zone player 400 to wirelessly communicate with other devices (e.g., other zone player(s), speaker(s), receiver(s),

component(s) associated with the data network 128, and so on) in accordance with a communication protocol (e.g., any wireless standard including IEEE 802.11a, 802.11b, 802.11g, 802.11n, or 802.15). Wireless interface 404 may include one or more radios. To receive wireless signals and to provide the wireless signals to the wireless interface 404 and to transmit wireless signals, the zone player 400 includes one or more antennas 420. The wired interface 406 provides network interface functions for the zone player 400 to communicate over a wire with other devices in accordance with a communication protocol (e.g., IEEE 802.3). In some embodiments, a zone player includes both of the interfaces 404 and 406. In some embodiments, a zone player 400 includes only the wireless interface 404 or the wired interface 406.

[0051] In some embodiments, the processor 408 is a clock-driven electronic device that is configured to process input data according to instructions stored in memory 410. The memory 410 is data storage that can be loaded with one or more software module(s) 414, which can be executed by the processor 408 to achieve certain tasks. In the illustrated embodiment, the memory 410 is a tangible machine-readable medium storing instructions that can be executed by the processor 408. In some embodiments, a task might be for the zone player 400 to retrieve audio data from another zone player or a device on a network (e.g., using a uniform resource locator (URL) or some other identifier). In some embodiments, a task may be for the zone player 400 to send audio data to another zone player or device on a network. In some embodiments, a task may be for the zone player 400 to synchronize playback of audio with one or more additional zone players. In some embodiments, a task may be to pair the zone player 400 with one or more zone players to create a multi-channel audio environment. Additional or alternative tasks can be achieved via the one or more software module(s) 414 and the processor 408.

[0052] The audio processing component 412 can include one or more digital-to-analog converters (DAC), an audio preprocessing component, an audio enhancement component or a digital signal processor, and so on. In some embodiments, the audio processing component 412 may be part of processor 408. In some embodiments, the audio that is retrieved via the network interface 402 is processed and/or intentionally altered by the audio processing component 412. Further, the audio processing component 412 can produce analog audio signals. The processed analog audio signals are then provided to the audio amplifier 416 for play back through speakers 418. In addition, the audio processing component 412 can include circuitry to process analog or digital signals as inputs to play from zone player 400, send to another zone player on a network,

or both play and send to another zone player on the network. An example input includes a line-in connection (e.g., an auto-detecting 3.5mm audio line-in connection).

[0053] The audio amplifier 416 is a device(s) that amplifies audio signals to a level for driving one or more speakers 418. The one or more speakers 418 can include an individual transducer (e.g., a "driver") or a complete speaker system that includes an enclosure including one or more drivers. A particular driver can be a subwoofer (e.g., for low frequencies), a mid-range driver (e.g., for middle frequencies), and a tweeter (e.g., for high frequencies), for example. An enclosure can be sealed or ported, for example. Each transducer may be driven by its own individual amplifier.

[0054] A commercial example, presently known as the PLAY:5, is a zone player with a built-in amplifier and speakers that is capable of retrieving audio directly from the source, such as on the Internet or on the local network, for example. In particular, the PLAY:5 is a five-amp, five-driver speaker system that includes two tweeters, two mid-range drivers, and one woofer. When playing audio content via the PLAY:5, the left audio data of a track is sent out of the left tweeter and left mid-range driver, the right audio data of a track is sent out of the right tweeter and the right mid-range driver, and mono bass is sent out of the subwoofer. Further, both mid-range drivers and both tweeters have the same equalization (or substantially the same equalization). That is, they are both sent the same frequencies, but from different channels of audio. Audio from Internet radio stations, online music and video services, downloaded music, analog audio inputs, television, DVD, and so on, can be played from the PLAY:5.

IV. Controller

[0055] Referring now to Figure 5, there is shown an example block diagram for controller 500, which can correspond to the controlling device 130 in Figure 1. Controller 500 can be used to facilitate the control of multi-media applications, automation and others in a system. In particular, the controller 500 may be configured to facilitate a selection of a plurality of audio sources available on the network and enable control of one or more zone players (e.g., the zone players 102-124 in Figure 1) through a wireless or wired network interface 508. According to one embodiment, the wireless communications is based on an industry standard (e.g., infrared, radio, wireless standard including IEEE 802.11a, 802.11b 802.11g, 802.11n, or 802.15, and so on). Further, when a particular audio is being accessed via the controller 500 or being played via

a zone player, a picture (e.g., album art) or any other data, associated with the audio and/or audio source can be transmitted from a zone player or other electronic device to controller 500 for display.

[0056] Controller 500 is provided with a screen 502 and an input interface 514 that allows a user to interact with the controller 500, for example, to navigate a playlist of many multimedia items and to control operations of one or more zone players. The screen 502 on the controller 500 can be an LCD screen, for example. The screen 500 communicates with and is commanded by a screen driver 504 that is controlled by a microcontroller (e.g., a processor) 506. The memory 510 can be loaded with one or more application modules 512 that can be executed by the microcontroller 506 with or without a user input via the user interface 514 to achieve certain tasks. In some embodiments, an application module 512 is configured to facilitate grouping a number of selected zone players into a zone group and synchronizing the zone players for audio play back. In some embodiments, an application module 512 is configured to control the audio sounds (e.g., volume) of the zone players in a zone group. In operation, when the microcontroller 506 executes one or more of the application modules 512, the screen driver 504 generates control signals to drive the screen 502 to display an application specific user interface accordingly.

[0057] The controller 500 includes a network interface 508 that facilitates wired or wireless communication with a zone player. In some embodiments, the commands such as volume control and audio playback synchronization are sent via the network interface 508. In some embodiments, a saved zone group configuration is transmitted between a zone player and a controller via the network interface 508. The controller 500 can control one or more zone players, such as 102-124 of Figure 1. There can be more than one controller for a particular system, and each controller may share common information with another controller, or retrieve the common information from a zone player, if such a zone player stores configuration data (e.g., such as state information). Further, a controller can be integrated into a zone player.

[0058] It should be noted that other network-enabled devices such as an IPHONE®, IPAD® or any other smart phone or network-enabled device (e.g., a networked computer such as a PC or MAC®) can also be used as a controller to interact or control zone players in a particular environment. In some embodiments, a software application or upgrade can be downloaded onto a network-enabled device to perform the functions described herein.

[0059] In certain embodiments, a user can create a group or collection of zones referred to as a bonded zone including at least two zone players from the controller 500. The zone players in the bonded zone can play audio in a synchronized fashion, such that all of the zone players in the group play back an identical audio source or a list of identical audio sources in a synchronized manner such that no (or substantially no) audible delays or hiccups are to be heard. Similarly, in some embodiments, when a user increases the audio volume of the group from the controller 500, the signals or data of increasing the audio volume for the group are sent to one of the zone players and causes other zone players in the group to be increased together in volume.

[0060] A user via the controller 500 can group zone players into a zone group by activating a "Link Zones" or "Add Zone" soft button, or de-grouping a zone group by activating an "Unlink Zones" or "Drop Zone" button. For example, one mechanism for 'joining' zone players together for audio play back is to link a number of zone players together to form a group. To link a number of zone players together, a user can manually link each zone player or room one after the other. For example, assume that there is a multi-zone system that includes the following zones: Bathroom, Bedroom, Den, Dining Room, Family Room, and Foyer.

[0061] In certain embodiments, a user can link any number of the zone players (e.g., six zone players available in the example above), for example, by starting with a single zone and then manually linking each zone to that zone.

[0062] In certain embodiments, a set of zones can be dynamically linked together using a command to create a zone scene or theme (subsequent to first creating the zone scene). For instance, a "Morning" zone scene command can link the Bedroom, Office, and Kitchen zones together in one action. Without this single command, the user would manually and individually link each zone. The single command may include a mouse click, a double mouse click, a button press, a gesture, or some other programmed action. Other kinds of zone scenes can be programmed.

[0063] In certain embodiments, a zone scene can be triggered based on time (e.g., an alarm clock function). For instance, a zone scene can be set to apply at 8:00 am. The system can link appropriate zones automatically, set specific music to play, and then stop the music after a defined duration. Although any particular zone can be triggered to an "On" or "Off" state based on time, for example, a zone scene enables any zone(s) linked to the scene to play a predefined

audio (e.g., a favorable song, a predefined playlist) at a specific time and/or for a specific duration. If, for any reason, the scheduled music failed to be played (e.g., an empty playlist, no connection to a share, failed Universal Plug and Play (UPnP), no Internet connection for an Internet Radio station, and so on), a backup buzzer can be programmed to sound. The buzzer can include a sound file that is stored in a zone player, for example.

V. Example Configuration Systems and Methods

[0064] In an example system such as the ones shown in Figures 1 and 6, where multiple users can listen to the same audio content through one or more zone players such as those shown in Figures 2 and 4, the ability to provide crowd-sourced playlists and/or facilitate guest access to music services may be valuable.

[0065] An example system is shown in Figure 6, whereby a zone group 600 includes two zones, a Dining Room zone 610 and a Living Room zone 620, in which multiple users, via multiple controllers 630-633, can control the audio that is played in the zone group 600 via a plurality of playback devices 640-642 (e.g., a plurality of zone players and/or other media playback devices such as shown and described in Figures 1-4). As shown in the example of Figure 6, a media playback system can be configured to accept control and/or other input from multiple controllers 630-633, such as a controller 500, a smartphone, a tablet computer, a laptop computer, and/or other controlling device. Control, however, may be limited or otherwise restricted according to system permissions, preferences, etc., set by default, by owner, and so on.

[0066] In certain embodiments, a party playlist mode enables users with a phone or other controller (e.g., other device running a controller software application, etc.) that has access to the playback network to control music playback. In some embodiments, playback control includes adding content to a playback system, such as adding content to a playback queue (e.g., party playlist). In other embodiments, playback control includes moderation of content playback, such as moderating the content added to the party playlist. In some embodiments, the party playlist mode can facilitate moderation of content playback to users with a phone or other controller that has access to the playback network. In some embodiments, moderation of content playback can start with a single moderator and evolve to multiple moderators as time evolves (e.g., as the party goes on), for example. In one example embodiment, people with access to the playback network can be notified when new tracks are added and be asked to vote regarding addition of the track to

the playlist. In another example embodiment, the order or timing of the newly added track in the playlist can be voted on as well by people with access to the playback network.

[0067] In certain embodiments, playlist contributors are identified with the tracks they add and the identification of the contributors is shared with everyone to view. In this way, for example, listeners can know who added which song or track to the party playlist. In one example embodiment, the playlist contributor is not identified until their contribution has been accepted into the party playlist.

[0068] Certain embodiments provide guest access to allow participants in the playback system to bring their own content to the system on a temporary basis. For example, people can provide access to their music service accounts, the content on their mobile phones, their content stored in the cloud, and so on, for a temporary basis.

[0069] In certain embodiments, duplicate tracks or songs being added to the party playlist can be identified and rejected. For example, multiple users may simultaneously (or substantially simultaneously) add the same song or track to the playlist. To avoid multiple occurrences of the same song or track, the system can automatically reject duplicates.

[0070] Certain embodiments provide limited user access to control music playback in a shared environment. In some embodiments limited user access may apply restrictions on an entire media playback system, a single listening zone, and/or a listening zone group. In some example embodiments, limited user access may include restricting playback in certain specified listening zones and/or zone groups. In another example embodiment, limited user access may include restricting playback for a fixed time interval, during a particular time-of-day, and/or on a recurring basis.

[0071] In an example embodiment, limited user access includes a party playlist that gives limited access to play control of a particular listening zone and/or group of zones. For example, the party playlist may limit users to only adding songs or tracks to the playlist, whereas other functionality in the listening zone or zone group may be disabled. In another example, the party playlist may allow users to collectively decide (e.g., vote) if a new song or track should be added to the playlist, for example. In another example, the party playlist may also limit system configuration functionality, such as the zone grouping configuration, the music equalization

parameters, etc. In some example embodiments, the party playlist may only be in effect for a fixed time duration, and not require explicit disabling operation.

[0072] In an example embodiment, limited user access may be applied based on authentication of the user. For example, limited user access may be applied based on authentication of a controlling device which may include registration of the controlling device and its associated identifier. In another example, authentication may include all controller devices used in the media playback system over a defined time interval (e.g., a previous twenty-four (24) hours).

[0073] Certain embodiments provide shared music access for a limited time duration in a group listening environment. Shared music may be a library of tracks or a playlist on a physical device that is accessed wirelessly by the media playback system, for example. Shared music may be a subscription service accessed independently over the Internet and/or other network, for example (e.g., a cloud-based storage, music streaming service, etc.). Subscription service credentials may be passed directly to a playback system device, for example. Subscription service may be username/password or token, for example.

[0074] While illustrative examples provided below reference music or audio as content provided, video, images and/or other multimedia content may be provided in addition or instead.

[0075] Crowd-Sourced Playlist

[0076] In some embodiments, one or more users can create a multimedia playlist. For example, a 'party playlist' mode is provided to allow multiple users to add tracks to a queue for playback via a media playback system.

[0077] A media playback system can be put into party playlist mode by an authenticated user. In an example, the user is to "sign in" such as by entering a username, a password, or a username/password combination to be authenticated. In another example, the user may be authenticated by identifying a device used to control the system (e.g., the device may be identified by a unique identifier (ID) such as a Media Access Control (MAC) address that has been registered in the playback system). For example, a SONOS™ controller may be considered such a device, or a device with a SONOS™ controller application may be registered as such a device. In another example, "Jonathan's IPHONE™" may be considered such a device if the target playback system is Jonathan's SONOS™ system. In yet another example, devices that

have been used with respect to the media playback system within a certain time period (e.g., in a twenty-four (24)-hour period) may be considered registered. Alternatively, the playback system may be put into party playlist mode by anyone with access to the playback system.

[0078] The party playlist mode may be set to last for a fixed duration of time (e.g., four (4) hours), for example. The party playlist mode may be set to end at a specific time of day (e.g., 1 am), for example. The party playlist mode may last indefinitely until a user manually exits the mode, for example. In an embodiment, a password is generated when the playback system is put in party playlist mode and is used to exit party playlist mode. In another embodiment, no authentication is required to take the system out of party playlist mode.

[0079] Party playlist mode may apply to a single zone or zone grouping, multiple zones or zone groupings, or the entire media playback system, for example.

[0080] Once the system is put into party playlist mode, in some embodiments, users can only add music to the listening queue. Deleting tracks, changing the play mode (e.g., shuffle, repeat, etc.), or changing the system settings (e.g., zone group configuration, music equalization parameters, etc.) is not allowed. In some embodiments, some or all of the following rules or limitations are applied: an ability to modify content may be limited, an ability to affect order may be limited, an ability to adjust system configuration may be limited, and so on. For example, rules and/or other access permissions may limit whether anyone can add songs to the party playlist, no one can remove songs from the party playlist, only one song may be added at a time (rather than adding an entire album or set of content in a single action), etc. Artist repetition may be avoided by limiting a number of songs in the queue by the same artist, for example. Songs in the queue may be played randomly and/or in a predefined order, for example. In certain examples, once a song is played, the song is removed from the queue. In certain examples, no user can switch sources or change a zone grouping in party playlist mode. In other examples, certain users may be able to switch sources or change a zone grouping in party playlist mode.

[0081] A visual history of recently played tracks can be accessed and shown to users via a control device, for example. In certain embodiments, a graphical "Jukebox" screen can be shown on the control device.

[0082] In an embodiment, a method is used to determine if a new track should be added to the playlist. In an embodiment, all tracks are added to the playlist in an unrestricted fashion. In

another embodiment, the playlist is moderated by an "owner" of the media playback system. In another embodiment, the playlist is moderated by the crowd or collection of users. For example, when a user attempts to add a track to the playlist, notification is sent to users in the crowd. Notification can be in the form of an application-based notification (e.g., a notification message within a Sonos application), a text message, an instant message, or some other messaging scheme. Any number of users can be selected to participate in the moderation, and the user selection may be at random when a subset of the crowd is selected. Once notification is sent to the users to vote, they are given a fixed time duration (e.g., two (2) minutes) to vote on adding the track to the listening queue. The system can use a majority-rule to determine if the track is added or not. In certain embodiments, certain role(s) (e.g., a disc jockey (DJ), host, organizer, etc.) may have discretion or take priority to add or approve addition of a track to the party playlist, for example.

[0083] In an example in which duplicate songs are not allowed, multiple users may try to add the same track or song to the queue. In an embodiment, duplicate tracks are identified by comparing the source location and track identifiers. In another embodiment, duplicate tracks are identified by comparing the metadata (e.g., artist, track name, length of track, etc.) between the tracks. In yet another embodiment, duplicate tracks are identified by comparing the musical composition of both tracks. The comparison may be done directly in the system or via a service hosted locally or in the Internet "cloud", for example.

[0084] In an embodiment, the user or users that add a track to the queue are identified for others to see. In an embodiment, the user or users that add the track are identified in the queue alongside the track name. In another embodiment, the user or users that add the track are identified by drilling down (e.g., double-click, touch, hover over, etc.) on the track name.

[0085] In an embodiment, authentication mechanisms as described above may be used to identify the user or users that added the track. In another embodiment, the user may be asked to enter a name along with the track to be added.

[0086] In an embodiment, the user who added the track to the playlist is notified if the track has been successfully added or rejected from the listening queue.

[0087] Guest Access

[0088] In an example media playback system, music that is added to the party playlist can come from many different sources. In an embodiment, music can be selected from sources already associated with the playback system. Already-associated sources may include an indexed music library that is on a Local Area Network (e.g., music stored on a PC or MAC™ computer, a network attached storage device, a docked IPOD™ or IPHONE™, or another wired or wireless device that has been indexed as part of the playback system), an indexed music library that is stored in the "cloud" over the Internet (e.g., a cloud-based music storage such as Apple ICLOUD™ or Amazon Cloud Player, etc.), or an Internet music service that provides streaming content over the Internet (e.g., PANDORA™, RHAPSODY™, SPOTIFY™, etc.) . In another embodiment, the music can be played to the media playback system (e.g., a SONOS™ system) from a third party software application such as SPOTIFY™ or FACEBOOK™. In another embodiment, the music can be played directly from the device on which the content resides (e.g., music stored on an IPHONE™, IPAD™, IPOD™, or ANDROID™ device).

[0089] In another embodiment, a 'guest pass' mode allows users to share their music services with other users in the crowd on a temporary basis. For example, users may want to share their SPOTIFY™ account temporarily if the playback system does not have a SPOTIFY™ account already associated with the system. In another example, users wanting to share a personal playlist may want to share their SPOTIFY™ account temporarily even if the system already has a SPOTIFY™ account associated with it. In an embodiment, guest access requires the guest to be linked to the playback system. In an embodiment, the guest is linked to the playback system using a configuration sequence including a special button press on a system device. When the guest is linked to the playback system as a guest, user credentials (e.g., username/password, token, etc.) are transferred to the playback system from the user in a secure fashion. The user credentials are used to register the playback system with a music service, for example. In an embodiment, the user credentials are passed directly to a media playback system device using wired or wireless communication. In another embodiment, the user credentials are transmitted to a media playback system device from a mobile device by first connecting through the mobile network (e.g., a 3G or 4G network) and then connecting to the playback system through an Internet or other network connection. Guest access may be set to last for a fixed duration of time (e.g., four (4) hours). Guest access may be set to end at a specific time of day (e.g., 1 am). Guest access may last as long as the user is connected to the network, or it may last indefinitely until a

user manually exits the mode. In an embodiment, when guest access is terminated, the user credentials are purged from the system.

[0090] In certain embodiments, guest credentials (e.g., password) shall not be retrievable from the system. An owner of the account, however, may allow a 'user id' to be displayed by the system on controllers in certain circumstances (e.g., associated with a song playing from their account, similar to above user attribution). In an example, guest access may be terminated via a refutation mechanism that does not require the guest still be attached to the hosting system or on the local network. This could be via an Internet online multimedia authorization protocol (OMAP) or similar protocol using an Internet connection (including a mobile connection), for example.

[0091] Restricted Mode

[0092] In some embodiments, the example media playback system includes one or more restrictions that limit access to control music playback. Certain embodiments include a 'restricted' mode that limits users to certain functionality. In the example playback system described and disclosed above, the party playlist mode may limit user access to adding tracks to a listening queue, for example. In another example system, users are limited as to a time of day at which they can control the playback of music. In another example system, users are limited as to the zones or zone groups that they can control. For example, in a household with young children, parents may wish to limit their children to playback control only in the living room and the children's bedroom(s). In another example, parents may want to limit their children to playback control only during the hours of 9am to 7pm. In another example, parents may want to do both: limit their children to playback control only during the hours of 9am to 7pm and also only in the living room and child bedroom(s). In another example system, users are limited to the type of content that they can play. In some embodiments, the content is limited by the playback system using an "explicit" tag embedded in a digital music file. In another embodiment, the content is limited by the system to the location of the source or the streaming service.

[0093] In certain embodiments, a user may be limited in a number of tracks that the user can add to the queue. For example, the host can allot or credit the user with a number of tracks to be added, such as by selecting the user's controller from a list of linked controllers, by providing the user with a token or activation code, and so on. Each song added by the user to the party playlist

is deducted from the user's allotment or credit, for example. In an embodiment, the host is a business establishment, and the user is a customer of that establishment. The customer can influence the playlist at the establishment as they would with a traditional jukebox, for example.

[0094] Example Party Playlist Methods

[0095] Figure 7 illustrates a flow diagram of an example method 700 to implement a party playlist mode in a media playback system. At block 710, a playback or "Now Playing" screen is displayed. For example, a listing of a playlist and currently playing song can be displayed via a controller, such as controller 500 (e.g., a controller application running on an IPHONE™, ANDROID™, or IPAD™).

[0096] At block 720, a party playlist mode is selected. The mode may be manually selected by a user or selected according to a schedule and/or other automated trigger. For example, the user may select an option via a controller to trigger entry into the party playlist mode. In another example, a user may schedule the party playlist mode to begin at a certain time on a certain day for a party. At block 730, a user is authenticated to determine authorization of that user to enter the party playlist mode. For example, the user is authenticated based on a username and password, token, password alone, biometric identification, and so on. In another example, the user is authenticated based on the identification of the controller that is being used.

[0097] At block 740, the media playback system enters party playlist mode. In party playlist mode, user(s) (e.g., all users within range (e.g., at a party), authorized users, etc.) can add content to the party playlist for playback via a local playback system (e.g., a household SONOS™ system local to the party). In certain embodiments, in party playlist mode, user(s) can specify priority/order of content. In certain embodiments, in party playlist mode, user(s) can specify a zone (re)configuration, for example. In certain embodiments, in party playlist mode, user(s) can specify volume and/or other parameters (e.g., in general and/or associated with their particular added track(s)). In certain embodiments, changes made by a user may be subject to approval and/or override (e.g., by a host/owner/administrator, by a vote of participants, etc.).

[0098] In certain embodiments, a remote user can add content to the playlist queue. For example, a party host can give a remote user access to modify the party playlist (e.g., the host can message her old college roommate to ask about the song they loved to dance to in college and ask her old roommate to remotely add the song from her collection to the host's playlist,

etc.). Remote adding of content to the party playlist can be facilitated by providing a content identifier (e.g., a song name), a copy of the content, etc.

[0099] At block 750, an exit from party playlist mode is selected. The mode may be may be manually selected by a user or selected according to a schedule and/or other automated trigger. For example, the user may select an option via a controller to trigger exit from the party playlist mode. In another example, a user may schedule the party playlist mode to end at a certain time on a certain day. At block 760, a user is authenticated to determine authorization of that user to exit the party playlist mode. For example, the user is authenticated based on a username and password, token, password alone, biometric identification, and so on. In another example, the user is authenticated based on the identification of the controller that is being used. Once the playback system has exited the party playlist mode, normal operation of the playback system can resume.

[00100] Figure 8 illustrates a flow diagram of an example method 800 to facilitate addition of content to a party playlist. At block 810, the local playback system waits for a user to add content to the party playlist. For example, a guest at a party may be given access to modify the playlist or queue of content for playback via the host's local playback system (e.g., household playback system, nightclub playback system, business playback system, etc.). Guest user access can be validated and/or otherwise authenticated to determine authorization to access the party playlist, for example.

[00101] At block 820, content is added by the user to the party playlist. For example, the user utilizes a controller, such as controller 500 (e.g., a controller application running on a smartphone or tablet computer), to browse/search, select, and add content to the party playlist. In certain embodiments, the user is given access (perhaps limited) to the host's content for addition to the playlist. In certain embodiments, the user is able to access his or her own content for referral and/or addition to the playlist. In certain embodiments, the user is able to access one or more streaming and/or cloud-based content services to route content to the party playlist.

[00102] At block 830, participating users are identified. For example, if a plurality of people attending a party has access to the party playlist via one or more controllers, the plurality of people are identified as participating users. Participating users may be identified based on

controller, user authentication, user registration, activity with respect to the playlist or other part of the local playback system, etc.

[00103] At block 840, based on criteria the host provides (e.g., a number of participating (e.g., controlling) users are present above a threshold), then a message is sent to the users to vote. For example, the host can set a threshold above which users can vote on addition and/or other adjustment of content to the party playlist. The number of participating users can be set by default, for example. The number of users may be more than one, for example.

[00104] At block 850, the voting users determine if the content is added to the party playlist. For example, each eligible voting user receives a message and request to vote via a controller (e.g., a smartphone or tablet controller application, etc.) associated with that user. In certain embodiments, a voting scheme can be configured, such as a simple majority and/or other voting scheme. In certain embodiments, a moderator, such as a host or disc jockey, can override a user vote.

[00105] At block 860, if user voting is not employed, if too few votes are cast, or if the host elects for other reason(s), a moderator (e.g., the host) decides whether the content is to be added to the party playlist. For example, if only one participating user is present and/or the minimum number set in the system is not satisfied, then the moderator/host arbitrates the addition of content to the party playlist. As another example, the moderator/host may override or veto the vote of participating users.

[00106] At block 870, the requesting user is notified of the decision regarding the content to be added. Such notification may include comments and/or additional information including, for example, the vote tally, moderator comments, etc. For example, a user attempting to add a song to the party playlist is sent a message notifying him/her regarding whether the song was successfully added or rejected with respect to the party playlist.

[00107] The playback system then resumes waiting, in party playlist mode, for a user to request content to be added to the party playlist. Although the example of Figure 8 has been described with respect to content (e.g., audio, video, and/or other media content), it is understood that the example method 800 can be executed with respect to zone group configuration, volume and/or other parameter settings, and so on for the local playback system in party mode.

[00108] Figures 9-15 illustrate an example sequence of user interfaces facilitating content selection, playback and configuration in a party playlist mode. As shown in the example of Figure 9, a user interface 900 includes a list or other set of audio tracks available to be selected for a playlist in a party playlist mode, for example. In Figure 9, a playback queue can be found at 902. In this example, the playback queue 902 corresponds to the "Office" zone 906. Also in Figure 9, a play indicator 904 appears to the left of the item currently playing in the playback queue (e.g., currently a pause symbol is shown that indicates the user can pause the play by selecting the symbol). When the current item ends, the next item in the queue starts to play, and play continues through the list until the queue is completed or some other action like "repeat" is selected.

[00109] In Figure 10, a user is asked to create a password 1010 when starting a party playlist mode. For example, a host may be asked to establish a password 1010 and/or other identifier that a participating user is to provide in order to add content to the playlist. In certain embodiments, a password and/or other authorization may be required to enter and/or to exit party playlist mode. In certain embodiments, a host may have a moderator password separate from a participating user password, where each password provides a differing level of access to affect content and/or behavior of the media playback system, for example. As shown in the example of Figure 11, in order to exit party playlist mode, the user (e.g., the host) is to enter a password 1100 and/or other identification via the interface.

[00110] Figure 12 shows an example of a restricted set of functions 1210 made available to a participating user in party playlist mode. In the example of Figure 12, a user is provided with options 1210 to add selected content (e.g., track, album, etc.) to a playback queue or retrieve information regarding selected content (e.g., retrieve artist, album, date, etc., for a selected song). Figure 13 shows another example of commands 1310 made available to a participating user who is requesting that content be added to a party playlist. Rather than playing or adding radio stations, in the example of Figure 13, a user is only able to add more music, delete a track he/she added from the playlist, rename, etc. As shown in the example of Figure 14, a party playlist queue can be displayed to a participating user, along with an indication 1410 that the selected zone group is in party playlist or "Jukebox" mode. In the example of Figure 14, a user can add single songs that are to be played randomly from the party playlist. In Figure 15, once party

playlist mode has been exited, the example interface provides a notification 1510 that the party playlist mode is now off.

VI. Conclusion

[00111] As discussed above, systems and methods are provided to offer a restricted playback mode (e.g., a party playlist mode) to allow one or more participating users to access a media playback system and interact with a reduced subset of functions in that system (e.g., add content to a party playlist, vote on content, etc.). The embodiments described herein may be further useful by systems in which a limited-time, group-based access to a subset of available functionality is required or preferred.

[00112] Thus certain embodiments provide a method including providing, via a local media playback system, a restricted playback mode open to a plurality of participating users, the restricted playback mode providing a subset of playback functions from the local media playback system to the participating users, the subset including addition of content to a playlist for playback via the local media playback system. The example method includes facilitating addition of content to the playlist by at least one participating user. The example method includes facilitating playback of content from the playlist in the restricted playback mode.

[00113] Certain embodiments provide a tangible computer readable storage medium including instructions which, when executed by a processor, are to implement at least a method. The example method includes providing, via a local media playback system, a restricted playback mode open to a plurality of participating users, the restricted playback mode providing a subset of playback functions from the local media playback system to the participating users, the subset including addition of content to a playlist for playback via the local media playback system. The example method includes facilitating addition of content to the playlist by at least one participating user. The example method includes facilitating playback of content from the playlist in the restricted playback mode.

[00114] Certain embodiments provide a media playback system including one or more playback devices, each playback device including a processor, a memory and a speaker to output audio content provided to the playback device. The example system includes one or more controllers, each controller to facilitate review and addition of audio content for playback via the one or more playback devices. In the example system, at least one controller is to configure the media

playback system in a restricted playback mode open to a plurality of participating users, the restricted playback mode to provide a subset of playback functions from the media playback system to the participating users, the subset including addition of content to a playlist for playback via the media playback system, the controller to facilitate addition of content to the playlist by at least one participating user and facilitate playback of content from the playlist in the restricted playback mode.

[00115] The description discloses various example systems, methods, apparatus, and articles of manufacture including, among other components, firmware and/or software executed on hardware. However, such examples are merely illustrative and should not be considered as limiting. For example, it is contemplated that any or all of these firmware, hardware, and/or software components can be embodied exclusively in hardware, exclusively in software, exclusively in firmware, or in any combination of hardware, software, and/or firmware. Accordingly, while the following describes example systems, methods, apparatus, and/or articles of manufacture, the examples provided are not the only way(s) to implement such systems, methods, apparatus, and/or articles of manufacture.

[00116] Additionally, reference herein to "embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one example embodiment of the invention. The appearances of this phrase in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. As such, the embodiments described herein, explicitly and implicitly understood by one skilled in the art, can be combined with other embodiments.

[00117] The specification is presented largely in terms of illustrative environments, systems, procedures, steps, logic blocks, processing, and other symbolic representations that directly or indirectly resemble the operations of data processing devices coupled to networks. These process descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. Numerous specific details are set forth to provide a thorough understanding of the present disclosure. However, it is understood to those skilled in the art that certain embodiments of the present disclosure can be practiced without certain, specific details. In other instances, well known methods, procedures,

components, and circuitry have not been described in detail to avoid unnecessarily obscuring aspects of the embodiments. Accordingly, the scope of the present disclosure is defined by the appended claims rather than the forgoing description of embodiments.

[00118] When any of the appended claims are read to cover a purely software and/or firmware implementation, at least one of the elements in at least one example is hereby expressly defined to include a tangible medium such as a memory, DVD, CD, Blu-ray, and so on, storing the software and/or firmware.

Claims

We claim:

1. A method, comprising:

providing, via a local media playback system, a restricted playback mode open to a plurality of participating users, the restricted playback mode providing a subset of playback functions from the local media playback system to the participating users, the subset including addition of content to a playlist for playback via the local media playback system;

facilitating addition of content to the playlist by at least one participating user; and

facilitating playback of content from the playlist in the restricted playback mode.

2. The method of claim 1, wherein playback of content from the playlist in the restricted playback mode comprises random play of content from the playlist.

3. The method of claim 1, further comprising authenticating the at least one participating user to enable the at least one participating user to add content to the playlist in the restricted playback mode.

4. The method of claim 1, further comprising accepting a vote of the participating users to determine whether content is to be added to the playlist.

5. The method of claim 1, wherein facilitating addition of content further comprises accepting user selection of the content from a list of available content via a graphical user interface.

6. The method of claim 5, wherein the list of available content includes a library of shared music available via a network.

7. The method of claim 1, wherein the restricted playback mode is initiated and ended by a host user according to user authorization.

8. The method of claim 1, further comprising configuring the restricted playback mode for a fixed time interval.

9. The method of claim 1, wherein the restricted playback mode includes a specified configuration of zones.

10. The method of claim 1, wherein the subset of playback functions further includes limited user interaction with at least one of zone configuration and content playback parameters.

11. A tangible computer readable storage medium including instructions which, when executed by a processor, are to implement at least a method, the method comprising:

providing, via a local media playback system, a restricted playback mode open to a plurality of participating users, the restricted playback mode providing a subset of playback functions from the local media playback system to the participating users, the subset including addition of content to a playlist for playback via the local media playback system;

facilitating addition of content to the playlist by at least one participating user; and

facilitating playback of content from the playlist in the restricted playback mode.

12. The computer readable storage medium of claim 11, wherein playback of content from the playlist in the restricted playback mode comprises random play of content from the playlist.

13. The computer readable storage medium of claim 11, wherein the method further comprises authenticating the at least one participating user to enable the at least one participating user to add content to the playlist in the restricted playback mode.

14. The computer readable storage medium of claim 11, wherein the method further comprises accepting a vote of the participating users to determine whether content is to be added to the playlist.

15. The computer readable storage medium of claim 11, wherein facilitating addition of content further comprises accepting user selection of the content from a list of available content via a graphical user interface.

16. The computer readable storage medium of claim 15, wherein the list of available content includes a library of shared music available via a network.

17. The computer readable storage medium of claim 11, wherein the restricted playback mode is initiated and ended by a host user according to user authorization.

18. The computer readable storage medium of claim 11, wherein the method further comprises configuring the restricted playback mode for a fixed time interval.

19. The computer readable storage medium of claim 11, wherein the restricted playback mode includes a specified configuration of zones.

20. The computer readable storage medium of claim 11, wherein the subset of playback functions further includes limited user interaction with at least one of zone configuration and content playback parameters.

21. A media playback system comprising:

one or more playback devices, each playback device including a processor, a memory and a speaker to output audio content provided to the playback device;

one or more controllers, each controller to facilitate review and addition of audio content for playback via the one or more playback devices,

wherein at least one controller is to configure the media playback system in a restricted playback mode open to a plurality of participating users, the restricted playback mode to provide a subset of playback functions from the media playback system to the participating users, the subset including addition of content to a playlist for playback via the media playback system, the controller to facilitate addition of content to the playlist by at least one participating user and facilitate playback of content from the playlist in the restricted playback mode.

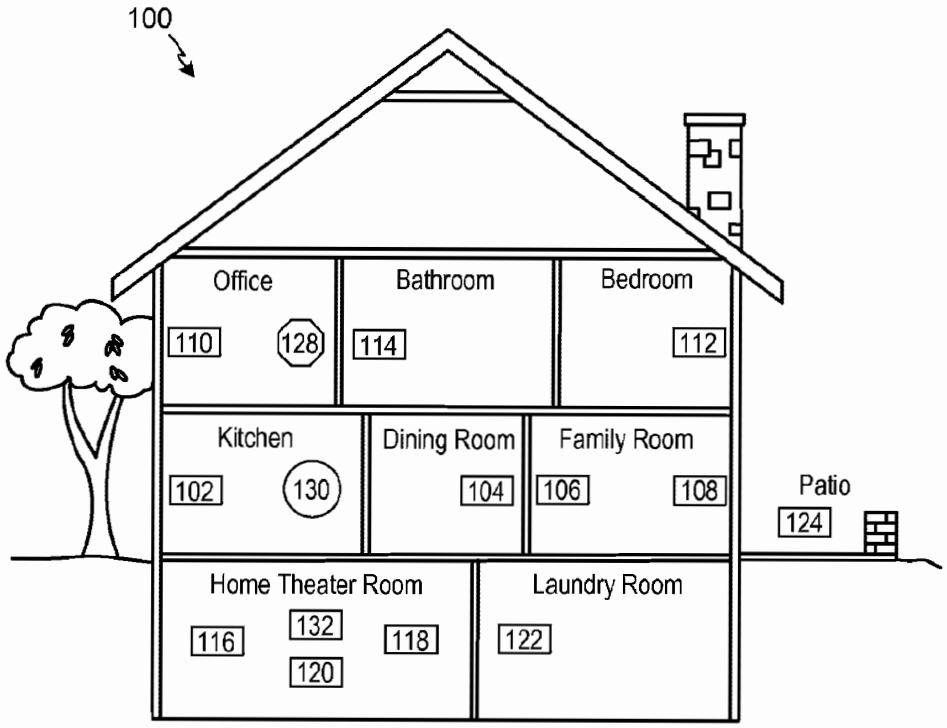

100
Office
110
128
Bathroom
114
Bedroom
112
Kitchen
102
130
Dining Room
104
Family Room
106
108
Patio
124
Home Theater Room
116
132
120
118
Laundry Room
122

FIGURE 1

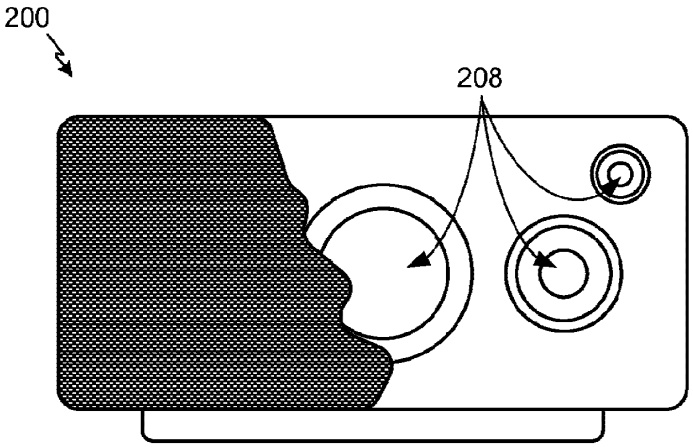


FIGURE 2A

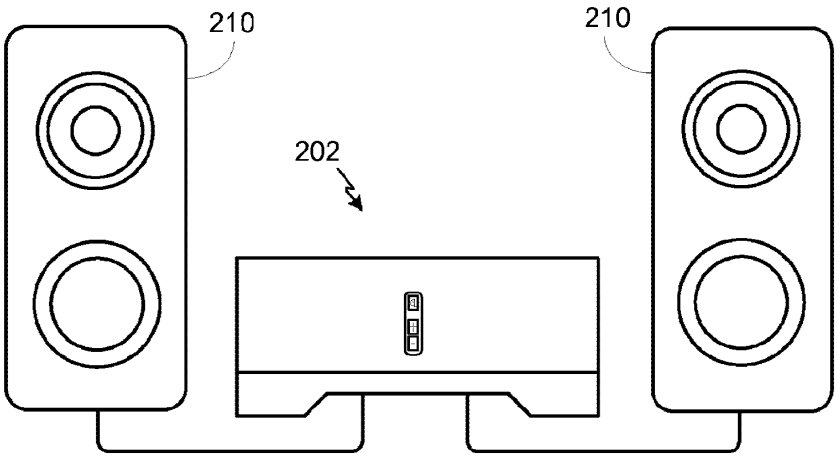


FIGURE 2B

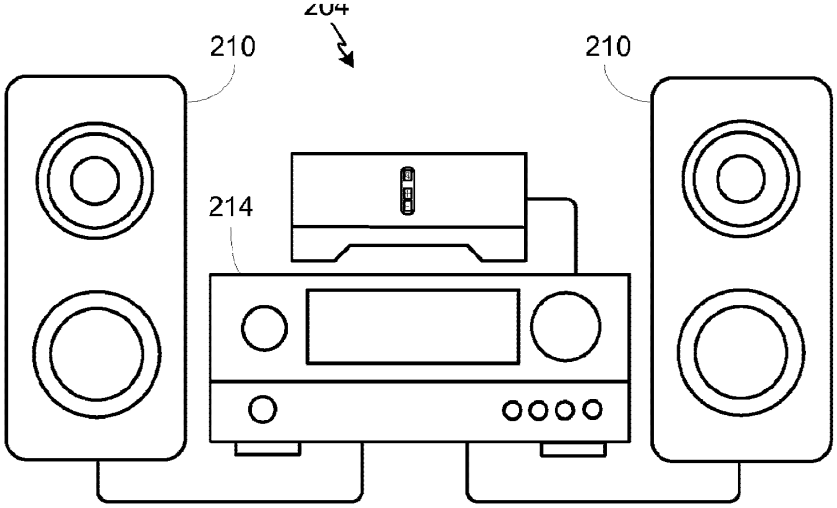


FIGURE 2C

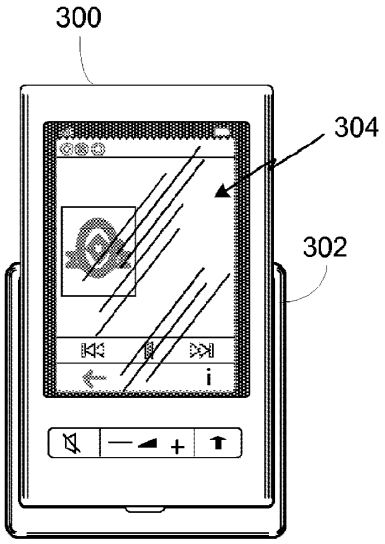


FIGURE 3

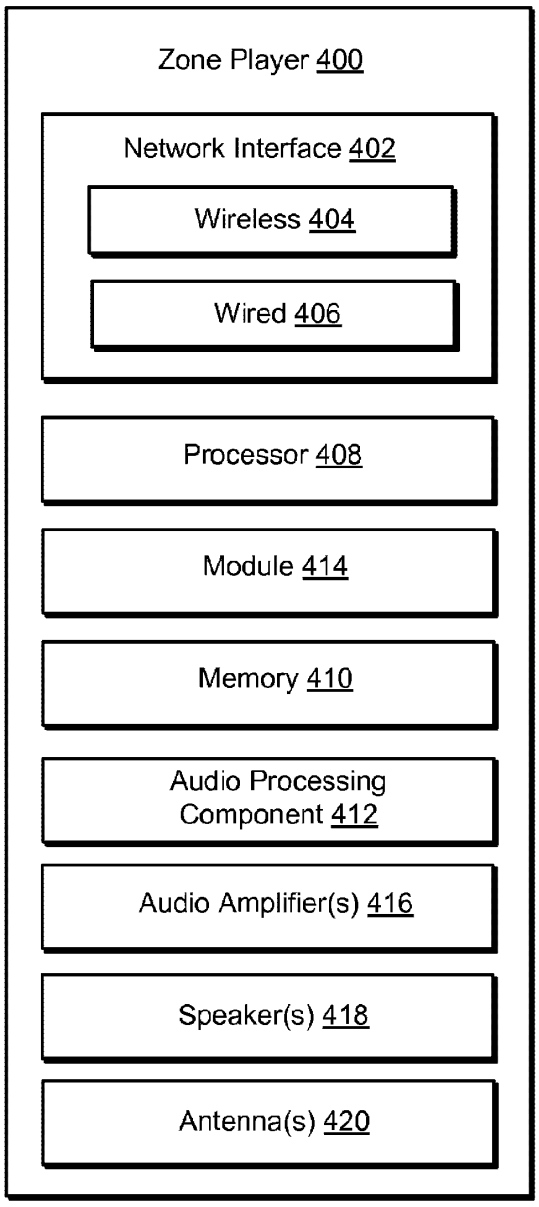

Zone Player 400
Network Interface 402
Wireless 404
Wired 406
Processor 408
Module 414
Memory 410
Audio Processing Component 412
Audio Amplifier(s) 416
Speaker(s) 418
Antenna(s) 420

FIGURE 4

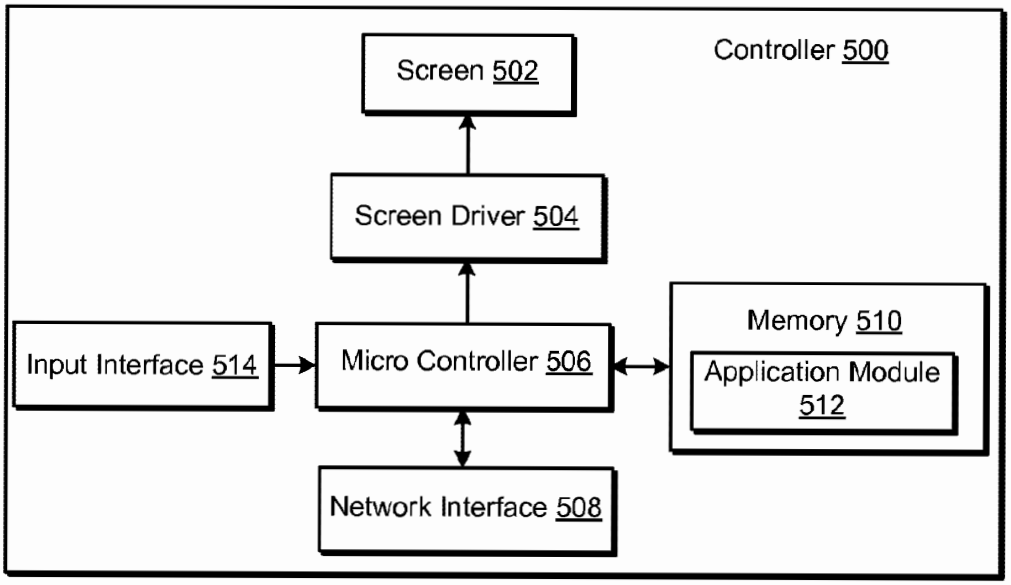

Controller 500
Screen 502
Screen Driver 504
Input Interface 514
Micro Controller 506
Memory 510
Application Module 512
Network Interface 508

FIGURE 5

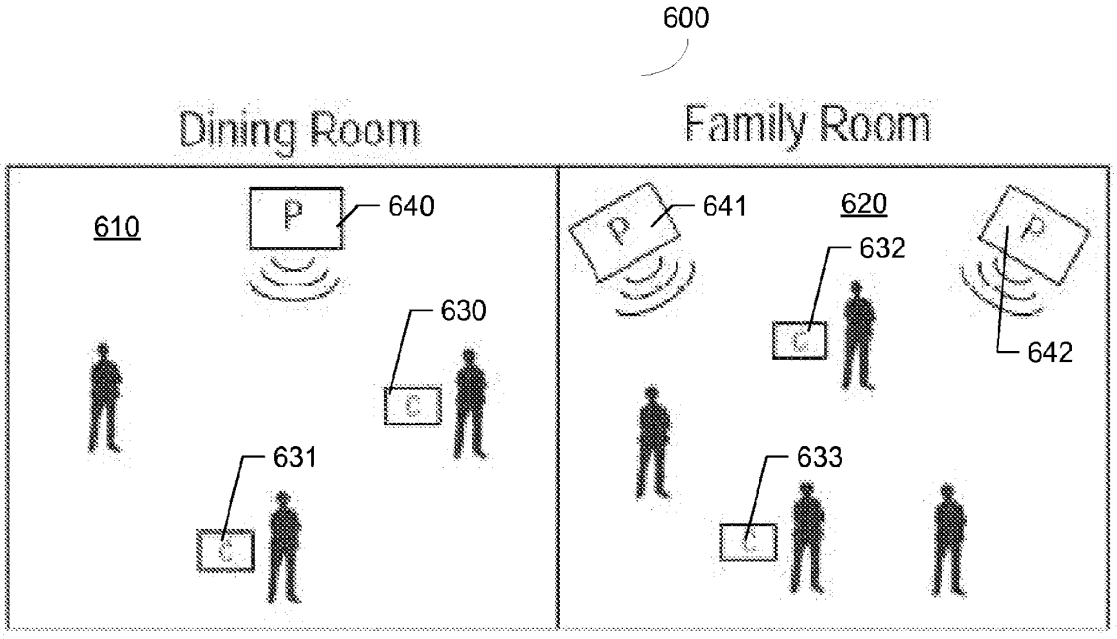

600
Dining Room
Family Room
610
P
640
630
631
641
620
632
642
633

FIGURE 6

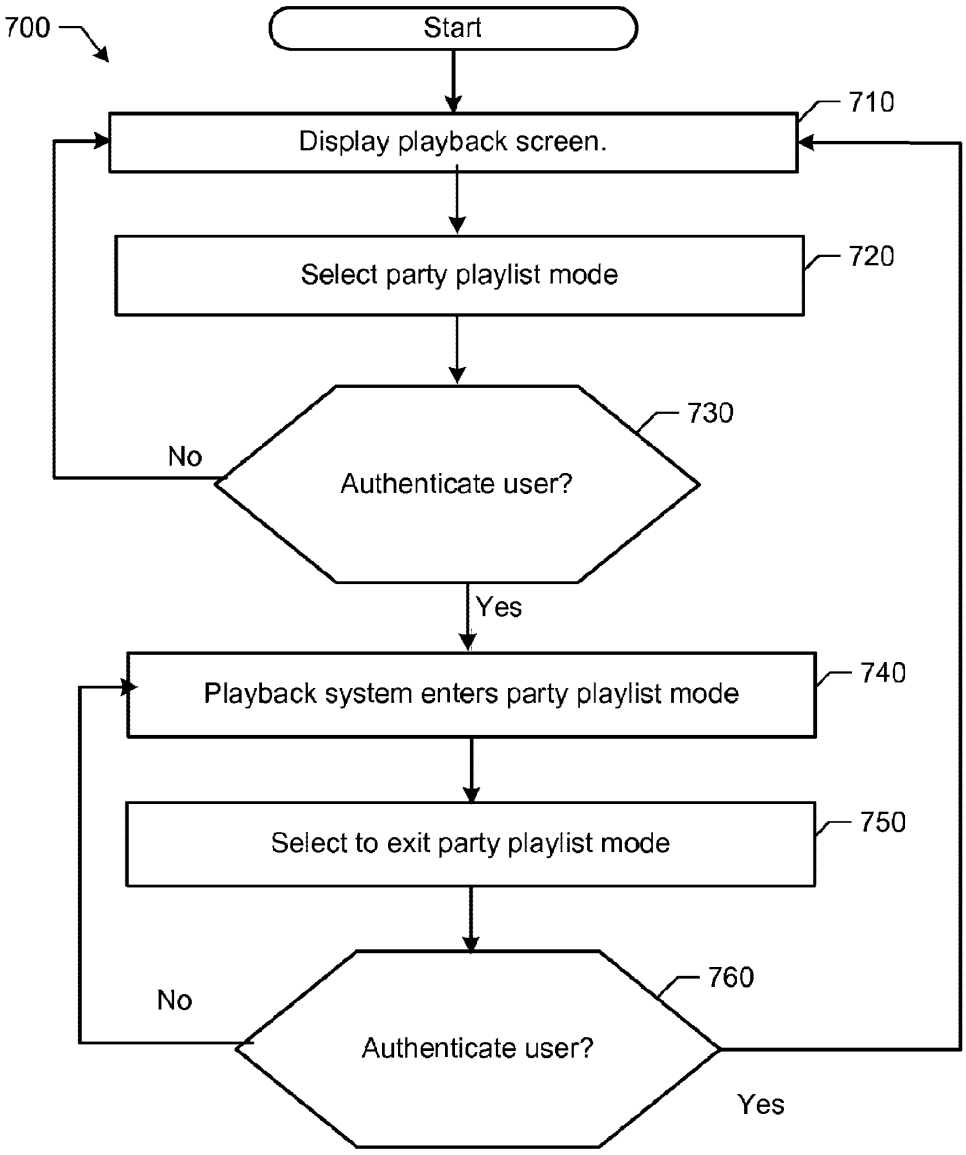

700
Start
710
Display playback screen.
720
Select party playlist mode
730
No
Authenticate user?
Yes
740
Playback system enters party playlist mode
750
Select to exit party playlist mode
760
No
Authenticate user?
Yes

FIGURE 7

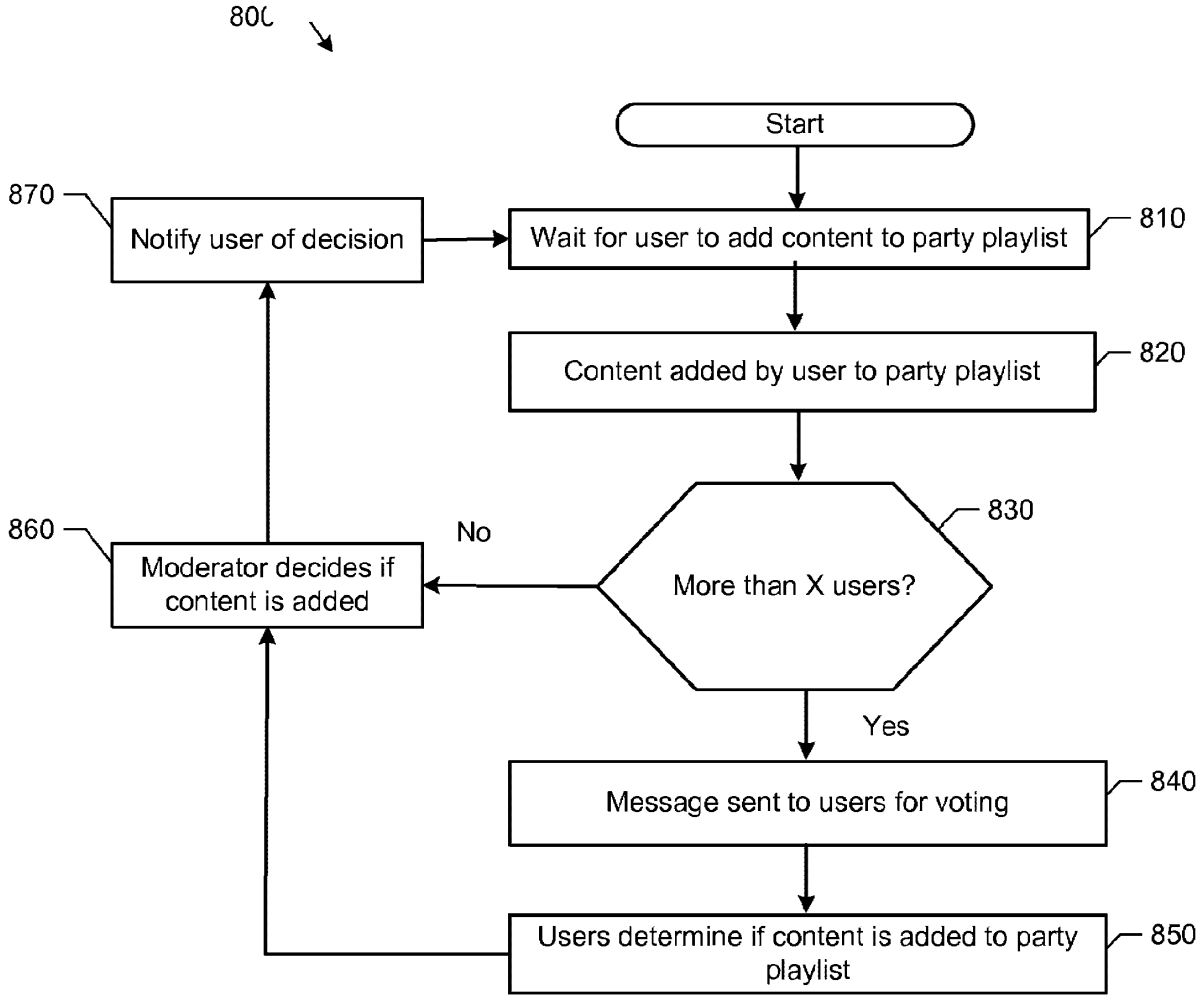

800
Start
870
Notify user of decision
Wait for user to add content to party playlist
810
Content added by user to party playlist
820
860
Moderator decides if content is added
No
More than X users?
830
Yes
Message sent to users for voting
840
Users determine if content is added to party playlist
850

FIGURE 8

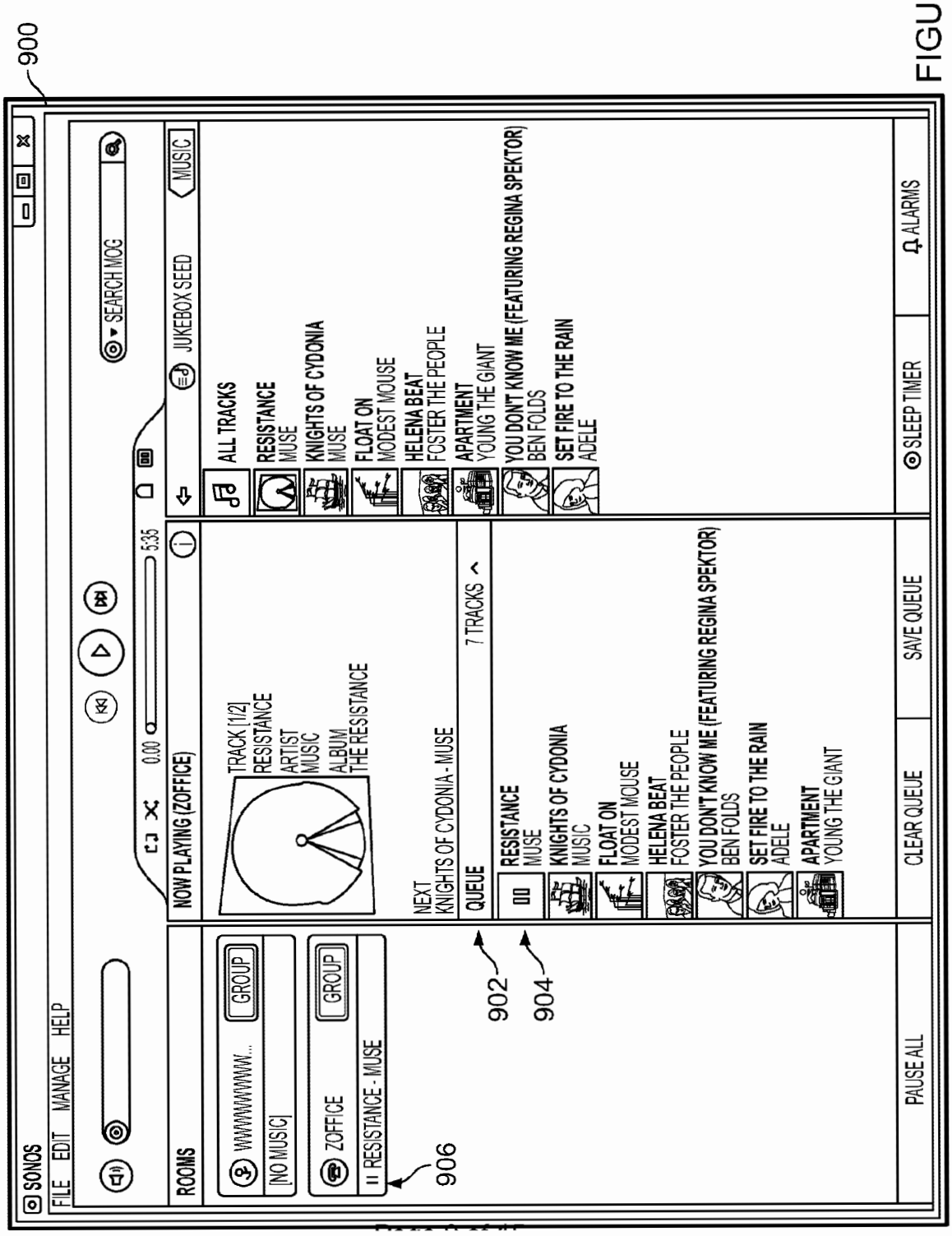

900
SONOS
FILE EDIT MANAGE HELP
SEARCH MOG
ROOMS
NOW PLAYING (ZOFFICE)
JUKEBOX SEED
MUSIC
ALL TRACKS
RESISTANCE
MUSE
KNIGHTS OF CYDONIA
MUSE
FLOAT ON
MODEST MOUSE
HELENA BEAT
FOSTER THE PEOPLE
APARTMENT
YOUNG THE GIANT
YOU DON'T KNOW ME (FEATURING REGINA SPEKTOR)
BEN FOLDS
SET FIRE TO THE RAIN
ADELE
WWWWWWWW...
GROUP
[NO MUSIC]
ZOFFICE
GROUP
RESISTANCE - MUSE
906
TRACK [1/2]
RESISTANCE
ARTIST
MUSIC
ALBUM
THE RESISTANCE
NEXT
KNIGHTS OF CYDONIA - MUSE
QUEUE
7 TRACKS
902
904
RESISTANCE
MUSE
KNIGHTS OF CYDONIA
MUSIC
FLOAT ON
MODEST MOUSE
HELENA BEAT
FOSTER THE PEOPLE
YOU DON'T KNOW ME (FEATURING REGINA SPEKTOR)
BEN FOLDS
SET FIRE TO THE RAIN
ADELE
APARTMENT
YOUNG THE GIANT
PAUSE ALL
CLEAR QUEUE
SAVE QUEUE
SLEEP TIMER
ALARMS

FIGURE 9

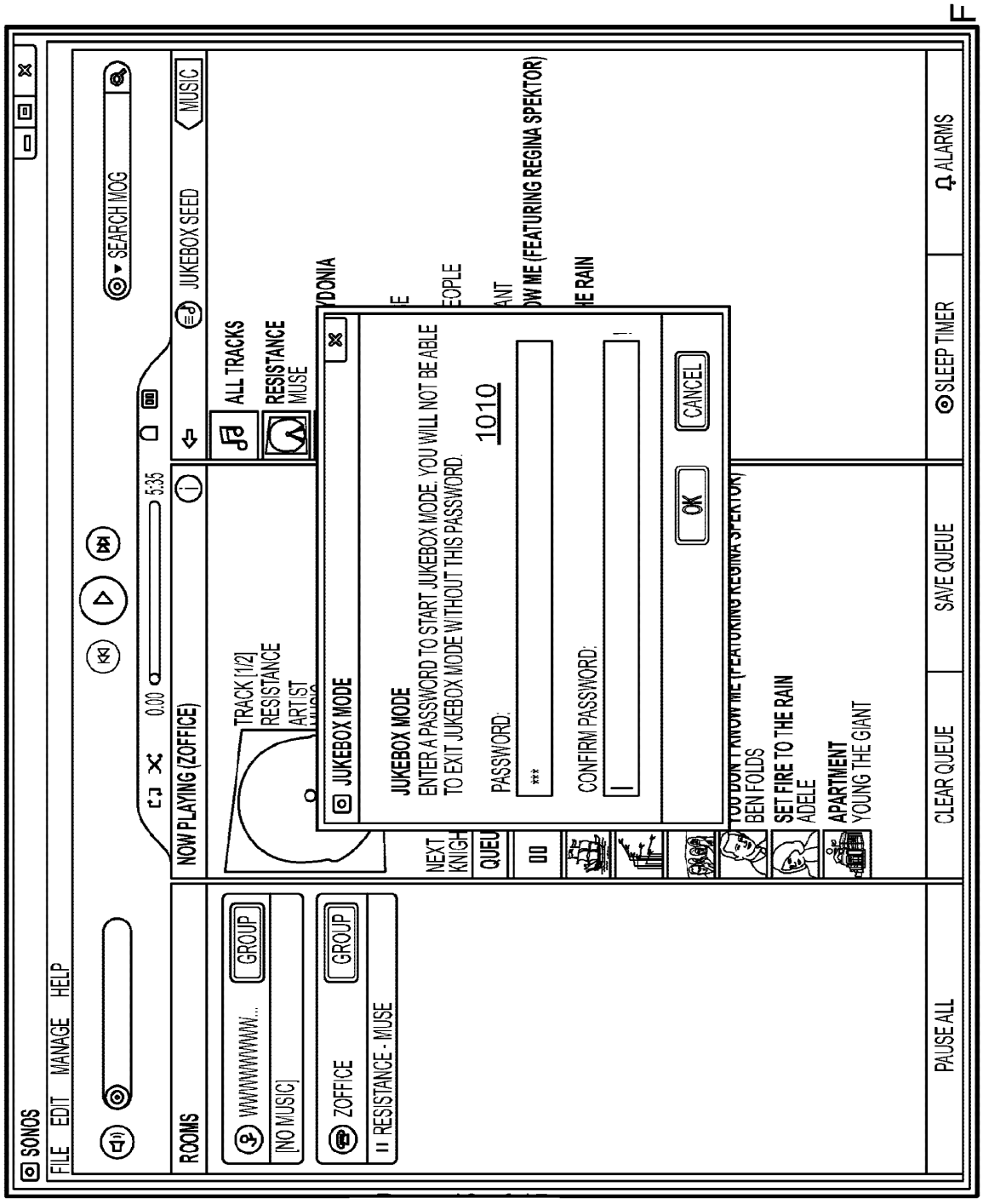

SONOS
FILE EDIT MANAGE HELP
SEARCH MOG
ROOMS
NOW PLAYING (ZOFFICE)
JUKEBOX SEED
MUSIC
ALL TRACKS
RESISTANCE
MUSE
JUKEBOX MODE
ENTER A PASSWORD TO START JUKEBOX MODE. YOU WILL NOT BE ABLE TO EXIT JUKEBOX MODE WITHOUT THIS PASSWORD.
1010
PASSWORD:
CONFIRM PASSWORD:
OK
CANCEL
GROUP
[NO MUSIC]
ZOFFICE
RESISTANCE - MUSE
BEN FOLDS
SET FIRE TO THE RAIN
ADELE
APARTMENT
YOUNG THE GIANT
PAUSE ALL
CLEAR QUEUE
SAVE QUEUE
SLEEP TIMER
ALARMS

FIGURE 10

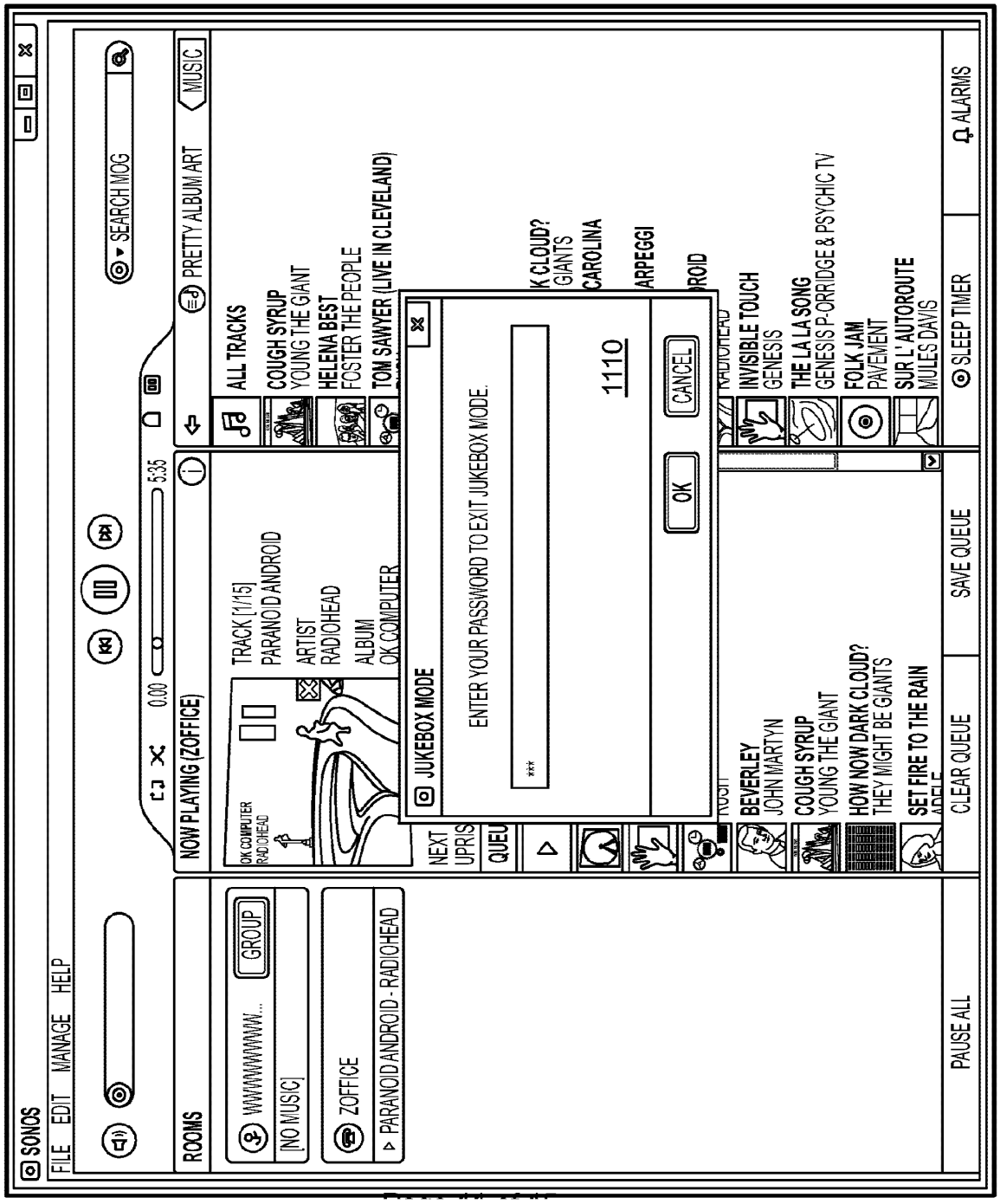

SONOS
FILE EDIT MANAGE HELP
SEARCH MOG
ROOMS
WWWWWWWW...
GROUP
[NO MUSIC]
ZOFFICE
PARANOID ANDROID - RADIOHEAD
NOW PLAYING (ZOFFICE)
5:35
TRACK [1/15]
PARANOID ANDROID
ARTIST
RADIOHEAD
ALBUM
OK COMPUTER
PRETTY ALBUM ART
MUSIC
ALL TRACKS
COUGH SYRUP
YOUNG THE GIANT
HELENA BEST
FOSTER THE PEOPLE
TOM SAWYER (LIVE IN CLEVELAND)
JUKEBOX MODE
ENTER YOUR PASSWORD TO EXIT JUKEBOX MODE.
***
OK
CANCEL
1110
K CLOUD?
GIANTS
CAROLINA
ARPEGGI
ROID
INVISIBLE TOUCH
GENESIS
THE LA LA SONG
GENESIS P-ORRIDGE & PSYCHIC TV
FOLK JAM
PAVEMENT
SUR L' AUTOROUTE
MULES DAVIS
NEXT
QUEU
BEVERLEY
JOHN MARTYN
COUGH SYRUP
YOUNG THE GIANT
HOW NOW DARK CLOUD?
THEY MIGHT BE GIANTS
SET FIRE TO THE RAIN
PAUSE ALL
CLEAR QUEUE
SAVE QUEUE
SLEEP TIMER
ALARMS

FIGURE 11

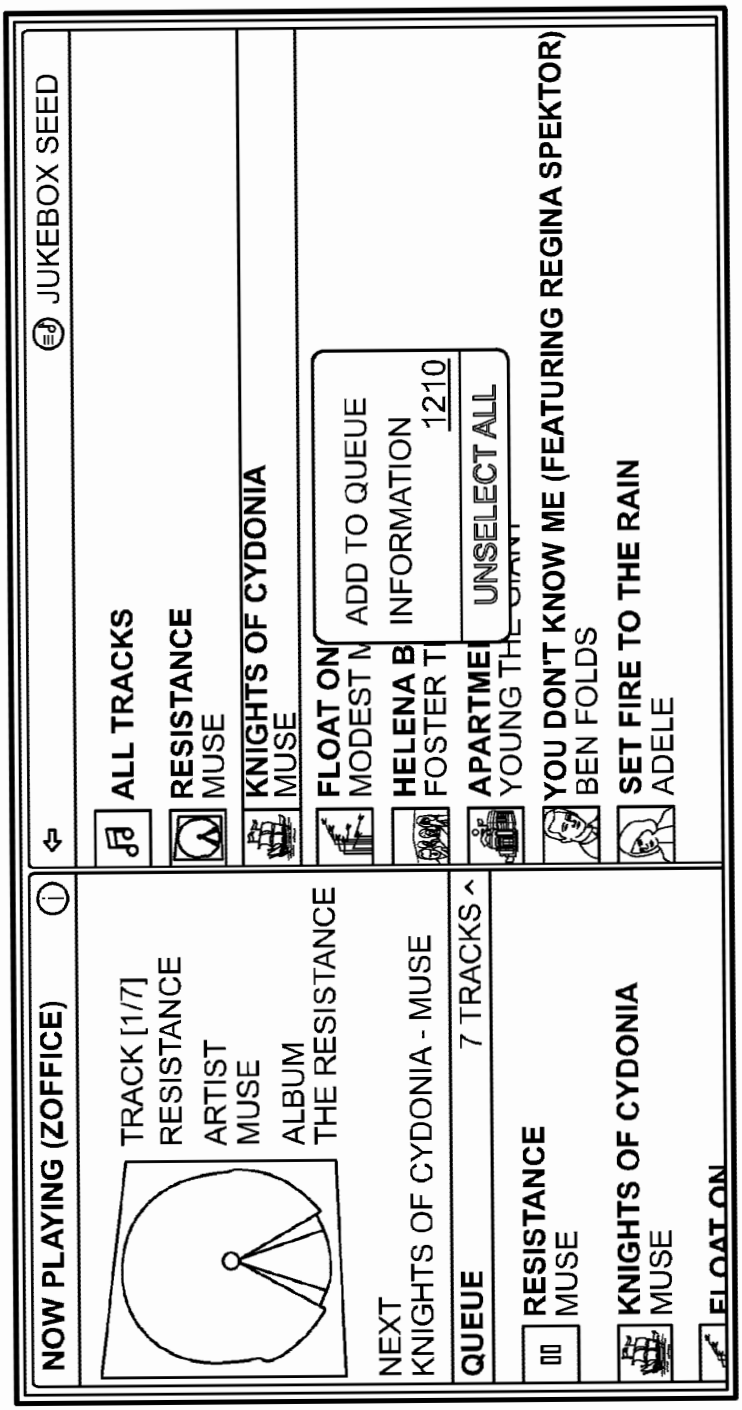

NOW PLAYING (ZOFFICE)
TRACK [1/7]
RESISTANCE
ARTIST
MUSE
ALBUM
THE RESISTANCE
NEXT
KNIGHTS OF CYDONIA - MUSE
QUEUE
7 TRACKS
RESISTANCE
MUSE
KNIGHTS OF CYDONIA
MUSE
JUKEBOX SEED
ALL TRACKS
RESISTANCE
MUSE
KNIGHTS OF CYDONIA
MUSE
FLOAT ON
MODEST M
HELENA B
FOSTER T
APARTME
YOUNG THE GIANT
YOU DON'T KNOW ME (FEATURING REGINA SPEKTOR)
BEN FOLDS
SET FIRE TO THE RAIN
ADELE
ADD TO QUEUE
INFORMATION
1210
UNSELECT ALL

FIGURE 12

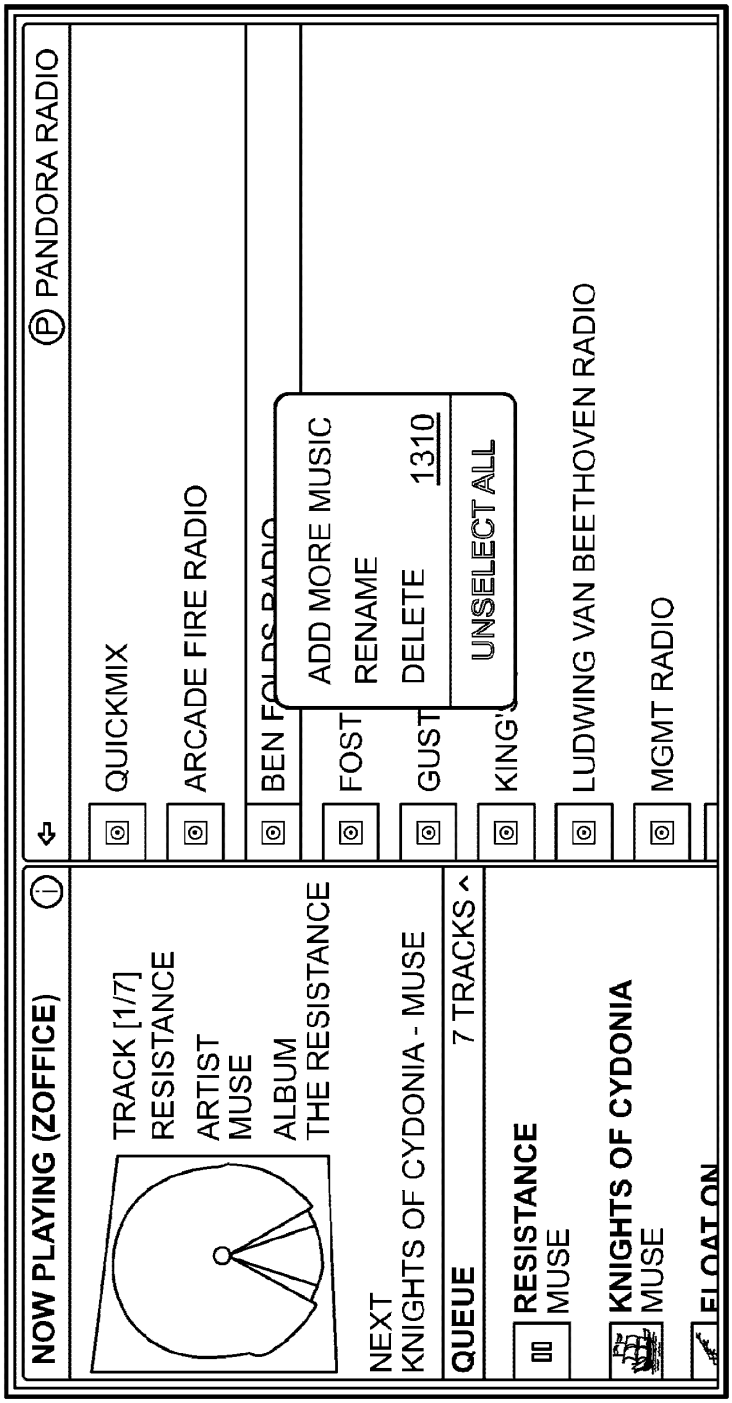

NOW PLAYING (ZOFFICE)
TRACK [1/7]
RESISTANCE
ARTIST
MUSE
ALBUM
THE RESISTANCE
NEXT
KNIGHTS OF CYDONIA - MUSE
QUEUE
7 TRACKS
RESISTANCE
MUSE
KNIGHTS OF CYDONIA
MUSE
PANDORA RADIO
QUICKMIX
ARCADE FIRE RADIO
BEN FOLDS RADIO
FOST
GUST
KING'S
LUDWING VAN BEETHOVEN RADIO
MGMT RADIO
ADD MORE MUSIC
RENAME
DELETE
1310
UNSELECT ALL

FIGURE 13

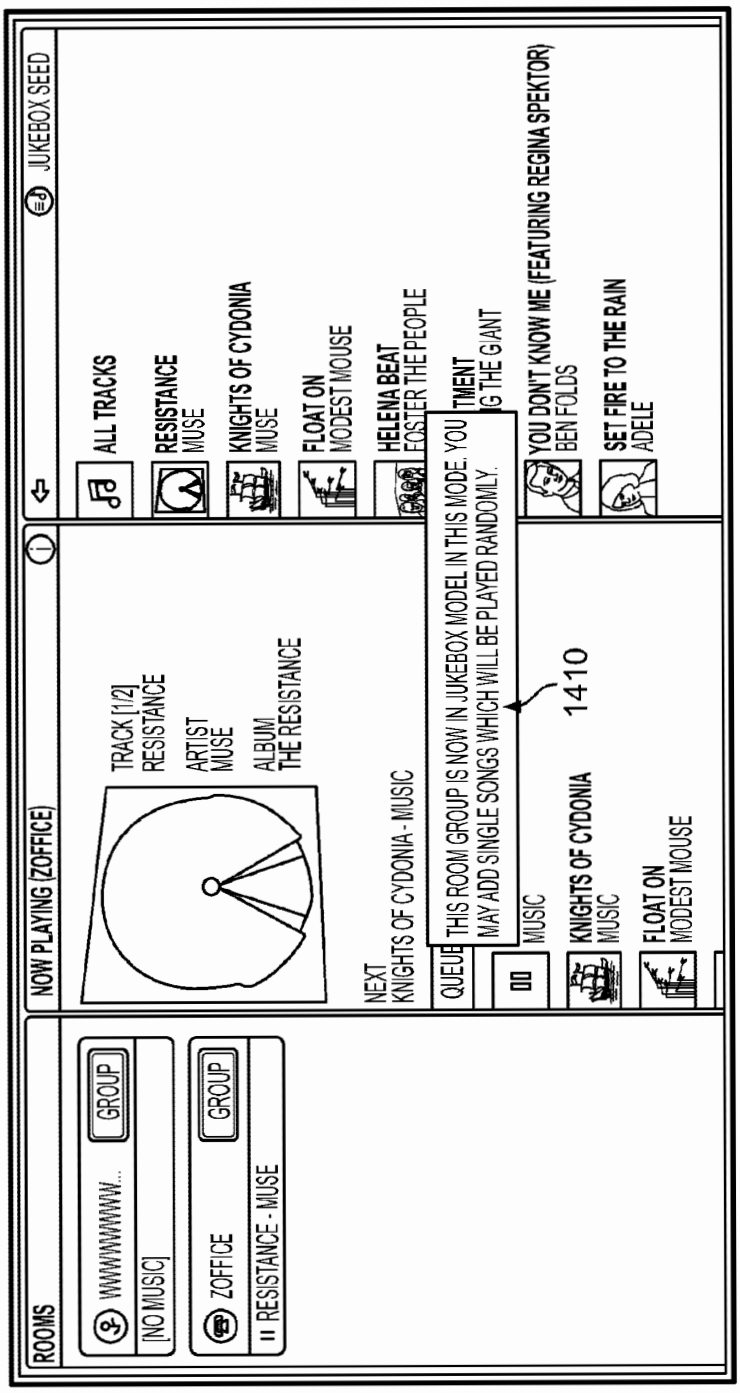

ROOMS
NOW PLAYING (ZOFFICE)
JUKEBOX SEED
GROUP
WWWWWWWW...
[NO MUSIC]
GROUP
ZOFFICE
RESISTANCE - MUSE
TRACK [1/2]
RESISTANCE
ARTIST
MUSE
ALBUM
THE RESISTANCE
NEXT
KNIGHTS OF CYDONIA - MUSIC
QUEUE
THIS ROOM GROUP IS NOW IN JUKEBOX MODEL IN THIS MODE, YOU
MAY ADD SINGLE SONGS WHICH WILL BE PLAYED RANDOMLY.
MUSIC
KNIGHTS OF CYDONIA
MUSIC
FLOAT ON
MODEST MOUSE
1410
ALL TRACKS
RESISTANCE
MUSE
KNIGHTS OF CYDONIA
MUSE
FLOAT ON
MODEST MOUSE
HELENA BEAT
FOSTER THE PEOPLE
TMENT
G THE GIANT
YOU DON'T KNOW ME (FEATURING REGINA SPEKTOR)
BEN FOLDS
SET FIRE TO THE RAIN
ADELE

FIGURE 14

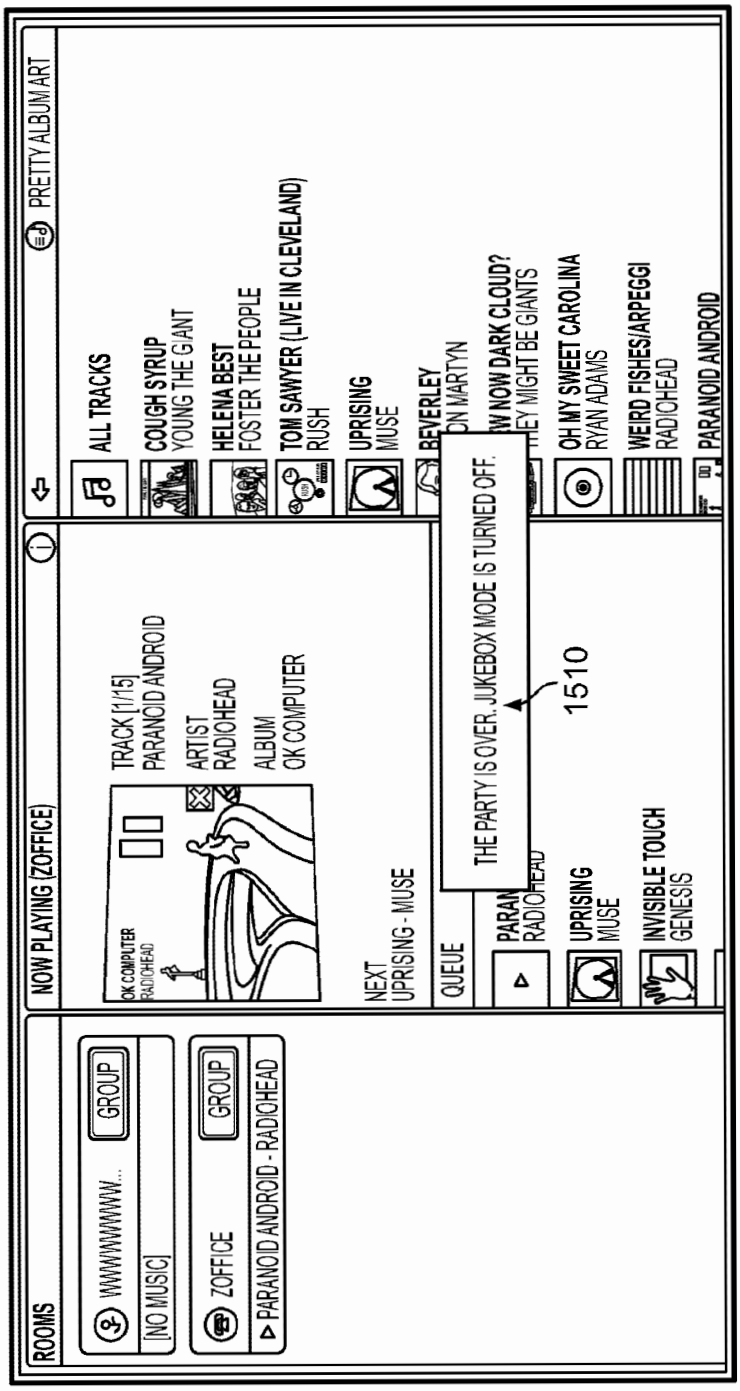

ROOMS
NOW PLAYING (ZOFFICE)
PRETTY ALBUM ART
GROUP
WWWWWWWW...
[NO MUSIC]
GROUP
ZOFFICE
PARANOID ANDROID - RADIOHEAD
OK COMPUTER
RADIOHEAD
TRACK [1/15]
PARANOID ANDROID
ARTIST
RADIOHEAD
ALBUM
OK COMPUTER
NEXT
UPRISING - MUSE
QUEUE
PARAN
RADIOHEAD
UPRISING
MUSE
INVISIBLE TOUCH
GENESIS
THE PARTY IS OVER. JUKEBOX MODE IS TURNED OFF.
1510
ALL TRACKS
COUGH SYRUP
YOUNG THE GIANT
HELENA BEST
FOSTER THE PEOPLE
TOM SAWYER (LIVE IN CLEVELAND)
RUSH
UPRISING
MUSE
BEVERLEY
DN MARTYN
W NOW DARK CLOUD?
EY MIGHT BE GIANTS
OH MY SWEET CAROLINA
RYAN ADAMS
WEIRD FISHES/ARPEGGI
RADIOHEAD
PARANOID ANDROID

FIGURE 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/046386

A. CLASSIFICATION OF SUBJECT MATTER

G06Q 50/10(2012.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06Q 50/10; G06F 15/16; H04N 7/173; G06F 7/00; G06F 17/30; H04L 9/00; H04W 40/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords:playlist, authorization, participate, zone:

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7483958 B1 (TAREK Z. ELABBADY et al.) 27 January 2009 See abstract, column 7, lines 61-66, column 11, lines 1-20, claims 1, 6 and figure 4.	1-21
Y	US 2010-0228740 A1 (ALAN CANNISTRARO et al.) 09 September 2010 See abstract, paragraphs [0009], [0036]-[0037], [0047]-[0057], [0089], claim 1 and figure 4.	1-21
A	US 2012-0129446 A1 (STEVE KO et al.) 24 May 2012 See abstract, paragraphs [0036]-[0037], claim 1 and figure 4.	1-21
A	US 2009-0031336 A1 (TIMOTHY R. CHAVEZ et al.) 29 January 2009 See abstract, paragraph [0021], claim 1 and figure 3.	1-21
A	US 2007-0299778 A1 (RYAN A. HAVESON et al.) 27 December 2007 See abstract, claim 1 and figure 3.	1-21

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
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Date of the actual completion of the international search	Date of mailing of the international search report
27 September 2013 (27.09.2013)	**30 September 2013 (30.09.2013)**

Name and mailing address of the ISA/KR	Authorized officer
Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701, Republic of Korea	KIM Sung Gon
Facsimile No. +82-42-472-7140	Telephone No. +82-42-481-8746

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/US2013/046386

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7483958 B1	27/01/2009	None	
US 2010-0228740 A1	09/09/2010	None	
US 2012-0129446 A1	24/05/2012	AT 520238 T	15/08/2011
		CN 101346965 A	14/01/2009
		CN 102984041 A	20/03/2013
		EP 1964365 A1	03/09/2008
		EP 1964365 B1	10/08/2011
		EP 2299654 A1	23/03/2011
		HK 1122664 A1	18/11/2011
		JP 2009-521185 A	28/05/2009
		JP 2012-235471 A	29/11/2012
		US 2007-169115 A1	19/07/2007
		US 2010-049835 A1	25/02/2010
		US 2013-080599 A1	28/03/2013
		US 7702279 B2	20/04/2010
		US 8112032 B2	07/02/2012
		US 8315555 B2	20/11/2012
		WO 2007-075376 A1	05/07/2007
US 2009-0031336 A1	29/01/2009	None	
US 2007-0299778 A1	27/12/2007	None	

Form PCT/ISA/210 (patent family annex) (July 2009)

Electronic Acknowledgement Receipt	
EFS ID:	25842484
Application Number:	13864249
International Application Number:	
Confirmation Number:	9806
Title of Invention:	METHOD AND APPARATUS FOR PLAYING AND PROVIDING AUDIO CONTENT IN A SYNCHRONY GROUP
First Named Inventor/Applicant Name:	Nicholas A. J. Millington
Customer Number:	107361
Filer:	Benjamin Michael Urban
Filer Authorized By:	
Attorney Docket Number:	13-0402 (MBHB 15-518-CON)
Receipt Date:	20-MAY-2016
Filing Date:	17-APR-2013
Time Stamp:	18:13:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	13-0402_MBHB15-518-CON_IDS.pdf	1056037 a3beded30bfd420f1c7c33abc2a1447b32d59ab3	no	8
Warnings:					
Information:					

2	Foreign Reference	JP2009535708.pdf	1158271 a225780e8ab7472c0ae89ca2c32fd69881f5cea9	no	26
Warnings:					
Information:					
3	Foreign Reference	WO2007127485A2.pdf	1743497 51dbdbf632a2131bb27538bd84dc36132b5c830f	no	32
Warnings:					
Information:					
4	Foreign Reference	WO2007131555A1.pdf	2374487 f1e473bd1adddf7fe9604ba6392202e2eef23bc3	no	49
Warnings:					
Information:					
5	Foreign Reference	WO2014004182.pdf	2037255 300230e07c41979daf09d809d507a13c449515a8	no	49
Warnings:					
Information:					
6	Non Patent Literature	Canadian_No_2842342_Office_Action_4-4-16.pdf	3685860 433fa1bfbfcfe662e98c18db0795f2ae1f34aaaf	no	5
Warnings:					
Information:					
7	Non Patent Literature	EP14181454_1_ExamReport_03-22-2016.pdf	255952 2364ff8d1c445a54c1d67abbfd57a96639ece5a8	no	6
Warnings:					
Information:					
8	Non Patent Literature	Falcone_Sonos_BU150.pdf	626015 090725021e3e3fad9acd8897dd5f43cfce816b50	no	11
Warnings:					
Information:					
9	Non Patent Literature	JP2015520288_OA_03-29-2016.pdf	304956 5082659c564f8039e97018b78697d9b8277be286	no	12
Warnings:					
Information:					
10	Non Patent Literature	13848921_OA_03-08-2016.pdf	466605 242b90a94e7520bccc2580d68b752eb8bbdb416f	no	13
Warnings:					
Information:					

11	Non Patent Literature	13533105_NOA_04-07-2016.pdf	1427429 2951fc59784e93854f6c934f80dbb8974d7701db	no	40
Warnings:					
Information:					
12	Non Patent Literature	13864247_NOA_4-11-16.pdf	850319 65391c07ba210127cdfe68cae1235959e07c31f0	no	21
Warnings:					
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		Total Files Size (in bytes):	15986683		

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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	13864249
Filing Date	2013-04-17
First Named Inventor	NICHOLAS; A. J. Millington
Art Unit	2442
Examiner Name	SURVILLO, Oleg
Attorney Docket Number	13-0402 (MBHB 15-518-CON)

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4696037		1987-09-22	FIERENS; Gustaaf E. M.	
	2	5553147		1996-09-03	PINEAU; Joseph E. M.	
	3	6809635		2004-10-26	KAARESOJA; Topi	
	4	6882335		2005-04-19	SAARINEN; Pertti	
	5	8934647		2015-01-13	JOYCE; John et al.	
	6	8934655		2015-01-13	BREEN; John J. et al.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	1	20020067909		2002-06-06	IIVONEN; Jukka-Pekka	
	2	20040023697		2004-02-05	KOMURA; Tatsumi	
	3	20050201549		2005-09-15	DEDIEU; Stephane et al.	
	4	20060155721		2006-07-13	GRUNWALD; David et al.	
	5	20070003067		2007-01-04	GIERL; Stefan et al.	
	6	20070022207		2007-01-25	MILLINGTON; Nicholas A. et al.	
	7	20070265031		2007-11-15	KOIZUMI; Michiaki et al.	
	8	20080144864		2008-06-19	HUON; Graeme John	
	9	20080146289		2008-06-19	KORNELUK; Jose E. et al.	
	10	20100031366		2010-02-04	KNIGHT; Mark Stephen et al.	
	11	20110002487		2011-01-06	PANTHER; Heiko et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	12	20120051567		2012-03-01	CASTOR-PERRY, Kendall	
	13	20130129122		2013-05-23	JOHNSON; Martin E. et al.	

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	1	2002111817	JP		2002-04-12	NEC CORP.	English translation of Abstract only	
	2	2002123267	JP	A	2002-04-26	SONY CORP.	English translation of Abstract only	
	3	2005136457	JP		2005-05-26	SANYO ELECTRIC CO. LTD.	English translation of Abstract only	
	4	2007241652	JP	A	2007-09-20	CORE COLORS INC.	English translation of Abstract only	
	5	2009135750	JP		2009-06-18	KYOCERA CORP.	English translation of Abstract only	
	6	2009506603	JP	A	2009-02-12		English translation of Abstract only	
	7	2009538006	JP	A	2009-10-29		English translation of Abstract only	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	8	2011130496	JP		2011-06-30	TOSHIBA CORP.	English translation of Abstract only	
	9	2007023120	WO	A1	2007-03-01	SONY ERICSSON MOBILE COMM AB		
	10	2008114389	WO	A1	2008-09-25	PIONEER CORPORATION	English translation of Abstract only	
	11	2012050927	WO		2012-04-19	BEYOND OBLIVION INC.		

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T5
	1	Advisory Action mailed on 10 February 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 3 pages.	
	2	European Extended Search Report mailed 07 March 2016, issued in connection with EP Application No. 13810340.3, 9 pages.	
	3	Final Office Action mailed on 24 February 2016, issued in connection with U.S. Patent Application No. 13/871795, filed on 26 April 2013, 28 pages.	
	4	HORWITZ, Jeremy, "Logic3 i-Station25," retrieved from the internet: http://www.ilounge.com/index.php/reviews/entry/logic3-i-station25/, last visited December 17, 2013, 5 pages.	
	5	INTERNATIONAL BUREAU, International Preliminary Search Report mailed on 30 January 2014, issued in connection with International Application No. PCT/US2012/045894, 6 pages.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

	6	INTERNATIONAL SEARCHING AUTHORITY, International Search Report for Application No. PCT/US2012/045894, mailed 26 December 2012, 3 pages.	
	7	INTERNATIONAL SEARCHING AUTHORITY, Written Opinion mailed on 26 December 2012, issued in connection with International Application No. PCT/US2012/045894, filed on 09 July 2012, 4 pages.	
	8	JAPANESE INTELLECTUAL PROPERTY OFFICE, Office Action Summary mailed on 02 February 2016, issued in connection with Japanese Patent Application No. 2015-520286, 6 pages.	
	9	Japanese Patent Office, Notice of Rejection, mailed on 03 February 2015, issued in connection with Japanese Patent Application No. 2014-521648, 7 pages.	
	10	ROLAND CORPORATION, "Roland announces BA-55 Portable PA System," press release, April 6, 2011, 2 pages.	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	13864249
	Filing Date	2013-04-17
	First Named Inventor	NICHOLAS; A. J. Millington
	Art Unit	2442
	Examiner Name	SURVILLO, Oleg
	Attorney Docket Number	13-0402 (MBHB 15-518-CON)

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Benjamin M. Urban/	Date (YYYY-MM-DD)	2016-03-18
Name/Print	Benjamin M. Urban	Registration Number	71,591

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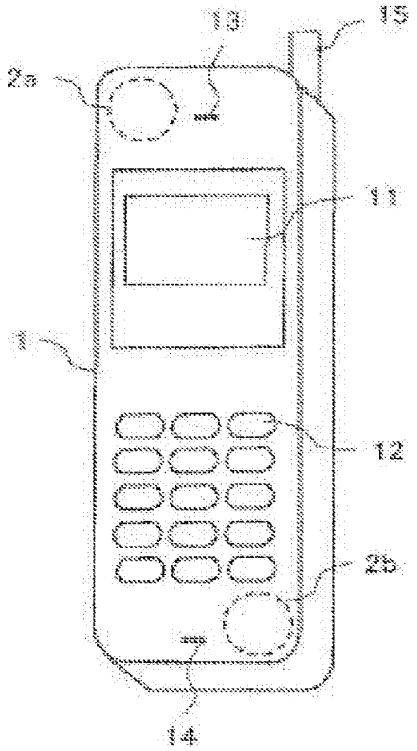
Bibliographic data: JP2002111817 (A) — 2002-04-12

SYSTEM AND METHOD FOR REPRODUCING SOUND OF PORTABLE TERMINAL

Inventor(s):	KOMURA TATSUMI ± (KOMURA TATSUMI)
Applicant(s):	NEC CORP ± (NEC CORP)
Classification:	**- international:** ***H04M1/00; H04M1/02; H04M1/03; H04R5/02; H04S1/00;*** (IPC1-7): H04M1/00; H04M1/02; H04R5/02; H04S1/00 **- cooperative:** **H04M1/0202**; **H04M1/03**; **H04R1/025**; H04M1/0214; H04M1/0235; H04R2499/11; H04R2499/15; H04R5/02
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Abstract of JP2002111817 (A)

PROBLEM TO BE SOLVED: To provide a portable terminal which can reproduce a high quality sound comfortably while exhibiting high adaptability to working environment and high convenience. SOLUTION: In the sound reproduction system of a portable terminal 1, the portable terminal is provided with at least two sound speakers 2a and 2b being driven simultaneously to supplement the reproduction sound mutually.


13
15
2a
11
1
12
2b
3
14

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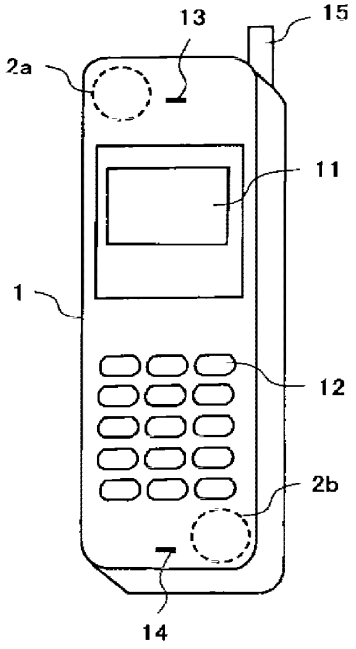
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(71)出願人　000004237
日本電気株式会社
東京都港区芝五丁目７番１号
(72)発明者　小村　辰美
東京都港区芝五丁目７番１号　日本電気株式会社内
(74)代理人　100104400
弁理士　浅野　雄一郎

最終頁に続く

(54)【発明の名称】　携帯端末装置の音響再生システム及び方法

(57)【要約】
【課題】快適、高音質な音響再生が可能で、使用環境への高適応性、高利便性を有する携帯端末装置を提供する。
【解決手段】　携帯端末装置１の音響再生システムにおいて、携帯端末装置に少なくとも２つの音響用スピーカ２ａ、２ｂが設けられ、前記少なくとも２つの音響用スピーカは、同時に駆動され、互いの再生音響を補助し合う。



【特許請求の範囲】
【請求項１】　携帯端末装置の音響再生システムにおいて、
携帯端末装置に少なくとも２つの音響用スピーカが設けられ、
前記少なくとも２つの音響用スピーカは、同時に駆動され、互いの再生音響を補助し合うことを特徴とする携帯端末装置の音響再生システム。
【請求項２】　前記少なくとも２つの音響用スピーカは、前記携帯端末装置の長手方向又は対角線の両端に配置されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項３】　前記少なくとも２つの音響用スピーカのうち少なくとも一方の音響用スピーカは、前記携帯端末装置の筐体壁と角度をもって設置されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項４】　前記少なくとも２つの音響用スピーカのうち少なくとも一方の音響用スピーカと前記携帯端末装置の筐体壁との角度が自由に変更できることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項５】　前記少なくとも２つの音響用スピーカは、互いの角度が自由に変更されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項６】　前記少なくとも２つの音響用スピーカの間にクロストーク防止壁を設け、前記クロストーク防止壁は、個々の音響用スピーカから発生するクロストークを防ぐことを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項７】　前記クロストーク防止壁は折り畳み又は取り外し可能であることを特徴とする、請求項６に記載の携帯端末装置の音響再生システム。
【請求項８】　前記携帯端末装置にクロストーク削除の信号処理回路を設け、前記クロストーク削除の信号処理回路は、前記少なくとも２つの音響用スピーカの入力信号を処理してクロストークを削除することを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項９】　前記少なくとも２つの音響用スピーカのうち少なくとも一方は携帯端末装置の筐体壁位置より凹んだ位置に設置されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項１０】　前記少なくとも一方の音響用スピーカの一部又は全てを前記携帯端末装置の筐体壁の多孔部で覆うか又は前記スピーカの振動面を覆う筐体壁を削除することを特徴とする、請求項９に記載の携帯端末装置の音響再生システム。
【請求項１１】　前記少なくとも２つの音響用スピーカのうち少なくとも一方の音響用スピーカは、前記携帯端末装置の両端の側面からはみ出して設置されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項１２】　前記少なくとも一方の音響用スピーカは前記携帯端末装置の前面から奥の方に位置し、前記少なくとも一方の音響スピーカの一部を前記携帯端末装置の筐体壁の多孔部で覆うか又は前記少なくとも一方の音響用スピーカの振動面を覆う筐体壁を削除することを特徴とする、請求項１１に記載の携帯端末装置の音響再生システム。
【請求項１３】　はみ出した前記少なくとも一方の音響用スピーカが前記携帯端末装置内に収納されることを特徴とする、請求項１１に記載の携帯端末装置の音響再生システム。
【請求項１４】　前記少なくとも２つの音響用スピーカは前記携帯端末装置に一列のスピーカアレイに配列されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項１５】　前記少なくとも２つの音響用スピーカは互いに異なる方向に向けて前記携帯端末装置に配列されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項１６】　前記少なくとも２つの音響用スピーカは異なる方向に個々に異なる音響が聴取されるように音響再生を行うことを特徴とする、請求項１５に記載の携帯端末装置の音響再生システム。
【請求項１７】　前記携帯端末装置に指向性の絞り信号処理回路が設けられ、前記指向性の絞り信号処理回路は、前記少なくとも２つの音響用スピーカの入力信号を処理して指向性の方向を絞ることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項１８】　前記携帯端末装置に無指向性信号処理回路を設け、前記無指向性信号処理回路は前記少なくとも２つの音響用スピーカの入力信号を処理して無指向性にすることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項１９】　前記携帯端末装置に前記少なくとも２つの音響用スピーカの指向性に関する方向を絞る指向性の絞り信号処理回路と、前記少なくとも２つの音響用スピーカを無指向性にする無指向性信号処理回路とを設け、前記指向性の絞り信号処理回路、前記無指向性信号処理回路が択一的に選択されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２０】　高効率な前記少なくとも２つの音響用スピーカを用い、音響再生時にアンプレスの駆動を可能にすることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２１】　前記少なくとも２つの音響用スピーカから個々の音響を再生し、個々の音響の音量を独自に調整可能にすることを特徴とする、請求項１に記載の携帯

端末装置の音響再生システム。
【請求項２２】　前記少なくとも２つの音響用スピーカは、中音～高音域に特化した特性、低音域に特化した特性をそれぞれ有することを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２３】　前記少なくとも２つの音響用スピーカのうち少なくとも一方は、前記携帯端末装置が机、床、壁際を含む面に接して設置された際に、音響の反射が利用できるようにすることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２４】　前記少なくとも２つの音響用スピーカのうち少なくとも一方の音響再生と前記携帯端末装置の通話を同時に可能にすることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２５】　前記少なくとも一方の音響用スピーカの音響再生信号が前記携帯端末装置の通話相手にも聴取可能なように送信されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２６】　前記少なくとも２つの音響用スピーカの少なくとも１つは、通話マイクロフォン兼用の音響用スピーカ、受話スピーカ兼用の音響用スピーカ、リンガ兼用の音響用スピーカ、バイブレータ兼用の音響用スピーカ、画面表示モニタ兼用の音響用スピーカ、キーパネル兼用の音響用スピーカを含む前記携帯端末装置のデバイスと兼用することを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２７】　前記携帯端末装置には音響信号発生装置が接続され、前記音響信号発生装置は音響データを有し、前記少なくとも２つの音響用スピーカは、前記音響信号発生装置から得た前記音響データを音響再生することを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項２８】　前記携帯端末装置には前記音響信号発生装置が複数接続され、スイッチで取得先である音響信号発生装置を切り換えることを特徴とする、請求項２７に記載の携帯端末装置の音響再生システム。
【請求項２９】　前記少なくとも２つの音響用スピーカをアンプレス駆動可能とし、前記携帯端末装置自体の電源を切った状態で、前記音響信号発生装置から得た前記音響データの音響再生を可能にすることを特徴とする、請求項２７に記載の携帯端末装置の音響再生システム。
【請求項３０】　前記携帯端末装置は前記音響信号発生装置からのデータを無線で得ることを特徴とする、請求項２７に記載の携帯端末装置の音響再生システム。
【請求項３１】　前記携帯端末装置にはヘッドホン又はイヤホンが接続され、前記ヘッドホン又はイヤホンから前記少なくとも２つの音響用スピーカに代わり再生音響が聴取されることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項３２】　前記ヘッドホン又はイヤホンから前記少なくとも２つの音響用スピーカからの再生音響と前記携帯端末装置の通話音声とが同時に聴取されることを特徴とする、請求項３１に記載の携帯端末装置の音響再生システム。
【請求項３３】　前記携帯端末装置は伸張式であることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項３４】　前記携帯端末装置は折り畳み式であることを特徴とする、請求項１に記載の携帯端末装置の音響再生システム。
【請求項３５】　携帯端末装置の音響再生方法において、
携帯端末装置に設けられる少なくとも２つの音響用スピーカは、同時に駆動され、互いの再生音響を補助し合うことを特徴とする携帯端末装置の音響再生方法。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は、携帯電話、ＰＨＳ（Ｐｅｒｓｏｎａｌ　Ｈａｎｄｙ　ＰｈｏｎｅＳｙｓｔｅｍ）、コードレス電話、親子電話の子機、ＰＤＡ（ＰｅｒｓｏｎａｌＤｉｇｉｔａｌ　Ａｓｓｉｓｔａｎｔｓ）等の、無線電話を含む携帯端末装置に関する。特に、本発明は、高音質の音響再生を実現するための携帯端末装置の音響再生システム及び方法に関する。
【０００２】
【従来の技術】従来の携帯電話などの携帯端末装置におけるスピーカ類の設置については、着信を知らせる手段として、ベル音を発生するリンガ、振動を引き起こすバイブレータのためにマイクロモータ等が携帯端末装置の筐体に取り付けられている。また、携帯端末装置の基本機能である受話音の再生、留守録音等の拡声を行うために、マイクロスピーカが取り付けられ、音声を集音するためにマイクロフォンがそれぞれ取り付けられるのが一般的である。
【０００３】特開平１０－２７６２５０号公報には、携帯端末装置において、イヤホン、ヘッドホンを用いてステレオ音響を聴取することが記載されている。この場合、イヤホン、ヘッドホンを長時間使用すると、耳との接触箇所に痛みが生じたり、移動する際に携帯端末装置と一緒に持ち歩かねばならないという不便があり、また複数の人数で同時に聴取できなく、快適さ、利便性という点に関し十分とは言えないという問題があった。
【０００４】さらに、特開平８－１７１４７７号公報にはパーソナルコンピュータ（ＰＣ）、ワークステーション等について、特開平９－１２０３５４号公報にはノート型パーソナルコンピュータについて、イヤホン、ヘッドホン無しのスピーカによるステレオ音響再生が開示されている。スピーカのステレオ音響再生では、音源の空間的広がりや、イヤホン、ヘッドホンには無い後述するクロストークが生じる。このため、左右のスピーカ間の

間隔が一定距離以上に確保され、各左右スピーカに対して受聴者の両耳間の音圧差、位相差が一定値以上に確保される。左右のスピーカが接近して各左右スピーカに対して受聴者の両耳間の音圧差、位相差が小さくなると、クロストークに起因してステレオ効果が無くなり、モノラルに近づいてしまう。

【０００５】ところで、携帯端末装置は、上記パーソナルコンピュータ等よりも小型であるため、当然に左右のスピーカ間の間隔も狭くなり、ステレオ効果を確保することが困難であり、高音質のステレオ再生を実現するのが困難であるという問題を有する。ところで、近年、携帯端末装置は、マルチメディア化が顕著になり、携帯端末装置の内蔵メモリ容量増加、記憶媒体の導入、通信の高速度化により、画像、音楽などの大容量データを扱うようになってきた。さらに、携帯電話を始めとする携帯端末装置の普及率はめざましく、また多くの人が外出時に携帯するため、これに他の付加機能をつけて利便性を向上させるという課題がある。

【０００６】携帯端末装置を用いて、マルチメディアデータがもたらす高品位かつ快適な音響を視聴するためには、携帯端末装置に対し、快適な音響のステレオ再生だけでなく、高品位を確保するために音響の周波数の広帯域性を確保することが要求されるという課題がある。さらに、限られた領域内で複数の人数で聴取したり、周囲への迷惑を回避したり使用環境に適するように、携帯端末装置に対し、音響の指向性を確保することが要求されるという課題がある。

【０００７】また、上記とは逆に、より多くの人と聴取を行うため、音響の無指向性を確保することが要求されるという課題がある。さらに、２カ国語またはそれ以上の音源に対して双方が個別に聴取可能な利便性が要求されるという課題がある。

【０００８】

【発明が解決しょうとする課題】したがって、本発明は上記問題点、要求に鑑みて、快適、高音質な音響再生が可能で、使用環境への高適応性、高利便性を有する携帯端末装置の音響再生システム及び方法を提供することを目的とする。

【０００９】

【課題を解決するための手段】本発明は、前記問題点を解決するために、携帯端末装置の音響再生システムにおいて、携帯端末装置に少なくとも２つの音響用スピーカが設けられ、前記少なくとも２つの音響用スピーカは、同時に駆動され、互いの再生音響を補助し合うことを特徴とする携帯端末装置の音響再生システムを提供する。この手段により、携帯端末装置は、快適、高音質な音響再生を行え、使用環境への高適応性、高利便性を有するようになった。

【００１０】好ましくは、前記少なくとも２つの音響用スピーカは、前記携帯端末装置の長手方向又は対角線の両端に配置される。この手段により、ステレオ音響再生時に音響用スピーカ間のクロストークを回避でき、携帯端末装置では高音質のステレオ音響再生が可能になる。好ましくは、前記少なくとも２つの音響用スピーカの全て又は一部は前記携帯端末装置の筐体壁と角度をもって設置される。

【００１１】この手段により、携帯端末装置が机、床等の低い場所に置かれたとき、少なくとも２つの音響用スピーカからの音響の伝播方向が受聴者に向き、聞きやすくなる。さらに、携帯端末装置が小型化した場合には、少なくとも２つの音響用スピーカが互いに外側に向くことにより、音響用スピーカ間のクロストークを回避することが可能になる。好ましくは、前記少なくとも２つの音響用スピーカの全て又は一部と前記携帯端末装置の筐体壁との角度が自由に変更できる。

【００１２】さらに、好ましくは、前記少なくとも２つの音響用スピーカの全て又は一部は互いの角度が自由に変更される。これらの手段により、携帯端末装置に対する受聴者の位置、携帯端末装置の小型化の状況に応じて、音響用スピーカの角度が任意に変更することができる。

【００１３】好ましくは、前記少なくとも２つの音響用スピーカの間にクロストーク防止壁を設け、前記クロストーク防止壁は、個々の音響用スピーカから発生するクロストークを防ぐ。この手段により、少なくとも２つの音響用スピーカが非常に接近した場合に生じるクロストーク成分が物理的に削除される。好ましくは、前記クロストーク防止壁は折り畳み、取り外し可能である。

【００１４】この手段により、音響用スピーカが不要で、携帯端末装置の持ち運び時にクロストーク防止壁が引っかかったりして破損するのを防止する。好ましくは、前記携帯端末装置にクロストーク削除の信号処理回路を設け、前記クロストーク削除の信号処理回路は、前記少なくとも２つの音響用スピーカへの入力信号を処理してクロストークを削除する。この手段により、クロストーク防止壁なしに音響用スピーカ間のクロストークの削除が可能になる。

【００１５】好ましくは、前記少なくとも２つの音響用スピーカのうち少なくとも一方は携帯端末装置の筐体壁位置より凹んだ位置に設置される。この手段により、凹みを設けなかった場合と比較して、外部への突出部分を低減して引っかかりが少ないクロストーク防止壁が実現できる。好ましくは、前記少なくとも一方の音響用スピーカの一部又は全てを前記携帯端末装置の筐体壁の多孔部で覆うか又は前記スピーカの振動面を覆う筐体壁を削除する。

【００１６】この手段により、音響用スピーカからの音響の音圧を向上することが可能になる。好ましくは、前記少なくとも一方の音響用スピーカは、前記携帯端末装置の両端の側面からはみ出して設置される。この手段に

より、音響用スピーカ間の距離が大きくなり、音響用スピーカ間のクロストークを低減でき、クロストーク防止壁なしで高音質のステレオ音響再生が可能になる。

【００１７】好ましくは、前記少なくとも一方の音響用スピーカは前記携帯端末装置の前面から奥の方に位置し、前記少なくとも一方の音響用スピーカの一部を前記携帯端末装置の筐体壁の多孔部で覆うか又は前記少なくとも一方の音響用スピーカの振動面を覆う筐体壁を削除する。この手段により、音響用スピーカ間の距離が大きくなり、音響用スピーカ間のクロストークを低減でき、クロストーク防止壁なしで高音質のステレオ音響再生が可能になると同時に音響用スピーカの音圧を大きくすることが可能になる。

【００１８】好ましくは、はみ出した前記少なくとも一方の音響用スピーカが前記携帯端末装置内に収納される。この手段により、携帯端末装置の携帯時に突出している音響用スピーカが収納されるので、持ち運び時に引っかかったりする障害となることが回避できる。好ましくは、前記少なくとも２つの音響用スピーカは前記携帯端末装置に一列のスピーカアレイに配列される。

【００１９】この手段により、スピーカアレイの方向に指向性が向上するので、携帯端末装置を用いて、喫茶店などの場所で、少人数の受聴者で音響を聴取するときなど、受聴者のみに音響が到達し、第３者には音響が到達しなようにすることができ、ヘッドホンなどを用いることなく、周囲への迷惑を回避した音響聴取が可能になる。好ましくは、前記少なくとも２つの音響用スピーカは異なる方向に向けて前記携帯端末装置に配列される。

【００２０】この手段により、音響用スピーカを互いに外向きに設置することが可能になるので、音響用スピーカの音響のクロストークは小さくなり、より高音質のステレオ音響再生が実現可能になる。さらに、音響用スピーカを携帯端末装置の四方に向けて設置することにより、より無指向性の効果を向上させることができる。これにより、多人数の受聴者に聴取させる場合に便利である。好ましくは、前記少なくとも２つの音響用スピーカは異なる方向に個々に異なる音響が聴取されるように音響再生を行う。

【００２１】この手段により、個々に異なる音響として、例えば、２カ国語の音声が複数人で聴取され、１台の携帯端末装置１で複数の言語を同時に聴取することが可能になる。好ましくは、前記携帯端末装置に指向性の絞り信号処理回路が設けられ、前記指向性の絞り信号処理回路は、前記少なくとも２つの音響用スピーカへの入力信号を処理し指向性の方向を絞る。

【００２２】この手段により、少ない数の音響用スピーカで音響伝播の指向性が信号処理により一定方向に絞られる。好ましくは、前記携帯端末装置に無指向性信号処理回路を設け、前記無指向性信号処理回路は前記少なくとも２つの音響用スピーカの入力信号を処理し、無指向性にする。この手段により、少ない数の音響用スピーカで音響伝播がより広角に広がる無指向性が実現されることにより、１台の携帯端末装置にて音響用スピーカを増設することなく、多人数の受聴者により音響聴取が可能になる。

【００２３】好ましくは、前記携帯端末装置に前記少なくとも２つの音響用スピーカの指向性に関する方向を絞る指向性の絞り信号処理回路と、前記少なくとも２つの音響用スピーカを無指向性にする無指向性信号処理回路とを設け、前記指向性の絞り信号処理回路、前記無指向性信号処理回路が択一的に選択される。この手段により、信号処理機能を選択可能にしたので、状況に応じて最適な信号処理を行うことが可能になると同時に、常に快適な音響聴取が可能になる。

【００２４】好ましくは、高効率な前記少なくとも２つの音響用スピーカを用い、音響再生時にアンプレスの駆動を可能にする。この手段により、音響用スピーカに高効率なものを適用することにより、アンプレスの駆動が可能な構造となり、アンプが不要となることで、携帯端末装置の部品点数が低減され、小型軽量化が実現でき、低消費電力化が実現され、１回の充電での携帯端末装置の未使用可能時間が増加する。

【００２５】好ましくは、前記少なくとも２つの音響用スピーカから個々の音響を再生し、個々の音響の音量を独自に調整可能にする。この手段により、例えば、２カ国語を聴取しながら、外国語を学ぶような場合、外国に比して母国語の音量を小さくした聴取により学習能率が向上できる。好ましくは、前記少なくとも２つの音響用スピーカは、中音～高音域に特化した特性、低音域に特化した特性をそれぞれ有する。

【００２６】この手段により、高帯域でより高音質の音響再生が可能になる。好ましくは、前記少なくとも２つの音響用スピーカは、前記携帯端末装置が机、床、壁際を含む面に接して設置された際に、音響の反射が利用できるようにする。この手段により、携帯端末装置が机等の面に接した際に、低音成分が机等の面で反射して位相が逆転して、音響用スピーカの前方から出る低音成分と同相になり、前方から出る低音成分を補強することが可能になる。

【００２７】好ましくは、前記少なくとも２つの音響用スピーカの音響再生と前記携帯端末装置の通話を同時に可能にする。さらに、好ましくは、前記少なくとも２つの音響用スピーカの音響再生信号が前記携帯端末装置の通話相手にも聴取可能なように送信される。これらの手段により、携帯端末装置を用いてＢＧＭを伴った会話の実現が可能になる。

【００２８】好ましくは、前記少なくとも２つの音響用スピーカの少なくとも１つは、通話マイクロフォン兼用の音響用スピーカ、受話スピーカ兼用の音響用スピーカ、リンガ兼用の音響用スピーカ、バイブレータ兼用の

音響用スピーカ、画面表示モニタ兼用の音響用スピーカ、キーパネル兼用の音響用スピーカを含む前記携帯端末装置のデバイスと兼用する。

【００２９】この手段により、音響用スピーカとデバイスとを兼用することで、携帯端末装置の部品点数が低減され、小型軽量化が実現できる。好ましくは、前記携帯端末装置には音響信号発生装置が接続され、前記音響信号発生装置は音響データを有し、前記少なくとも２つの音響用スピーカは、前記音響信号発生装置から得た前記音響データを音響再生する。

【００３０】この手段により、携帯端末装置を外付け音響用スピーカのように機能させ、他の音源からの音響を再生する機能を付加することにより、より多くの音響データに対応可能になるとともに、携帯端末装置以外に音響用スピーカを別途携帯することが不要となる。好ましくは、前記携帯端末装置には前記音響信号発生装置が複数接続され、スイッチで取得先である音響信号発生装置を切り換える。

【００３１】この手段により、複数の音源からの音響が容易に比較できるなど、利便性が向上する。好ましくは、前記少なくとも２つの音響用スピーカをアンプレス駆動可能とし、前記携帯端末装置自体の電源を切った状態で、前記音響信号発生装置から得た前記音響データの音響再生を可能にする。

【００３２】この手段により、外部からの入力信号を再生する場合、携帯端末装置自体の電源を切った状態での音響再生が可能になる。これにより、携帯端末装置が節電され、１回の充電に対する使用可能時間が増加し、バッテリーの残量にとらわれることなく、高音質の音響再生が可能になる。好ましくは、前記携帯端末装置は前記音響信号発生装置からのデータを無線で得る。この手段として、ｂｌｕｅｔｏｏｔｈなどの適用が可能であり、ケーブルが不要となるので、システムの構成を簡素化できる。好ましくは、前記携帯端末装置にはヘッドホン又はイヤホンが接続され、前記ヘッドホン又はイヤホンから前記少なくとも２つの音響用スピーカに代わり再生音響が聴取される。

【００３３】さらに、好ましくは、前記ヘッドホン又はイヤホンから前記少なくとも２つの音響用スピーカからの再生音響と前記携帯端末装置の通話音声とが同時に聴取される。これらの手段により、周囲の多大な迷惑とならずに、心地よいＢＧＭを伴った会話が実現できる。また、ＢＧＭに駅の騒音、雑踏、デパート、居酒屋の喧騒など選択することにより、より会話を弾ませることが可能になる。好ましくは、前記携帯端末装置は伸張式であり、さらに、好ましく、前記携帯端末装置は折り畳み式である。

【００３４】これらの手段により、本発明は、伸張式、折り畳み式の携帯端末装置にも、同様に、適用可能であり、高音質のステレオ音響再生が可能である。さらに、本発明は、携帯端末装置の音響再生方法において、携帯端末装置に設けられる少なくとも２つの音響用スピーカは、同時に駆動され、互いの再生音響を補助し合うことを特徴とする携帯端末装置の音響再生方法を提供する。

【００３５】この手段により、上記発明と同様に、携帯端末装置は、快適、高音質な音響再生を行え、使用環境への高適応性、高利便性を有するようになった。

【００３６】

【発明の実施の形態】以下、本発明の実施の形態について図面を参照して説明する。図１は本発明に係る携帯端末装置の音響再生システムにおける第１の実施の形態を示す概略構成を示す図である。本図に示すように、携帯端末装置１には、メニュー、電話番号、機能等の表示を行うために液晶（ＬＣＤ）で構成される画面表示モニタ１１、メニューの選択操作電話番号の入力操作、機能選択操作等を行うキーパネル１２、受信した音声をスピーカから聞くための受話口１３、送信すべき音声をマイクロフォンに伝えるための送話口１４と、受信電波を受信信号に変換し、送信信号を送信電波に変換するアンテナ１５等からなる。

【００３７】さらに、携帯端末装置１には、ステレオ音響再生を行う音響用スピーカ２ａ、２ｂが設けられる。音響用スピーカ２ａ、２ｂは、携帯端末装置１の前面に、長手方向に対角線上に両端に位置し、携帯端末装置１の前面に向けられ、音響用スピーカ２ａ、２ｂ間の間隔が最大になるように配置されている。

【００３８】図２は、図１の音響用スピーカ２ａ、２ｂのステレオ音響再生を説明する図である。本図に示すように、音響用スピーカ２ａ、２ｂにより、左（Ｌｅｆｔ；Ｌ）、右（Ｒｉｇｈｔ；Ｒ）信号がステレオ音響再生され、ステレオ音響再生された音響が受聴者に達する。

【００３９】このような設置により、音響用スピーカ２ａ、２ｂの快適で高音質な音響再生が可能になる。すなわち、従来のように、ヘッドホン、イヤホン、外付けスピーカシステムなどを用いることなく、携帯端末装置１のみでステレオ音響再生が可能となる。第１の実施の形態に関する第１の変形例として、携帯端末装置１が机、床、壁際などの面に接して設置された際に、音響用スピーカ２ａ、２ｂの裏面を解放する構造にし、音響の反射が利用できるようにする。

【００４０】携帯端末装置１は、小型であるため、低音再生が困難である。本発明により、携帯端末装置１が机等の面に接した際に、低音成分が机等の面で反射して位相が逆転して、音響用スピーカ２ａ、２ｂの前方から出る低音成分と同相になり、前方から出る低音成分を補強することが可能になる。なお、携帯端末装置１が机等の面に接していない場合には、音響用スピーカ２ａ、２ｂの裏面を閉じ、低音成分が回折効果により、音響用スピーカ２ａ、２ｂの前方に回り込んで低音成分の音圧を小

さくしないようにする。

【００４１】第１の実施の形態に関する第２の変形例として、音響用スピーカ２ａ、２ｂに高効率なものを適用することにより、アンプレスの駆動が可能な構造にする。このようにアンプが不要となることで、携帯端末装置１の部品点数が低減され、小型軽量化が実現でき、低消費電力化が実現され、１回の充電での携帯端末装置１の未使用可能時間が増加する。

【００４２】第１の実施の形態に関する第３の変形例として、音響再生と通話が同時に可能な構成とする。また、音響再生信号が通話相手にも聴取可能なように送信される。これによりＢＧＭを伴った会話の実現が可能になる。第１の実施の形態に関する第４の変形例として、音響用スピーカ２ａ、２ｂから個々の音響を再生し、個々の音響の音量を独自に調整可能な構造にする。

【００４３】これにより、例えば、２カ国語を聴取しながら、外国語を学ぶような場合、外国語に比して母国語の音量を小さくした聴取により学習能率が向上できる。図３は本発明に係る携帯端末装置の音響再生システムにおける第２の実施の形態を示す概略構成を示す図である。本図に示すように、図１と比較して、携帯端末装置１は伸張式であり、音響用スピーカ２ａ、２ｂは、携帯端末装置１の前面に、長手方向に対角線上に両端に位置する。

【００４４】本図（ａ）、本図（ｂ）に示すように、携帯端末装置１のフリップ部が伸張されることで、音響用スピーカ２ａ、２ｂ間の距離が広がり、音響用スピーカ２ａ、２ｂ間の間隔が最大になる。これにより、音響用スピーカ２ａ、２ｂにおけるクロストークが低減される。本発明は、伸張式の携帯端末装置１に適用されるので、移動時の持ち運びの利便性に加えて、高音質のステレオ音響再生を提供することが可能になる。

【００４５】図４は本発明に係る携帯端末装置の音響再生システムにおける第３の実施の形態を示す概略構成を示す図である。本図に示すように、図１と比較して、音響用スピーカ２ａ、２ｂは、携帯端末装置１の前面に、長手方向の同一辺の両端に位置し、音響用スピーカ２ａ、２ｂ間の間隔が最大になるように配置されている。

【００４６】携帯端末装置１では机、床など受聴者の耳よりも低い位置に設置される状態を想定して音響用スピーカ２ａ、２ｂが、以下のように、設置される。図５は図４におけるＢａ－Ｂａ’又はＢｂ－Ｂｂ’断面図である。本図に示すように、音響用スピーカ２ａ、２ｂは、その設置箇所の携帯端末装置１の筐体壁とある角度をもって設置され、音響用スピーカ２ａ、２ｂからの音響は受聴者の位置５に音響の伝播方向７に沿って達する。

【００４７】なお、音響用スピーカ２ａ、２ｂと筐体壁との角度、互いの角度は自由に変更することが可能である。このように、音響用スピーカ２ａ、２ｂの方向を受聴者の位置に向けることで、より聴取しやすい音響の実現が可能になる。図６は本発明に係る携帯端末装置の音響再生システムにおける第４の実施の形態を示す概略構成を示す図であり、図７は図６におけるＢ－Ｂ’断面図である。

【００４８】図６に示すように、図２と比較して、音響用スピーカ２ａ、２ｂは、携帯端末装置１の前面に、長手方向の同一辺の両端に位置する点では同一であるが、図７に示すように、音響用スピーカ２ａ、２ｂは互いに外向きに設置される。なお、音響用スピーカ２ａ、２ｂを互いに外向きにする角度は自由に変更することが可能である。

【００４９】携帯端末装置１の小型化がさらに進み、音響用スピーカ２ａ、２ｂ間の間隔が小さくなると想定する。これにともなって、音響用スピーカ２ａ、２ｂ間でクロストークが増大して、ステレオ効果を喪失するが、図６に示すように、音響用スピーカ２ａ、２ｂは互いに外向きに設置することにより、以下に説明するように、このクロストークを低減する。

【００５０】図８は図６、図７における音響用スピーカ２ａ、２ｂのクロストークの低減を説明する図である。本図（ａ）の場合、受聴者に対して、音響用スピーカ２ａ、２ｂは同じ方向に向いている。音響用スピーカ２ａからの音響の伝播方向７ａは、受聴者の左耳に向かう伝播方向７ａＬ、クロストーク（点線）として右耳に向かう伝播方向７ａＲからなり、音響用スピーカ２ｂからの音響の伝播方向７ｂは、クロストーク（点線）として受聴者の左耳に向かう伝播方向７ｂＬ、右耳に向かう伝播方向７ａＲからなる。

【００５１】なお、ヘッドホン、イヤホンでは、音響が空間を伝播しないので、このようなクロストークは存在しない。音響用スピーカ２ａ、２ｂ間の間隔が一定距離以上あれば、音響用スピーカ２ａ、２ｂから伝播方向７ａＬ及び７ａＲの音響、伝播方向７ｂＲ及び７ｂＬの音響により受聴者の両耳でそれぞれ形成される音圧差、位相差が大きく、それらの極性が相互に逆であるので、音響用スピーカ２ａ、２ｂが形成する音源が識別される。

【００５２】しかしながら、音響用スピーカ２ａ、２ｂが接近すると、音響用スピーカ２ａ、２ｂからの音波が受聴者の両耳でそれぞれ形成する音圧差、位相差が小さい状態で、受聴者の右耳に伝播方向７ｂＲ及び７ａＲ、左耳に７ａＬ及び７ｂＬが達するので、ステレオ効果が喪失し、モノラル効果が得られるだけになる。本図（ｂ）に示すように、音響用スピーカ２ａ、２ｂは互いに外向きに設置されると、音響用スピーカ２ａから受聴者の右耳に向かう伝播方向７ａＲの音響が右耳に達せず、さらに、音響用スピーカ２ｂから受聴者の左耳に向かう伝播方向７ｂＬの音響が左耳に達しなくなる割合が増加し、クロストークが低減する。

【００５３】このクロストークが低減するため、受聴者の右耳には音響用スピーカ２ｂからの音響が達し、受聴

者の左耳には音響用スピーカ２ａからの音響が達する割合が増加する。このため、受聴者は、音響用スピーカ２ａ、２ｂの音源をそれぞれ識別することが可能になるので、音響用スピーカ２ａ、２ｂの間の間隔が小さくなっても、ヘッドホン、イヤホンと同様なステレオ効果を得ることが可能になる。

【００５４】図９は本発明に係る携帯端末装置の音響再生システムにおける第５の実施の形態を示す概略構成を示す図である。本図に示すように、図１と比較して、音響用スピーカ２ａは、携帯端末装置１の正面、上面及び正面からみて左側面にかかって配置されたスピーカであり、音響用スピーカ２ｂは、携帯端末装置１の正面、下面及び正面からみて左側面にかかって配置されたスピーカである。

【００５５】本発明では、図７、図８で説明したように、クロストーク低減の効果による高音質のステレオ音響再生に加え、図４で説明したように、携帯端末装置１を机、床など受聴者の耳より低い位置に設置した状態で音響用スピーカ２ａ、２ｂの音響の伝播方向を受聴者に向ける構造とするため、より音響を聴取しやすくなる。図１０は本発明に係る携帯端末装置の音響再生システムにおける第６の実施の形態を示す概略構成を示す図である。

【００５６】本図に示すように、図１と比較して、携帯端末装置１は折り畳み式であり、音響用スピーカ２ａは、携帯端末装置１の正面、上面及び正面からみて左側面にかかって設置されたスピーカであり、音響用スピーカ２ｂは、携帯端末装置１の正面、下面及び正面からみて左側面にかかって設置されたスピーカである。本発明は、図９に示した例と比較して、折り畳み式の携帯端末装置１に適用されるので、移動時の持ち運びの利便性に加えて、高音質のステレオ音響再生を提供することが可能になる。

【００５７】次に、音響用スピーカ同士の間隔は広い方が望ましいが、小型軽量化が進む携帯端末装置１では、携帯端末装置１のサイズ、他の部品の配置により個々の音響用スピーカ間の距離などの寸法は、自ずと限られてしまう。このような場合について、以下に説明を行う。図１１は本発明に係る携帯端末装置の音響再生システムにおける第７の実施の形態を示す概略構成を示す図であり、図１２は図１１における音響用スピーカ２ａ、２ｂを含むＡ－Ａ’断面を矢印方向から見た概略構成図である。

【００５８】本図に示すように、図１と比較して、音響用スピーカ２ａ、２ｂは、携帯端末装置１の前面に、音響用スピーカ２ａ、２ｂの表面と携帯端末装置１の表面が一致し、横方向に並んで、携帯端末装置１の前面に向けて、画面表示モニタ１１とキーパネル１２の間に位置する。音響用スピーカ２ａ、２ｂの間には、クロストーク防止壁８が設けられ、クロストーク防止壁８は、音響用スピーカ２ａ、２ｂの表面から外側に突出した壁で、音響用スピーカ２ａ、２ｂが接近して設置される場合に、音響用スピーカ２ａ、２ｂ間に生じるクロストークを、以下のように、低減し、高音質なステレオ音響再生を実現する。

【００５９】図１３は図１１、図１２における音響用スピーカ２ａ、２ｂのクロストークの低減を説明する図である。本図（ａ）では、図７で説明したように、音響用スピーカ２ａ、２ｂ間には、クロストークが発生する。本図（ｂ）に示すように、クロストーク防止壁８により、音響用スピーカ２ａ、２ｂ間のクロストーク７ａＬ、７ｂＲが物理的に遮蔽され、受聴者の左耳、右耳にそれぞれ達しない。このため、高音質なステレオ音響再生を実現することが可能になる。

【００６０】なお、クロストーク防止壁８は、携帯端末装置１から突出するため、携帯端末装置１を移動する際に引っかけるなど障害となり得る。そこで、本発明における第７の実施の形態に関する第１の変形例として、クロストーク防止壁８は、使用が不要な場合には、折り畳んだり、取り外し等の移動可能な構造とし、音響を聴取するときのみ携帯端末装置１にセットする構造とする。

【００６１】これにより、持ち運び時には、破損等の障害とならず、且つ、音響聴取時には高音質のステレオ音響再生が可能となる。なお、このクロストーク防止壁８は図１１中の上下方向に対し長さを延長した構造とすることができる。クロストーク防止壁８が上下方向に短い場合、防止壁のある部分ではクロストークは回避されるが、防止壁が途切れた位置ではクロストークの要因が生じることとなる。しかし、クロストーク防止壁８を上下方向に長くすることで、よりクロストークを低減することが可能になる。また、携帯端末装置１内にクロストーク防止壁８の収納スペースを設け、取り外したクロストーク防止壁８を収納することにより、クロストーク防止壁８の紛失を回避することが可能になる。

【００６２】図１４は図１１における第７の実施の形態に関する概略構成の第２の変形例を示す図である。本図に示すように、図１１におけるＡ－Ａ’に相当する断面での構成では、音響用スピーカ２ａ、２ｂは、携帯端末装置１の筐体壁位置６より凹んだ位置に設置され、音響用スピーカ２ａ、２ｂ間の境界８’で分けられている。

【００６３】この境界８’が図１１、図１２の実施の形態で設けられたクロストーク防止壁８に類似の効果をもたらすことにより、外部に突出しないクロストーク防止壁が実現でき、且つ、音響聴取時には高音質なステレオ音響再生を実現可能にする。図１５は図１１における第７の実施の形態に関する概略構成の第３の変形例を示す図である。

【００６４】本図に示すように、音響用スピーカ２ａ、２ｂは、携帯端末装置１の筐体壁位置６よりそれぞれ凹んだ位置に設置される。クロストーク防止壁８は音響用

スピーカ２ａ、２ｂ間の音響のクロストークを防止する。一般的に、クロストーク防止壁８は、その高さが高いほどその効果が高くなるが、携帯端末装置１の筐体壁位置６から突出すると、障害になり得る。

【００６５】このため、このように凹んで設置された状態の音響用スピーカ２ａ、２ｂに対して、クロストーク防止壁８が設けられることにより、凹みの深さ分だけ、突出量が減少するため、音響用スピーカ２ａ、２ｂを携帯端末装置１の筐体壁位置６に近接して設置し、凹みを設けなかった場合（図１２）と比較して、外部への突出部分を低減したクロストーク防止壁８が実現できる。且つ音響聴取時には高音質のステレオ音響再生が可能になる。

【００６６】図１６は本発明に係る携帯端末装置の音響再生システムにおける第８の実施の形態を示す概略構成を示す図である。本図に示すように、図１と比較して、音響用スピーカ２ａは、携帯端末装置１の正面から見て左側に側面からはみ出して、携帯端末装置１の正面側に向けて設置され、音響用スピーカ２ｂは、携帯端末装置１の正面から見て右側に側面からはみ出して、携帯端末装置１の正面側に向けて設置される。

【００６７】音響用スピーカ２ａ、２ｂは、その設置位置の携帯端末装置１の筐体壁とは９０度に近い角度をもって設置されている。このように携帯端末装置１の側面に音響用スピーカ２ａ、２ｂをはみ出して設置することで、音響用スピーカ２ａ、２ｂ間の距離は、図１１に記載した本発明における第６の実施の形態例と比較して広がるため、クロストーク防止壁８なしに音響用スピーカ２ａ、２ｂから生じるクロストークが低減できる。よって、部品点数を低減すると共に高音質なステレオ音響再生が実現可能になる。

【００６８】また、音響用スピーカ２ａ、２ｂを、携帯端末装置１の前面から裏面に向けて、より奥に深く設置することにより、携帯端末装置１自体が音響用スピーカ２ａ、２ｂのクロストーク防止壁のような役割を果たすことで、音響用スピーカ２ａ、２ｂから生じる音響のクロストークがより低減でき、高音質なステレオ音響再生が実現可能になる。なお、前述のように、音響用スピーカ２ａ、２ｂと筐体壁との角度は自由に変更することが可能である。また、音響用スピーカ２ａ、２ｂが携帯端末装置１からはみ出すことで、持ち歩きなど携帯時の障害となる可能性がある。そこで、第８の実施の形態に関する変形例として、音響用スピーカ２ａ、２ｂを携帯端末装置１の筐体内に収納可能にし、音響用スピーカ２ａ、２ｂ使用時には筐体から引き出す方式にする。これにより、音響用スピーカ２ａ、２ｂが携帯時に障害となることを回避できるようになる。

【００６９】図１７は本発明に係る携帯端末装置の音響再生システムにおける第９の実施の形態を示す概略構成を示す図である。本図に示すように、図１１と比較して、音響用スピーカ２ａは携帯端末装置１の正面から見て左側に側面からはみ出して、携帯端末装置１の正面側に向けて設置され、音響用スピーカ２ｂは携帯端末装置１の正面から見て右側に側面からはみ出して、携帯端末装置１の正面側に向けて設置される。さらに、音響用スピーカ２ａ、２ｂは携帯端末装置１の前面から少し離れた奥に設置される。図１６にて述べた本発明における第７の実施の形態から、さらに、音響用スピーカ２ａ、２ｂの前面で、音響用スピーカ２ａ、２ｂを遮る位置にある筐体壁を削除することで、音響用スピーカ２ａ、２ｂの振動面が筐体壁に覆われないようにする。このため、音響用スピーカ２ａ、２ｂ前面からの音響が受聴者に到達し、音圧がより向上できる。

【００７０】音響用スピーカ２ａ、２ｂを携帯端末装置１の前面から突出させないので、音響用スピーカ２ａ、２ｂ間の携帯端末装置１本体が両スピーカ間のクロストーク防止壁の役割を果たし、より高音質のステレオ音響再生が可能になる。なお、前述のように、音響用スピーカ２ａ、２ｂが携帯端末装置１からはみ出すことで、持ち歩きなど携帯時の障害となる可能性がある。そこで、第９の実施の形態に関する変形例として、音響用スピーカ２ａ、２ｂを携帯端末装置１の筐体内に収納可能にし、音響用スピーカ２ａ、２ｂ使用時には筐体から引き出す方式にする。これにより、音響用スピーカ２ａ、２ｂが携帯時に障害となることを回避できるようになる。

【００７１】図１８は本発明に係る携帯端末装置の音響再生システムにおける第１０の実施の形態を示す概略構成を示す図である。本図に示すように、図１１と比較して、音響用スピーカ２ａは、携帯端末装置１の正面及び正面から見て左側面にかかって設置され、音響用スピーカ２ｂは、携帯端末装置１の正面及び正面から見て右側面にかかって設置される。

【００７２】本発明では、図１６と比較して、音響用スピーカ２ａ、２ｂを筐体壁から突出させないため、音響用スピーカ２ａ、２ｂが障害にならずに移動時に音響用スピーカ２ａ、２ｂを引っかけるなどの事態から回避できる。さらに、音響用スピーカ２ａ、２ｂを互いに外向きに設置することにより、音響用スピーカ２ａ、２ｂの音響のクロストークは小さくなり、より高音質のステレオ音響再生が実現可能になる。

【００７３】図１９は本発明に係る携帯端末装置の音響再生システムにおける第１１の実施の形態を示す概略構成を示す図であり、図２０は図１９における音響用スピーカ２ａ、２ｂを含むＡ－Ａ’断面を矢印方向から見た概略構成図である。本図に示すように、図１と比較して、音響用スピーカ２ａ、２ｂは、携帯端末装置１の前面に、音響用スピーカ２ａ、２ｂの表面と携帯端末装置１の表面が一致し、横方向に並んで、画面表示モニタ１１とキーパネル１２の間に位置する。

【００７４】なお、図１１のクロストーク防止壁８が設

けられないので、クロストーク防止壁８に代わり、以下のクロストークを削除する信号処理が行われる。図２１はクロストーク削除の信号処理を行う回路の概略を示す図である。本図に示すように、音響用スピーカ２ａ、２ｂへの左（Ｌ）、右（Ｒ）信号の分岐信号をそれぞれ入力する逆フィルタ２０ａ、２０ｂが設けられる。

【００７５】逆フィルタ２０ａ、２０ｂは、入力した分岐信号の位相を反転処理する。左（Ｌ）、右（Ｒ）信号の分岐点と音響用スピーカ２ａ、２ｂとの間にそれぞれ加算器２１ａ、２１ｂが設けられる。加算器２１ａ、２１ｂは右（Ｒ）、左（Ｌ）信号と逆フィルタ２０ａ、２０ｂの出力信号とをそれぞれ加算して、音響用スピーカ２ａ、２ｂにそれぞれ出力する。

【００７６】図２２は図２１のクロストークの削除動作を説明する図である。本図（ａ）に示すように、音響用スピーカ２ａ、２ｂから受聴者への音響の伝播方向７ａ、７ｂには、前述のように、クロストークとして、７ａＲ、７ｂＬが含まれる。本図（ｂ）に示すように、クロストークの信号処理により、前述のクロストーク防止壁８を用いずに、クロストークとしての伝播方向７ａＲ、７ｂＬの音響が位相反転した音響で相殺され削除される。

【００７７】図２３は図２０における第１１の実施の形態に関する第１の変形例を示す図である。本図に示すように、音響用スピーカ２ａ、２ｂは、携帯端末装置１の筐体壁６より凹んだ位置に設置される。これにより音響用スピーカ２ａ、２ｂの設置面に対する携帯端末装置１の筐体壁６には、その一部又は全体にキーパネルなどを構成することで、携帯端末装置１内の効率良い部品配置が可能になる。

【００７８】図２４は図２０における第１１の実施の形態に関する第２の変形例を示す図である。本図に示すように、音響用スピーカ２ａ、２ｂを携帯端末装置１の筐体から部分的に突出させることにより、突出部分に対応する筐体の内部空間が節約され、この部分に対し他の部品を配置したり、筐体全体を小さくするなどが可能になり、携帯端末装置１の、より小型軽量化が実現可能になる。

【００７９】図２５は本発明に係る携帯端末装置の音響再生システムにおける第１２の実施の形態を示す概略構成を示す図であり、図２６は図２５における音響用スピーカ２ａ、２ｂを含むＡ－Ａ’断面を矢印方向から見た概略構成図である。本図に示すように、図１９と比較して、音響用スピーカ２ａ、２ｂは、キーパネル１２にかかり、携帯端末装置１の筐体内部に、凹ませて、設けられる。このように、前記音響用スピーカの携帯端末筐体壁に対する面積占有率が低減される構造とすることで、携帯端末筐体壁をキーパネルなど他の用途に活用でき、携帯端末装置の小型化が実現できる。

【００８０】さらに、音響用スピーカ２ａ、２ｂは、筐体壁の多孔部６’により覆われるようにしたので、筐体壁の多孔部６’を通して音響が筐体外に伝播され、十分な音圧が得られる。なお、図２１の信号処理回路により、音響用スピーカ２ａ、２ｂのクロストークが削除される。このようにして、音響聴取時には、十分な音圧で高音質なステレオ音響再生の実現が可能になる。

【００８１】図２７は本発明に係る携帯端末装置の音響再生システムにおける第１３の実施の形態を示す概略構成を示す図であり、図２８は図２７における携帯端末装置の側面図である。本図に示すように、図２と比較して、音響用スピーカ２ａ、２ｂは、携帯端末装置１の前面に向けて、長手方向の同一辺の両端に位置し、音響用スピーカ２ｃは、携帯端末装置１の背面に向けて、長手方向の中央に位置する。すなわち、音響用スピーカ２ｃは、音響用スピーカ２ａ、２ｂに対して、１８０度の向きをもつように配置される。

【００８２】音響用スピーカ２ａ、２ｂには中音～高音域に特化した特性が与えられ、音響用スピーカ２ｃには低音域に特化した特性を与え、ウーファのように動作させることにより、広帯域でより高音質の音響再生が可能になる。さらに、本発明における第１２の実施の形態に関する変形として、音響用スピーカ２ａ、２ｂ、２ｃの方向を可動式の構造にする。

【００８３】例えば、携帯端末装置１を低い位置に置いた場合には音響用スピーカ２ａ、２ｂ、２ｃを上向きにセットし、多人数で聴取するなど広域の音響を得たいときには外向きにセットし聞きやすくするといったように、場合に応じて最適なスピーカ方向を選択することが可能になり、より汎用性が向上できる。図２９は本発明に係る携帯端末装置の音響再生システムにおける第１４の実施の形態を示す概略構成を示す図である。

【００８４】本図に示すように、携帯端末装置１には音響スピーカアレイ２ｓが設けられ、音響スピーカアレイ２ｓは、携帯端末装置１の長手方向に一列に携帯端末装置１の背面に向けて配列される複数の音響用スピーカの配列である。図３０は図２９の音響スピーカアレイ２ｓの指向性を示す図である。本図に示すように、音響スピーカアレイ２ｓの方向に指向性が向上する。本携帯端末装置１を用いて、喫茶店などの場所で、少人数の受聴者で音響を聴取するときなど、受聴者のみに音響が到達し、第３者には音響が到達しなようにすることができ、ヘッドホンなどを用いることなく、周囲への迷惑を回避した音響聴取が可能になる。

【００８５】図３１は本発明に係る携帯端末装置の音響再生システムにおける第１５の実施の形態を示す概略構成を示す図である。本図に示すように、図１と比較して、携帯端末装置１の周囲に音響用スピーカ２ａ、２ｂ、２ｃ、２ｄが設けられる。このように、音響用スピーカ２ａ、２ｂ、２ｃ、２ｄを四方に向けて設置することにより、より無指向性の効果を向上させることができ

る。これにより、多人数の受聴者に聴取させる場合に便利である。

【００８６】次に、音響用スピーカの数を増加させることなく、音響伝播の指向性を一定方向に絞る例、音響伝播をより広角に広げる無指向性にする例を説明する。図３２は本発明に係る携帯端末装置の音響再生システムにおける第１６の実施の形態を示す概略構成を示す図である。本図に示すように、図２９と比較して、２つだけの音響用スピーカ２ａ、２ｂが携帯端末装置１の長手方向の両端に携帯端末装置１の背面に向けて設けられる。音響用スピーカ２ａ、２ｂの音響伝播の指向性は、以下のように、信号処理により一定方向に絞られる。

【００８７】図３３は図３２の音響用スピーカ２ａ、２ｂの指向性を絞る信号処理の回路例を説明する図である。本図（ａ）に示すように、音響用スピーカ２ａ、２ｂのうち、例えば、音響用スピーカ２ｂの入力側に遅延器２２が設けられる。遅延器２２がない場合には、音響用スピーカ２ａ、２ｂの点線で示す音響伝播の方向に指向性が絞られているとする。

【００８８】遅延器２２がある場合には、右（Ｒ）信号が左（Ｌ）信号よりも遅延して、音響用スピーカ２ａ、２ｂが形成する音響の指向性は、本図（ａ）に示すように、遅延がない場合から遅延がある場合に方向が絞られる。任意の遅延量の設定により、音響の指向性の方向を任意に絞ることが可能になる。

【００８９】本図（ｂ）に示すように、音響用スピーカ２ａ、２ｂのうち、例えば、音響用スピーカ２ｂの入力側に減衰器２３が設けられる。減衰器２３がない場合には、音響用スピーカ２ａ、２ｂの点線で示す音響伝播の方向に指向性が絞られているとする。減衰器２２により、右（Ｒ）信号が左（Ｌ）信号よりも小さな振幅となり、音響用スピーカ２ａ、２ｂが形成する音響の指向性は、本図（ａ）に示すように、減衰がない場合から減衰がある場合に方向が絞られる。

【００９０】任意の減衰量の設定により、音響の指向性の方向を任意に絞ることが可能になる。このようにして、指向性が一定方向に絞られるので、喫茶店などの場所で少人数で音響を聴取するときなどに、受聴者のみに音響が到達し、第３者には音響が到達しないようにすることで、ヘッドホン、イヤホンなどを用いずに周囲への迷惑を回避した音響の聴取が、少数の音響用スピーカで、可能になる。

【００９１】図３４は図３２における第１６の実施の形態に関する第１の変形例であり、音響用スピーカ２ａ、２ｂの指向性を無指向性にする信号処理の回路例を説明する図である。本図に示すように、音響用スピーカ２ａの入力側に、左（Ｌ）信号を分岐して遅延する遅延器２４ａと、遅延器２４ａにより遅延された信号を元の左（Ｌ）信号に加算して音響用スピーカ２ａに出力する加算器２５ａが設けられる。

【００９２】さらに、音響用スピーカ２ｂの入力側に、右（Ｒ）信号を分岐して遅延する遅延器２４ｂと、遅延器２４ｂにより遅延された信号を元の右（Ｒ）信号に加算して音響用スピーカ２ｂに出力する加算器２５ｂが設けられる。双方に遅延がない左（Ｌ）信号、右（Ｒ）信号により音響用スピーカ２ａ、２ｂからの音響伝播の方向は、本図に示すように、（ａ）方向になる。

【００９３】遅延がある右（Ｒ）信号と遅延がない左（Ｌ）信号により音響用スピーカ２ａ、２ｂからの音響伝播の方向は、本図に示すように、（ｂ）方向になる。遅延がない右（Ｒ）信号と遅延がある左（Ｌ）信号により音響用スピーカ２ａ、２ｂからの音響伝播の方向は、本図に示すように、（ｃ）方向になる。遅延がある右（Ｒ）信号と遅延がある左（Ｌ）信号により音響用スピーカ２ａ、２ｂからの音響伝播の方向は、双方の遅延量が等しい場合には、本図に示すように、（ａ）方向と一致する。

【００９４】このようにして、携帯端末装置１を中心に輪になって音響を聴取するような場合、携帯端末装置１の片面にのみ音響用スピーカが置かれていると、音響用スピーカの設置されていない側では、音響聴取が困難となることが予想されるが、本発明の信号処理により、音響伝播がより広角に広がる無指向性が実現されることにより、１台の携帯端末装置１にて音響用スピーカを増設することなく、多人数の受聴者により音響聴取が可能になる。

【００９５】なお、遅延器は音響用スピーカ２ａ、２ｂの入力側にそれぞれ１つづ設けたが、これに限らず、異なる遅延量を持つ遅延器を複数設けてもよい。これにより、さらに、なめらかな無指向性が実現できる。また、スピーカの数を増やすことで、より広角的な音響聴取が可能となる。次に、時と場合により、受聴者の人数、場所が変化するため、上記信号処理の機能が単一であると不都合を生じる場合があるので、この不都合の回避について以下に説明を行う。

【００９６】図３５は本発明に係る携帯端末装置の音響再生システムにおける第１７の実施の形態を示す概略構成を示す図である。本図に示すように、音響用スピーカ２ａ、２ｂの入力側に指向性の絞り信号処理部３１、無指向性信号処理部３２、スイッチ部３３が設けられる。指向性の絞り信号処理部３１は、図３３に示すような構成を有し、指向性を一定の方向に絞る信号処理を行う。

【００９７】無指向性信号処理部３２は、図３４に示すような構成を有し、無指向性を形成する信号処理を行う。スイッチ部３３は、指向性の絞り信号処理部３１、無指向性信号処理部３２を択一に選択する。このようにして、信号処理機能を選択可能にしたので、状況に応じて最適な信号処理を行うことが可能になると同時に、常に快適な音響聴取が可能になる。

【００９８】図３６は本発明に係る携帯端末装置の音響

再生システムにおける第１８の実施の形態を示す概略構成を示す図である。本図に示すように、図１と比較して、音響用スピーカ２ａ、２ｂは、携帯端末装置１の上部の横方向に配置され、音響用スピーカ２ａは携帯端末装置１の前面に向き、音響用スピーカ２ｂは携帯端末装置１の背面に向き、双方は、１８０度異なる向きを有する。

【００９９】図３７は図３６における携帯端末装置１の音響の伝播方向を示す図である。本図に示すように、音響聴取位置５ａ、５ｂは、音響用スピーカ２ａ、２ｂからの聴取位置であり、音響の伝播方向７ａ、７ｂは音響用スピーカ２ａ、２ｂから生じた音響の伝播方向を示す。音響用スピーカ２ａ、２ｂからは、個々に異なる音響を、例えば、２カ国語の音声が複数人で聴取される。例えば、音響用スピーカ２ａからの言語を聴取したい者は音響聴取位置５ａで、音響用スピーカ２ｂからの言語を聴取したい者は音響聴取位置５ｂで聴取することにより、１台の携帯端末装置１で複数の言語を同時に聴取することが可能になる。

【０１００】また、このように携帯端末装置１の両面に音響用スピーカ２ａ、２ｂを設置することで音響を無指向性とする効果も得られ、携帯端末装置１を中心に輪になって音響を聴取する場合、１台の携帯端末装置１にて多数人での音響聴取が可能になる。例えば、外出先でこのような状態で音響を聴取する場合、携帯端末装置１が１台あれば可能となるため、他の外付けスピーカなどを併せて持参する必要がなくなり荷物の低減が可能となるとともに、携帯端末装置１は基本的に外出時に常に携帯されるものであるため、持参し忘れるといった事態も回避できる。

【０１０１】図３８は本発明に係る携帯端末装置の音響再生システムにおける第１９の実施の形態を示す概略構成を示す図である。本図に示すように、図１と比較して、携帯端末装置１には音響用スピーカ２と、通話マイクロフォン兼用の音響用スピーカ４２とが設けられる。このように、音響用スピーカと通話マイクロフォンとを兼用することで、携帯端末装置１の部品点数が低減され、小型軽量化が実現できる。

【０１０２】図３９は図３８における第１９の実施の形態に関する第１の変形例を示す図である。本図に示すように、携帯端末装置１には音響用スピーカ２と、受話スピーカ兼用の音響用スピーカ４３とが設けられる。このように、音響用スピーカと受話スピーカとを兼用することで、携帯端末装置１の部品点数が低減され、小型軽量化が実現できる。

【０１０３】図４０は図３８における第１９の実施の形態に関する第２の変形例を示す図である。本図に示すように、携帯端末装置１には通話マイクロフォン兼用の音響用スピーカ４２と、受話スピーカ兼用の音響用スピーカ４３とが設けられる。このように、音響用スピーカをそれぞれ通話マイクロフォン、受話スピーカと兼用することで、携帯端末装置１の部品点数が低減され、小型軽量化が実現できる。

【０１０４】図４１は図３８における第１９の実施の形態に関する第３の変形例を示す図である。本図に示すように、携帯端末装置１には音響用スピーカ２と、着信音を鳴らすリンガ兼用の音響用スピーカ４４とが設けられる。このように、音響用スピーカとリンガとを兼用することで、携帯端末装置１の部品点数が低減され、小型軽量化が実現できる。

【０１０５】図４２は図３８における第１９の実施の形態に関する第４の変形例を示す図である。本図に示すように、携帯端末装置１には音響用スピーカ２と、着信音を鳴らすバイブレータ兼用の音響用スピーカ４５とが設けられる。このように、音響用スピーカとバイブレータとを兼用することで、携帯端末装置１の部品点数が低減され、小型軽量化が実現できる。

【０１０６】図４３は図３８における第１９の実施の形態に関する第５の変形例を示す図である。本図に示すように、携帯端末装置１には音響用スピーカ２と、画面表示モニタ兼用の音響用スピーカ４６とが設けられる。このように、音響用スピーカと画面表示モニタとを兼用することで、携帯端末装置１の部品点数が低減され、小型軽量化が実現できる。

【０１０７】図４４は図３８における第１９の実施の形態に関する第６の変形例を示す図である。本図に示すように、携帯端末装置１には音響用スピーカ２と、キーパネル兼用の音響用スピーカ４７とが設けられる。このように、音響用スピーカとキーパネルと兼用することで、携帯端末装置１の部品点数が低減され、小型軽量化が実現できる。

【０１０８】以上の説明で再生される音響データが、携帯端末装置１に内蔵される内蔵メモリ、媒体などに記憶されているものを再生したり、又はダウンロードサイト、パーソナルコンピュータ（ＰＣ）などの外部ソースからの受信と同時に記憶されている音響データが再生されるように取り扱われることにより、携帯端末装置１は音源と音響スピーカ双方を兼ね備えた構造となっている。これでは音響データが限られるので、以下のようにして、音響データの入手範囲の拡大を図る。

【０１０９】図４５は本発明に係る携帯端末装置の音響再生システムにおける第２０の実施の形態を示す概略構成を示す図である。本図に示すように、図４０と比較して、携帯端末装置１には信号入力端子５０が設けられ、信号入力端子５０にはデータ受信ケーブル５１を介して音響信号発生装置５２が接続される。音響信号発生装置５２はパーソナルコンピュータ、デッキ等からなる。

【０１１０】本発明によれば、携帯端末装置１を外付け音響用スピーカのように機能させ、他の音源からの音響を再生する機能を付加することにより、より多くの音響

データに対応可能になる。さらに、第２０の実施の形態に関する第１の変形例として、携帯端末装置１を複数の音響信号発生装置５２に接続させ、入力音源の取得先をスイッチで切り換える。これにより、複数の音源からの音響が容易に比較できるなど、利便性が向上する。

【０１１１】さらに、第２０の実施の形態に関する第２の変形例として、外部からの入力信号を再生する場合、通話マイクロフォン兼用の音響用スピーカ４２、受話スピーカ兼用の音響用スピーカ４３をアンプレス駆動可能なスピーカとすることにより、携帯端末装置１自体の電源を切った状態での音響再生が可能になる。これにより、携帯端末装置１が節電され、１回の充電に対する使用可能時間が増加し、バッテリーの残量にとらわれることなく、高音質の音響再生が可能になる。また、これは、通話マイクロフォンや受話スピーカ兼用ではない音響スピーカの場合でも、同様の効果が得られる。さらに、第２０の実施の形態に関する第３の変形例として、携帯端末装置１は音響信号発生装置５２から無線、例えば、ｂｌｕｅｔｏｏｔｈなどで音響データを得る。ケーブルが使用されないので、システムの構成が簡素化できる。

【０１１２】図４６は本発明に係る携帯端末装置の音響再生システムにおける第２１の実施の形態を示す概略構成を示す図である。本図に示すように、図４０と比較して、携帯端末装置１にはヘッドホン装着端子５３が設けられ、ヘッドホン装着端子５３にはデータ受信ケーブル５１を介してヘッドホン５４が接続される。

【０１１３】このようにして、公共の交通機関、図書館など、周囲に音を漏らせないような場合にはヘッドホン５４にてステレオ音響の聴取が可能である。さらに、第２１の実施の形態に関する第１の変形例として、公共の交通機関などで音響が第３者に聞こえることが好ましくないような場合には、再生音響が携帯端末装置１の受話スピーカから再生されると共に、通話音声と同時に送信し通話相手の受話スピーカから再生されるような構成にする。

【０１１４】これにより、周囲の多大な迷惑とならずに、心地よいＢＧＭを伴った会話が実現できる。また、本ＢＧＭに駅の騒音、雑踏、デパート、居酒屋の喧騒など選択することにより、より会話を弾ませることが可能になる。

【０１１５】

【発明の効果】以上説明したように、本発明によれば、携帯端末装置に複数の音響用スピーカが設けられ、前記少なくとも２つの音響用スピーカは互いの再生音響を補助し合ながら同時に駆動されるので、ヘッドホン、イヤホン、外付けスピーカシステムなどを使用することなく、単体で、快適、高音質な音響再生が可能で、使用環境への高適応性、高利便性を有する携帯端末装置の実現が可能になった。

【図面の簡単な説明】

【図１】本発明に係る携帯端末装置の音響再生システムにおける第１の実施の形態を示す概略構成を示す図である。

【図２】図１の音響用スピーカ２ａ、２ｂのステレオ音響再生を説明する図である。

【図３】本発明に係る携帯端末装置の音響再生システムにおける第２の実施の形態を示す概略構成を示す図である。

【図４】本発明に係る携帯端末装置の音響再生システムにおける第３の実施の形態を示す概略構成を示す図である。

【図５】図４におけるＢａ－Ｂａ’又はＢｂ－Ｂｂ’断面図である。

【図６】本発明に係る携帯端末装置の音響再生システムにおける第４の実施の形態を示す概略構成を示す図である。

【図７】図６におけるＢ－Ｂ’断面図である。

【図８】図６、図７における音響用スピーカ２ａ、２ｂのクロストークの低減を説明する図である。

【図９】本発明に係る携帯端末装置の音響再生システムにおける第５の実施の形態を示す概略構成を示す図である。

【図１０】本発明に係る携帯端末装置の音響再生システムにおける第６の実施の形態を示す概略構成を示す図である。

【図１１】本発明に係る携帯端末装置の音響再生システムにおける第７の実施の形態を示す概略構成を示す図である。

【図１２】図１１における音響用スピーカ２ａ、２ｂを含むＡ－Ａ’断面を矢印方向から見た概略構成図である。

【図１３】図１１、図１２における音響用スピーカ２ａ、２ｂのクロストークの低減を説明する図である。

【図１４】図１１における第７の実施の形態に関する概略構成の第２の変形例を示す図である。

【図１５】図１１における第７の実施の形態に関する概略構成の第３の変形例を示す図である。

【図１６】本発明に係る携帯端末装置の音響再生システムにおける第８の実施の形態を示す概略構成を示す図である。

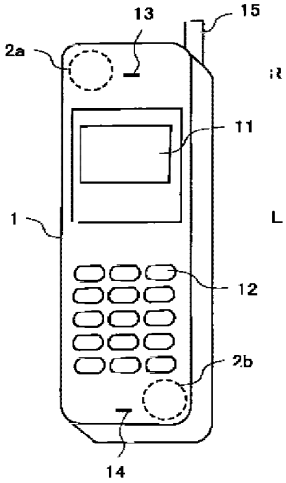
【図１７】本発明に係る携帯端末装置の音響再生システムにおける第９の実施の形態を示す概略構成を示す図である。

【図１８】本発明に係る携帯端末装置の音響再生システムにおける第１０の実施の形態を示す概略構成を示す図である。

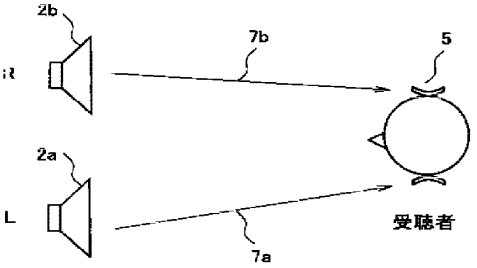
【図１９】本発明に係る携帯端末装置の音響再生システムにおける第１１の実施の形態を示す概略構成を示す図である。

【図２０】図１９における音響用スピーカ２ａ、２ｂを含むＡ－Ａ’断面を矢印方向から見た概略構成図である。
【図２１】クロストーク削除の信号処理を行う回路の概略を示す図である。
【図２２】図２１のクロストークの削除動作を説明する図である。
【図２３】図２０における第１１の実施の形態に関する第１の変形例を示す図である。
【図２４】図２０における第１１の実施の形態に関する第２の変形例を示す図である。
【図２５】本発明に係る携帯端末装置の音響再生システムにおける第１２の実施の形態を示す概略構成を示す図である。
【図２６】図２５における音響用スピーカ２ａ、２ｂを含むＡ－Ａ’断面を矢印方向から見た概略構成図である。
【図２７】本発明に係る携帯端末装置の音響再生システムにおける第１３の実施の形態を示す概略構成を示す図である。
【図２８】図２７における携帯端末装置の側面図である。
【図２９】本発明に係る携帯端末装置の音響再生システムにおける第１４の実施の形態を示す概略構成を示す図である。
【図３０】図２９の音響スピーカアレイ２ｓの指向性を示す図である。
【図３１】本発明に係る携帯端末装置の音響再生システムにおける第１５の実施の形態を示す概略構成を示す図である。
【図３２】本発明に係る携帯端末装置の音響再生システムにおける第１６の実施の形態を示す概略構成を示す図である。
【図３３】図３２の音響用スピーカ２ａ、２ｂの指向性を絞る信号処理の回路例を説明する図である。
【図３４】図３２における第１６の実施の形態に関する第１の変形例であり、音響用スピーカ２ａ、２ｂの指向性を無指向性にする信号処理例を説明する図である。
【図３５】本発明に係る携帯端末装置の音響再生システムにおける第１７の実施の形態を示す概略構成を示す図である。
【図３６】本発明に係る携帯端末装置の音響再生システムにおける第１８の実施の形態を示す概略構成を示す図である。
【図３７】図３６における携帯端末装置１の音響の伝播方向を示す図である。
【図３８】本発明に係る携帯端末装置の音響再生システムにおける第１９の実施の形態を示す概略構成を示す図である。
【図３９】図３８における第１９の実施の形態に関する第１の変形例を示す図である。
【図４０】図３８における第１９の実施の形態に関する第２の変形例を示す図である。
【図４１】図３８における第１９の実施の形態に関する第３の変形例を示す図である。
【図４２】図３８における第１９の実施の形態に関する第４の変形例を示す図である。
【図４３】図３８における第１９の実施の形態に関する第５の変形例を示す図である。
【図４４】図３８における第１９の実施の形態に関する第６の変形例を示す図である。
【図４５】本発明に係る携帯端末装置の音響再生システムにおける第２０の実施の形態を示す概略構成を示す図である。
【図４６】本発明に係る携帯端末装置の音響再生システムにおける第２１の実施の形態を示す概略構成を示す図である。
【符号の説明】
１…携帯端末装置
２、２ａ、２ｂ、２ｃ、２ｄ…音響用スピーカ
２ｓ…音響スピーカアレイ
５、５ａ、５ｂ…音響聴取位置
６…筐体壁位置
６’…筐体壁の多孔部
７、７ａ、７ｂ、７ａＲ、７ａＬ、７ｂＲ、７ｂＬ…伝播方向
８、８’…クロストーク防止壁
１１…画面表示モニタ
１２…キーパネル
１３…受話口
１４…送話口
１５…アンテナ
２０ａ、２０ｂ…逆フィルタ
２２、２４ａ、２４ｂ…遅延器
２３…減衰器
３１…指向性の絞り信号処理部
３２…無指向性信号処理部
３３…スイッチ部
４２…通話マイクロフォン兼用の音響用スピーカ
４３…受話スピーカ兼用の音響用スピーカ
４４…リンガ兼用の音響用スピーカ
４５…バイブレータ兼用の音響用スピーカ
４６…画面表示モニタ兼用の音響用スピーカ
４７…キーパネル兼用の音響用スピーカ
５０…信号入力端子
５１…データ受信ケーブル
５２…音響信号発生装置
５３…ヘッドホン装着端子
５４…ヘッドホン

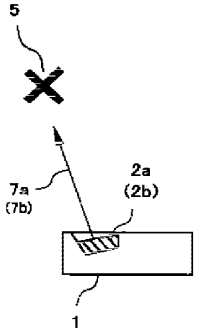
【図1】



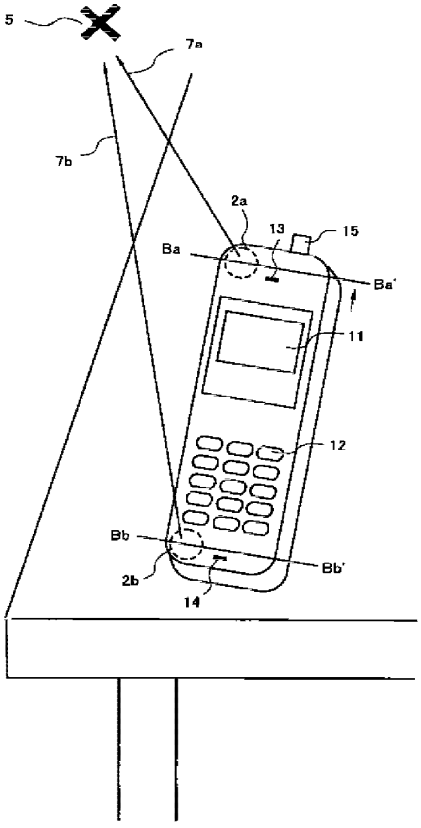
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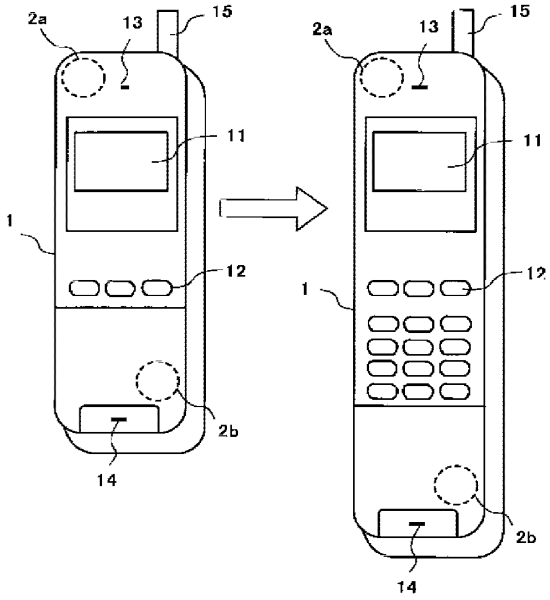
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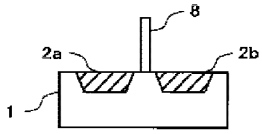
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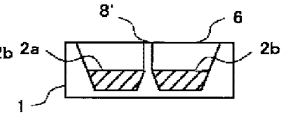
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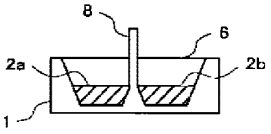
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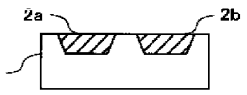
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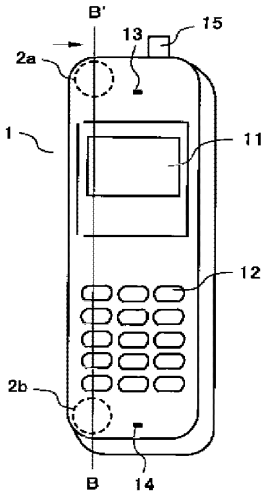
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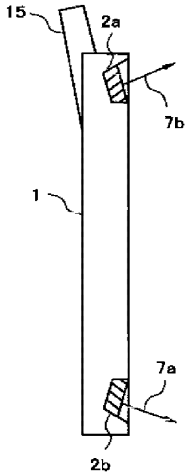
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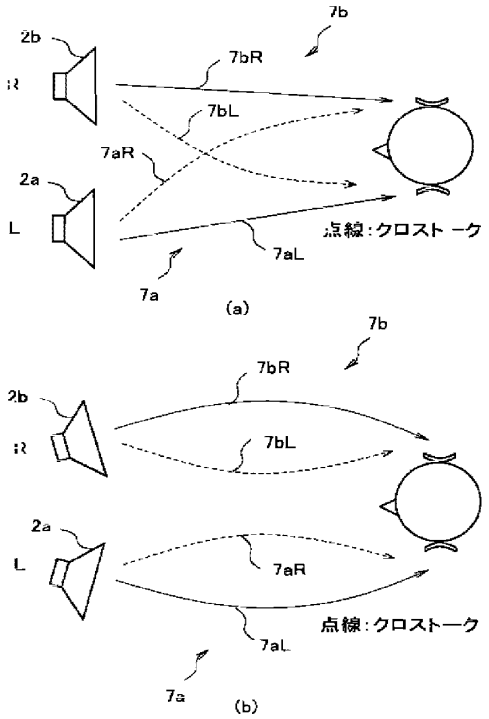
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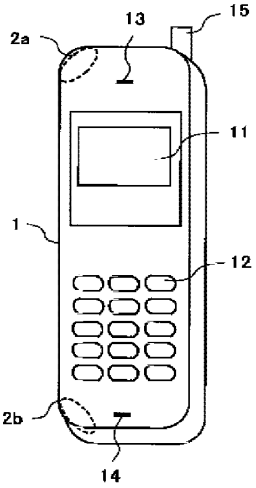
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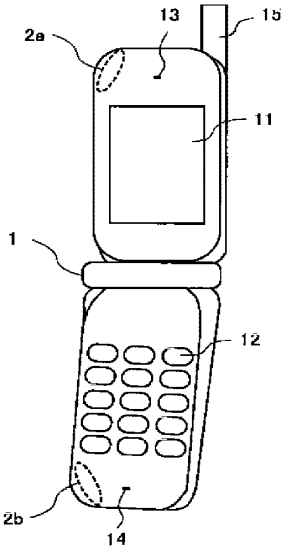
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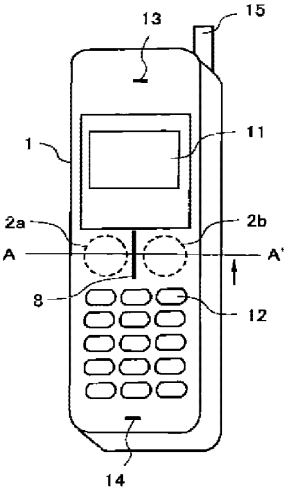
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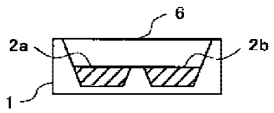
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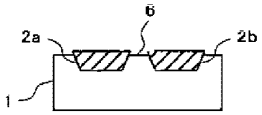
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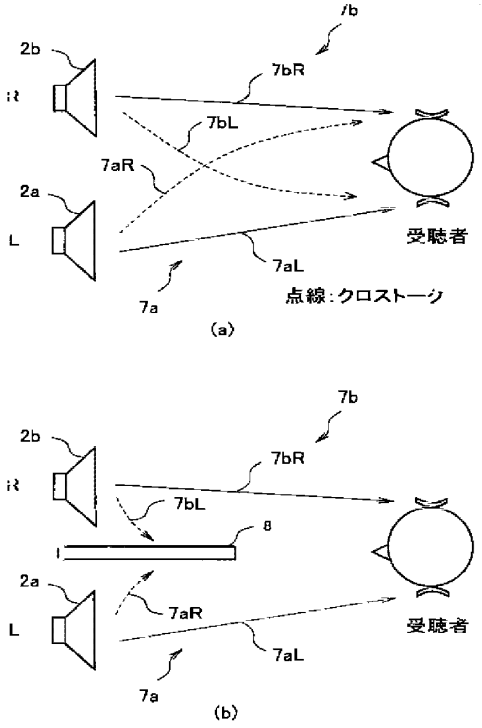
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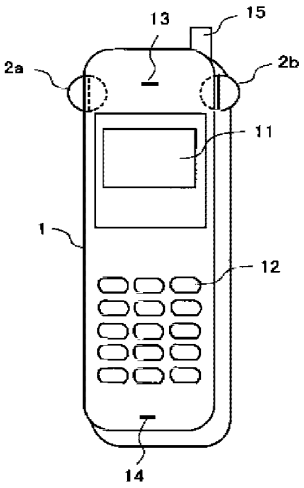
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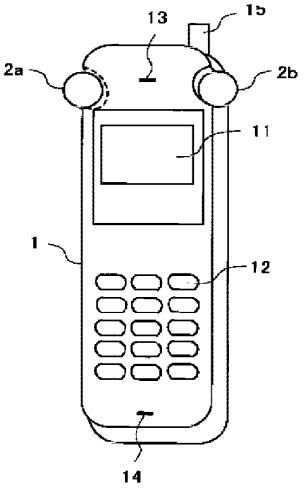
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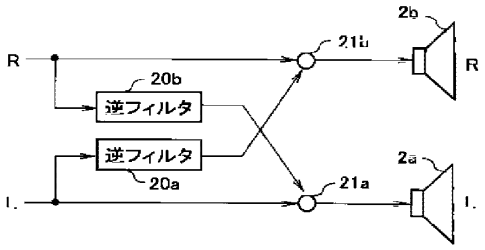
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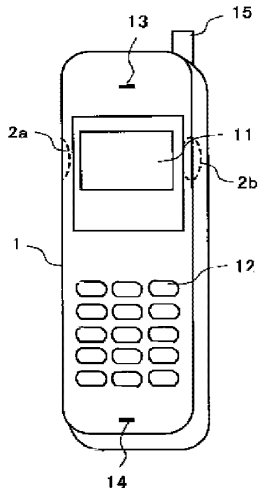
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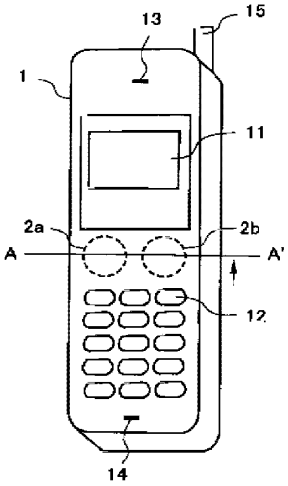
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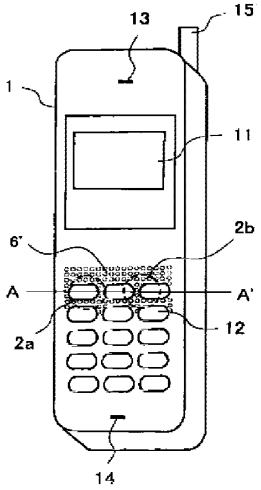
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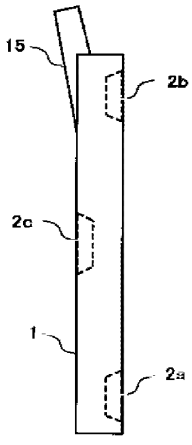
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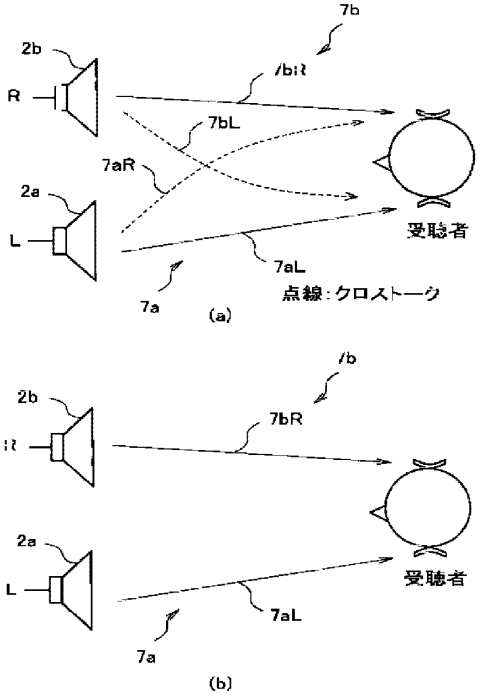
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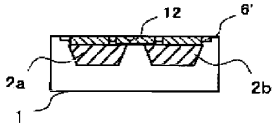
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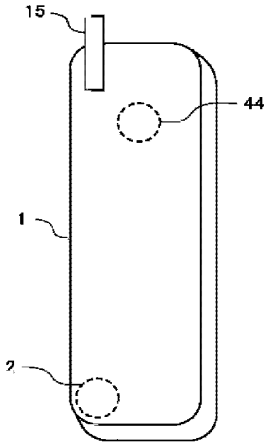
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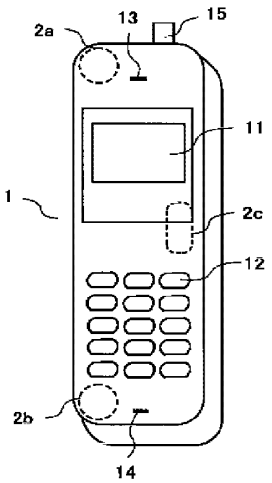
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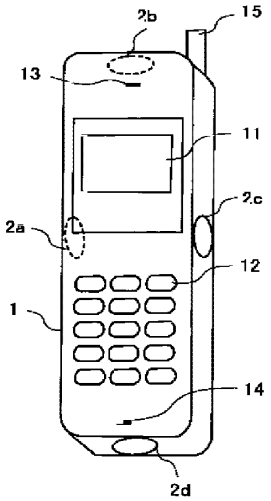
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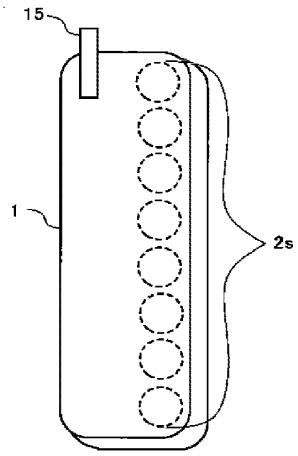
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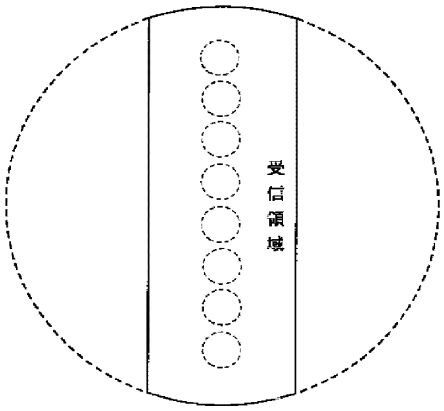
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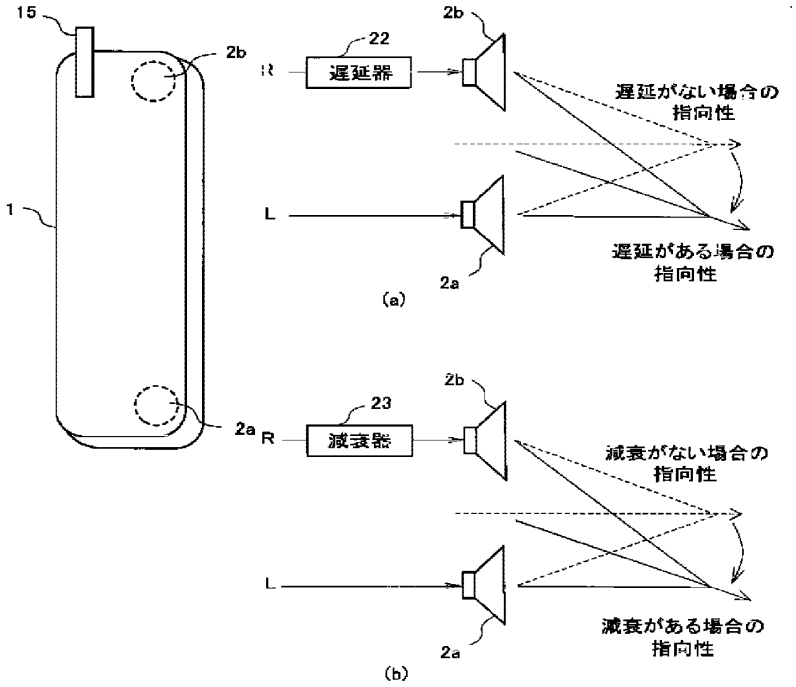
【図２９】



【図３０】

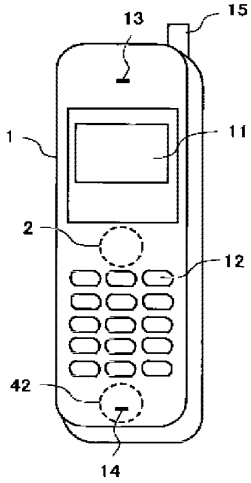


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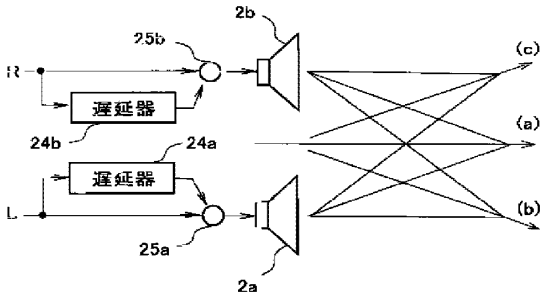


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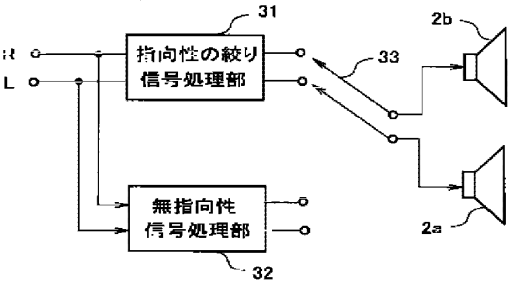
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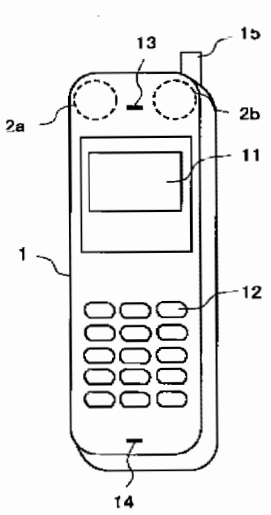
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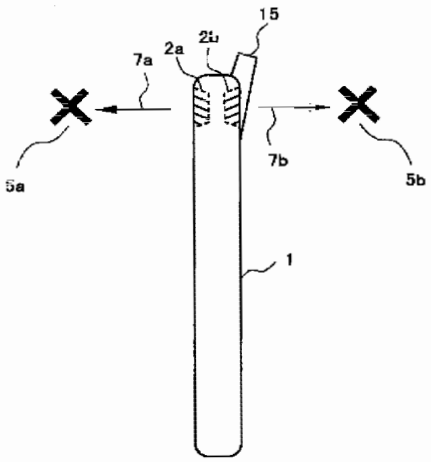
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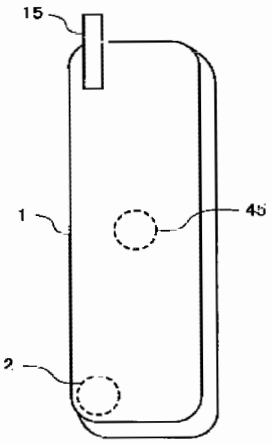
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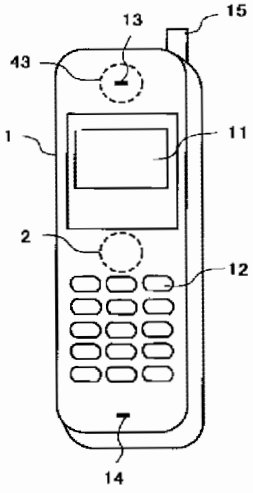
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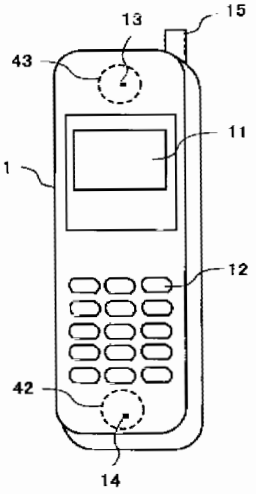
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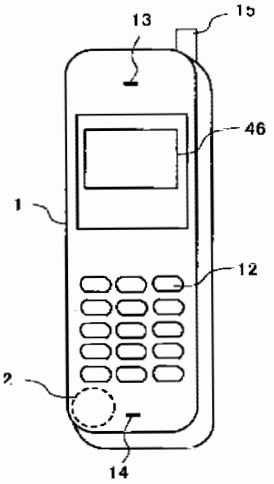
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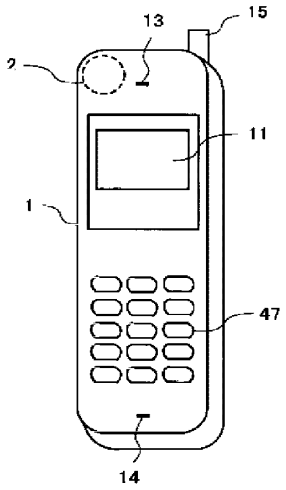
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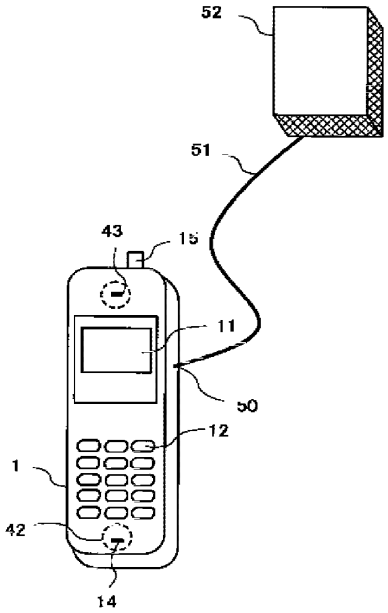
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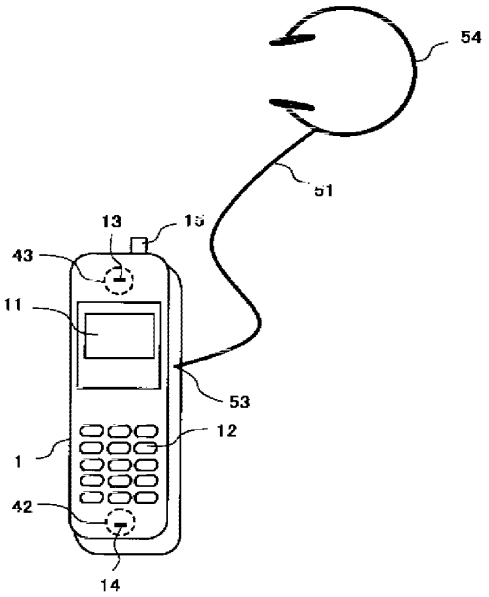
【図44】



【図45】



【図46】



フロントページの続き

(51)Int.Cl.⁷	識別記号	ＦＩ		(参考)
Ｈ０４Ｓ　1/00		Ｈ０４Ｓ　1/00	Ｂ	

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5D062 AA12
5K023 AA07 BB03 BB06 CC01 DD06
DD08 EE02 EE07 EE08 EE12
EE13 LL06
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HH03 HH29

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Bibliographic data: JP2002123267 (A) — 2002-04-26

INFORMATION PROCESSOR, METHOD AND PROGRAM STORING MEDIUM

Inventor(s): HATANAKA MITSUYUKI; SAKURAI MIKIKO ± (HATANAKA MITSUYUKI, ; SAKURAI MIKIKO)

Applicant(s): SONY CORP ± (SONY CORP)

Classification: - international: ***G06F12/00; G06F12/14; G06F17/30; G06F21/24; G06F3/048; G10K15/02; G11B20/10; G11B27/034; G11B27/11; G11B27/28; G11B27/34;*** (IPC1-7): G06F12/00; G06F12/14; G06F3/00; G10K15/02

- cooperative: **G06F17/30017**; **G11B20/10527**; **G11B27/034**; **G11B27/11**; **G11B27/28**; **G11B27/34**; G11B2220/20; G11B2220/2545

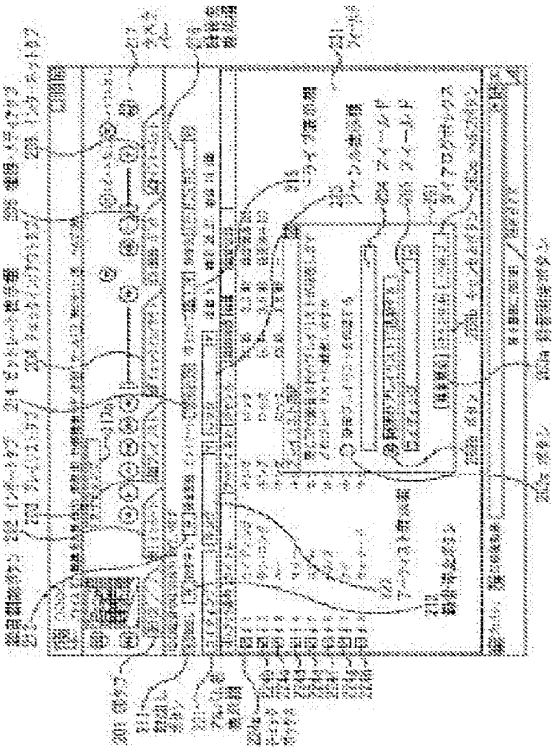
Application number: JP20000311803 20001012

Priority number(s): JP20000311803 20001012

Also published as: JP4385511 (B2) US2002078037 (A1) US7478437 (B2)

Abstract of JP2002123267 (A)

PROBLEM TO BE SOLVED: To search and to display contents recorded in the past. SOLUTION: A play list recorded in the past is searched, and the play list is displayed when it exists. About the contents recorded in the past, for example, 'recorded' is displayed such as contents corresponding to CD track numbers 1, 2, and 5. Furthermore, when the contents are recorded twice in the past, the number of times of the sound recording are displayed as [2] such as the contents corresponding to the CD track numbers 1, 2, and 5. Furthermore, when the play list exists, a dialog box 261 showing a play list selection is displayed, and then a user can select add-recording on the basis of the play list in the past or recording on the basis of a newly prepared play list.



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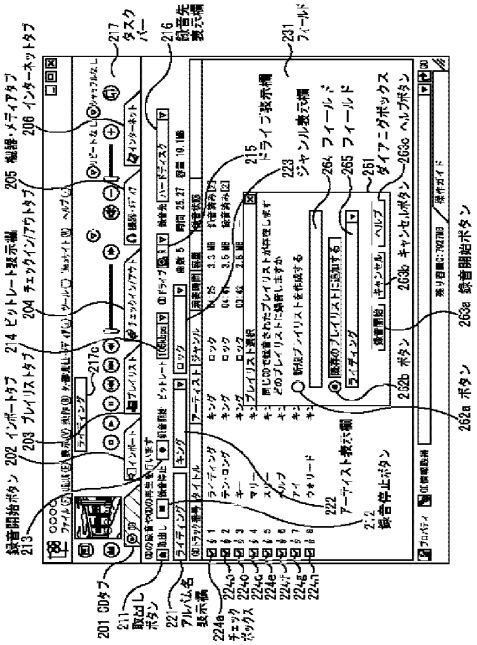
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(71)出願人　000002185
ソニー株式会社
東京都品川区北品川６丁目７番35号
(72)発明者　畠中　光行
東京都品川区北品川６丁目７番35号　ソニー株式会社内
(72)発明者　櫻井　美樹子
東京都品川区北品川６丁目７番35号　ソニー株式会社内
(74)代理人　100082131
弁理士　稲本　義雄

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(54)【発明の名称】　情報処理装置および方法、並びにプログラム格納媒体

(57)【要約】
【課題】　過去に録音したコンテンツを検索し、表示させる。
【解決手段】　過去に録音されたプレイリストが検索され、存在するとそのプレイリストが表示される。また、過去に録音されているコンテンツについては、例えば、ＣＤトラック番号１，２，５に対応するコンテンツのように「録音済み」が表示され、さらに、例えば、過去に２回録音されている場合、ＣＤトラック番号１，２，５に対応するコンテンツのように［２］、録音回数が表示される。さらに、プレイリストが存在する場合には、プレイリスト選択をしめすダイアログボックス２６１が表示され、使用者は、過去のプレイリストに追加して録音するか、新たなプレイリストを作成して録音するかを選択することができる。



【特許請求の範囲】
【請求項１】　第1の記録媒体に記録されたコンテンツを、第２の記録媒体に記録する機能を有する情報処理装置において、
前記第１の記録媒体に記録された前記コンテンツを第２の記録媒体に記録する記録手段と、
前記記録手段により、前記第１の記録媒体に記録された前記コンテンツが、第２の記録媒体に記録されるとき、前記コンテンツの情報を記録履歴情報として記憶する記録履歴情報記憶手段と、
前記記録手段により、前記第１の記録媒体に記録された前記コンテンツが、第２の記録媒体に再び記録されるとき、前記記録履歴情報記憶手段により前記記録履歴情報として記憶された前記コンテンツの情報を検索し、表示する表示手段とを備えることを特徴とする情報処理装置。
【請求項２】　前記記録履歴情報は、前記第１の記録媒体のトラック毎の録音回数を記録した録音履歴情報、前記コンテンツのタイトル保存情報、および、プレイリスト情報を含むことを特徴とする請求項１に記載の情報処理装置。
【請求項３】　第1の記録媒体に記録されたコンテンツを、第２の記録媒体に記録する機能を有する情報処理装置の情報処理方法において、
前記第１の記録媒体に記録された前記コンテンツを第２の記録媒体に記録する記録ステップと、
前記記録ステップの処理で、前記第１の記録媒体に記録された前記コンテンツが、第２の記録媒体に記録されるとき、前記コンテンツの情報を記録履歴情報として記憶する記録履歴情報記憶ステップと、
前記記録ステップの処理で、前記第１の記録媒体に記録された前記コンテンツが、第２の記録媒体に再び記録されるとき、前記記録履歴情報記憶ステップの処理で前記記録履歴情報として記憶された前記コンテンツの情報を検索し、表示する表示ステップとを含むことを特徴とする情報処理方法。
【請求項４】　第1の記録媒体に記録されたコンテンツを、第２の記録媒体に記録する機能を有する情報処理装置を制御するプログラムであって、
前記第１の記録媒体に記録された前記コンテンツの第２の記録媒体への記録を制御する記録制御ステップと、
前記記録制御ステップの処理で、前記第１の記録媒体に記録された前記コンテンツが、第２の記録媒体に記録されるとき、前記コンテンツの情報の記録履歴情報としての記憶を制御する記録履歴情報記憶制御ステップと、
前記記録制御ステップの処理で、前記第１の記録媒体に記録された前記コンテンツが、第２の記録媒体に再び記録されるとき、前記記録履歴情報記憶制御ステップの処理で前記記録履歴情報として記憶された前記コンテンツの情報の検索と、表示を制御する表示制御ステップとを含むことを特徴とするコンピュータが読み取り可能なプログラムが記録されているプログラム格納媒体。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、情報処理装置および方法、並びにプログラム格納媒体に関し、特に、第１の記録媒体に記憶されたコンテンツを第２の記録媒体に記録するとき、既に第２の記録媒体に記録されている、第１の記録媒体に記憶されたコンテンツの情報を検索して表示するようにした情報処理装置および方法、並びにプログラム格納媒体に関する。
【０００２】
【従来の技術】パーソナルコンピュータなどの情報処理装置は、ＣＤ（Compact Disc）などから音楽データなどのコンテンツを読み出して、読み出したコンテンツをハードディスクなどの記録媒体に記録する（録音する）ことができる。
【０００３】
【発明が解決しようとする課題】しかしながら、既に記録媒体に記録されているコンテンツを、例えば、ビットレートなどを変えて、再び、ＣＤから読み出して記録しようとする場合、既に、記録されているコンテンツが何回記録されているのかを調べるには、記録媒体に記録されたコンテンツの一覧表を表示させて、コンテンツ１個１個を使用者が自ら検索しなければならず、例えば、既に、数千という数のコンテンツが記録されているような場合、その検索作業は非常に手間のかかるものとなってしまうという課題があった。また、既に、記録されている音楽データを検索せずに、再びコンテンツを記録する場合、アーティスト名、アルバム名、および、タイトル名といったコンテンツの情報は、最初から編集し直さなければならないうえ、例えば、同じビットレートの全く同じコンテンツを録音してしまう恐れがあり、その場合、ハードディスクの容量を無駄にしてしまうという課題があった。
【０００４】本発明はこのような状況に鑑みてなされたものであり、記録媒体に音楽データなどのコンテンツを記録する際に、既に記録されたコンテンツの情報を検索して、表示させるようにするものである。
【０００５】
【課題を解決するための手段】本発明の情報処理装置は、第１の記録媒体に記録されたコンテンツを第２の記録媒体に記録する記録手段と、記録手段により、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に記録されるとき、コンテンツの情報を記録履歴情報として記憶する記録履歴情報記憶手段と、記録手段により、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に再び記録されるとき、記録履歴情報記憶手段により記録履歴情報として記憶されたコンテンツの情報を検索し、表示する表示手段とを備えることを特徴とする。

【０００６】前記記録履歴情報には、第１の記録媒体のトラック毎の録音回数を記録した録音履歴情報、コンテンツのタイトル保存情報、および、プレイリスト情報を含ませるようにすることができる。

【０００７】本発明の情報処理方法は、第１の記録媒体に記録されたコンテンツを第２の記録媒体に記録する記録ステップと、記録ステップの処理で、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に記録されるとき、コンテンツの情報を記録履歴情報として記憶する記録履歴情報記憶ステップと、記録ステップの処理で、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に再び記録されるとき、記録履歴情報記憶ステップの処理で記録履歴情報として記憶されたコンテンツの情報を検索し、表示する表示ステップとを含むことを特徴とする。

【０００８】本発明のプログラム格納媒体のプログラムは、第１の記録媒体に記録されたコンテンツの第２の記録媒体への記録を制御する記録制御ステップと、記録制御ステップの処理で、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に記録されるとき、コンテンツの情報の記録履歴情報としての記憶を制御する記録履歴情報記憶制御ステップと、記録制御ステップの処理で、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に再び記録されるとき、記録履歴情報記憶制御ステップの処理で記録履歴情報として記憶されたコンテンツの情報の検索と、表示を制御する表示制御ステップとを含むことを特徴とする。

【０００９】本発明の情報処理装置および方法、並びに、プログラム格納媒体においては、第１の記録媒体に記録されたコンテンツが第２の記録媒体に記録され、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に記録されるとき、コンテンツの情報が記録履歴情報として記憶され、第１の記録媒体に記録されたコンテンツが、第２の記録媒体に再び記録されるとき、記録履歴情報として記憶されたコンテンツの情報が検索され、表示される。

【００１０】

【発明の実施の形態】図１は、本発明に係るコンテンツデータ管理システムの一実施の形態を示す図である。パーソナルコンピュータ１は、ローカルエリアネットワークまたはインターネットなどから構成されるネットワーク２に接続されている。パーソナルコンピュータ１は、EMD（Electrical Music Distribution）サーバ３から受信した、またはCD（Compact Disc）から読み取った楽音のデータ（以下、コンテンツと称する）を、そのまま記録するか、または所定の圧縮の方式（例えば、ATRAC3（商標））に変換するとともにDES（Data Encryption Standard）などの暗号化方式で暗号化して記録する。

【００１１】パーソナルコンピュータ１は、暗号化して記録しているコンテンツに対応して、コンテンツの利用条件を示す権利情報を記録する。

【００１２】権利情報は、例えば、その権利情報に対応するコンテンツを同時に利用することができるポータブルデバイス（Portable Device（PDとも称する））の台数（後述する、いわゆるチェックアウトできるPDの台数）を示す。権利情報に示される数だけコンテンツをチェックアウトしたときでも、パーソナルコンピュータ１は、そのコンテンツを再生できる。

【００１３】または、権利情報は、コピーすることができることを示す。コンテンツをポータブルデバイス５－１乃至５－３にコピーしたとき、パーソナルコンピュータ１は記録しているコンテンツを再生できる。コンテンツの、ポータブルデバイス５－１乃至５－３に記憶させることができる回数は、制限される場合がある。この場合、コピーできる回数は、増えることがない。

【００１４】または、権利情報は、他のパーソナルコンピュータに移動することができるか否かなどを示す。ポータブルデバイス５－１乃至５－３にコンテンツを移動させた後、パーソナルコンピュータ１が記録しているコンテンツは使用できなくなる（コンテンツが削除されるか、または利用条件が変更されて使用できなくなる）。

【００１５】パーソナルコンピュータ１は、暗号化して記録しているコンテンツを、コンテンツに関連するデータ（例えば、曲名、または再生条件など）と共に、USB（Universal Serial Bus）ケーブルを介して、接続されているポータブルデバイス５－１に記憶させるとともに、ポータブルデバイス５－１に記憶させたことに対応して、記憶させたコンテンツに対応する権利情報を更新する（以下、チェックアウトと称する）。より詳細には、チェックアウトしたとき、パーソナルコンピュータ１が記録している、そのコンテンツに対応する権利情報のチェックアウトできる回数は、１減らされる。チェックアウトできる回数が０のとき、対応するコンテンツは、チェックアウトすることができない。

【００１６】パーソナルコンピュータ１は、暗号化して記録しているコンテンツを、コンテンツに関連するデータと共に、USBケーブルを介して、接続されているポータブルデバイス５－２に記憶させるとともに、ポータブルデバイス５－２に記憶させたことに対応して、記憶させたコンテンツに対応する権利情報を更新する。パーソナルコンピュータ１は、暗号化して記録しているコンテンツを、コンテンツに関連するデータと共に、USBケーブルを介して、接続されているポータブルデバイス５－３に記憶させるとともに、ポータブルデバイス５－３に記憶させたことに対応して、記憶させたコンテンツに対応する権利情報を更新する。

【００１７】また、パーソナルコンピュータ１は、USBケーブルを介して、接続されているポータブルデバイス５－１にパーソナルコンピュータ１がチェックアウトしたコンテンツを、ポータブルデバイス５－１に消去させ

て（または、使用できなくさせて）、消去させたコンテンツに対応する権利情報を更新する（以下、チェックインと称する）。より詳細には、チェックインしたとき、パーソナルコンピュータ１が記録している、対応するコンテンツの権利情報のチェックアウトできる回数は、１増やされる。

【００１８】パーソナルコンピュータ１は、USBケーブルを介して、接続されているポータブルデバイス５－２にパーソナルコンピュータ１がチェックアウトしたコンテンツを、ポータブルデバイス５－２に消去させて（または、使用できなくさせて）、消去させたコンテンツに対応する権利情報を更新する。パーソナルコンピュータ１は、USBケーブルを介して、接続されているポータブルデバイス５－３にパーソナルコンピュータ１がチェックアウトしたコンテンツを、ポータブルデバイス５－３に消去させて（または、使用できなくさせて）、消去させたコンテンツに対応する権利情報を更新する。

【００１９】パーソナルコンピュータ１は、図示せぬ他のパーソナルコンピュータがポータブルデバイス５－１にチェックアウトしたコンテンツをチェックインできない。パーソナルコンピュータ１は、他のパーソナルコンピュータがポータブルデバイス５－２にチェックアウトしたコンテンツをチェックインできない。パーソナルコンピュータ１は、他のパーソナルコンピュータがポータブルデバイス５－３にチェックアウトしたコンテンツをチェックインできない。

【００２０】EMDサーバ３は、パーソナルコンピュータ１の要求に対応して、ネットワーク２を介して、コンテンツに関連するデータ（例えば、曲名（以下、タイトルとも称する）、または再生制限など）と共に、パーソナルコンピュータ１にコンテンツを供給する。

【００２１】EMDサーバ３が供給するコンテンツは、所定の符号化の方式で符号化され、所定の暗号化の方式で暗号化されている。

【００２２】WWW（World WIDe Web）サーバ４は、パーソナルコンピュータ１の要求に対応して、ネットワーク２を介して、コンテンツを読み取ったCDに対応するデータ（例えば、CDのアルバム名、またはCDの販売会社など）、およびCDから読み取ったコンテンツに対応するデータ（例えば、曲名、または作曲者名（以下、アーティスト名とも称する）など）をパーソナルコンピュータ１に供給する。

【００２３】ポータブルデバイス５－１は、パーソナルコンピュータ１から供給されたコンテンツ（すなわち、チェックアウトされたコンテンツ）を、コンテンツに関連するデータ（例えば、曲名、または再生制限など）と共に記憶する。ポータブルデバイス５－１は、コンテンツに関連するデータに基づいて、記憶しているコンテンツを再生し、図示せぬヘッドフォンなどに出力する。

【００２４】例えば、コンテンツに関連するデータとして記憶されている、再生制限としての再生回数を超えて再生しようとしたとき、ポータブルデバイス５－１は、対応するコンテンツの再生を停止する。コンテンツに関連するデータとして記憶されている再生制限としての、再生期限を過ぎた後に再生しようとしたとき、ポータブルデバイス５－１は、対応するコンテンツの再生を停止する。

【００２５】使用者は、コンテンツを記憶したポータブルデバイス５－１をパーソナルコンピュータ１から取り外して、持ち歩き、記憶しているコンテンツを再生させて、コンテンツに対応する音楽などを、図示せぬヘッドフォンなどで聴くことができる。

【００２６】ポータブルデバイス５－２は、パーソナルコンピュータ１から供給されたコンテンツを、コンテンツに関連するデータと共に記憶する。ポータブルデバイス５－２は、コンテンツに関連するデータに基づいて、記憶しているコンテンツを再生し、図示せぬヘッドフォンなどに出力する。使用者は、コンテンツを記憶したポータブルデバイス５－２をパーソナルコンピュータ１から取り外して、持ち歩き、記憶しているコンテンツを再生させて、コンテンツに対応する音楽などを、図示せぬヘッドフォンなどで聴くことができる。

【００２７】ポータブルデバイス５－３は、パーソナルコンピュータ１から供給されたコンテンツを、コンテンツに関連するデータと共に記憶する。ポータブルデバイス５－３は、コンテンツに関連するデータに基づいて、記憶しているコンテンツを再生し、図示せぬヘッドフォンなどに出力する。使用者は、コンテンツを記憶したポータブルデバイス５－３をパーソナルコンピュータ１から取り外して、持ち歩き、記憶しているコンテンツを再生させて、コンテンツに対応する音楽などをヘッドフォンなどで聴くことができる。

【００２８】以下、ポータブルデバイス５－１乃至５－３を個々に区別する必要がないとき、単にポータブルデバイス５と称する。

【００２９】図２は、パーソナルコンピュータ１の構成を説明する図である。CPU（CentralProcessing Unit）１１は、後述する機能を実現するための各種アプリケーションプログラムや、OS（Operating System)を実際に実行する。ROM（Read-only Memory）１２は、一般的には、CPU１１が使用するプログラムや演算用のパラメータのうちの基本的に固定のデータを格納する。RAM（Random-Access Memory）１３は、CPU１１の実行において使用するプログラムや、その実行において適宜変化するパラメータを格納する。これらはCPUバスなどから構成されるホストバス１４により相互に接続されている。

【００３０】ホストバス１４は、ブリッジ１５を介して、PCI(Peripheral Component Interconnect/Interface)バスなどの外部バス１６に接続されている。

【００３１】キーボード１８は、CPU１１に各種の指令

を入力するとき、使用者により操作される。マウス１９は、ディスプレイ２０の画面上のポイントの指示や選択を行うとき、使用者により操作される。ディスプレイ２０は、液晶表示装置またはCRT（Cathode Ray Tube）などから成り、各種情報をテキストやイメージで表示する。HDD（Hard Disk Drive）２１は、ハードディスクを駆動し、それらにCPU１１によって実行するプログラムや情報を記録または再生させる。

【００３２】ドライブ２２は、装着されている磁気ディスク４１、光ディスク４２（CDを含む）、光磁気ディスク４３、または半導体メモリ４４に記録されているデータまたはプログラムを読み出して、そのデータまたはプログラムを、インターフェース１７、外部バス１６、ブリッジ１５、およびホストバス１４を介して接続されているRAM１３に供給する。

【００３３】USBポート２３－１には、USBケーブルを介して、ポータブルデバイス５－１が接続される。USBポート２３－１は、インターフェース１７、外部バス１６、ブリッジ１５、またはホストバス１４を介して、HDD２１、CPU１１、またはRAM１３から供給されたデータ（例えば、コンテンツまたはポータブルデバイス５－１のコマンドなどを含む）をポータブルデバイス５－１に出力する。

【００３４】USBポート２３－２には、USBケーブルを介して、ポータブルデバイス５－２が接続される。USBポート２３－２は、インターフェース１７、外部バス１６、ブリッジ１５、またはホストバス１４を介して、HDD２１、CPU１１、またはRAM１３から供給されたデータ（例えば、コンテンツまたはポータブルデバイス５－２のコマンドなどを含む）をポータブルデバイス５－２に出力する。

【００３５】USBポート２３－３には、USBケーブルを介して、ポータブルデバイス５－３が接続される。USBポート２３－３は、インターフェース１７、外部バス１６、ブリッジ１５、またはホストバス１４を介して、HDD２１、CPU１１、またはRAM１３から供給されたデータ（例えば、コンテンツまたはポータブルデバイス５－３のコマンドなどを含む）をポータブルデバイス５－３に出力する。

【００３６】スピーカ２４は、インターフェース１７から供給された音声信号を基に、コンテンツに対応する所定の音声を出力する。

【００３７】これらのキーボード１８乃至スピーカ２４は、インターフェース１７に接続されており、インターフェース１７は、外部バス１６、ブリッジ１５、およびホストバス１４を介してCPU１１に接続されている。

【００３８】通信部２５は、ネットワーク２が接続され、CPU１１、またはHDD２１から供給されたデータ（例えば、コンテンツの送信要求など）を、所定の方式のパケットに格納して、ネットワーク２を介して、送信するとともに、ネットワーク２を介して、受信したパケットに格納されているデータ（例えば、コンテンツなど）をCPU１１、RAM１３、またはHDD２１に出力する。

【００３９】通信部２５は、外部バス１６、ブリッジ１５、およびホストバス１４を介してCPU１１に接続されている。

【００４０】以下、USBポート２３－１乃至２３－３を個々に区別する必要がないとき、単に、USBポート２３と称する。

【００４１】図3は、CPU１１がコンテンツ管理プログラム（アプリケーションプログラム）を実行することにより実現されるパーソナルコンピュータ１の機能を説明するブロック図である。

【００４２】GUI（Graphical User Interface）部１００は、使用者によるキーボード１８またはマウス１９の操作に対応して、曲管理部１０４に、使用者が所望とするコンテンツに対応する曲名またはコンテンツが格納されているファイルのファイル名などを供給するとともに、データベース１０７へのコンテンツに対応するデータの登録を要求する。

【００４３】GUI部１００は、曲管理部１０４からコンテンツに対応するデータ、例えば、曲ID、曲名、または、アーティスト名などのデータを取得して、曲ID、曲名、または、アーティスト名などをディスプレイ２０に表示させる。

【００４４】GUI部１００は、使用者の操作によりコンテンツの再生が要求されたとき、再生が要求されたコンテンツに対応する曲IDをコンテンツ管理処理部１０２に供給すると共に、コンテンツの再生をコンテンツ管理処理部１０２に要求する。

【００４５】GUI部１００は、使用者の操作によりコンテンツの転送（チェックアウト、コピー、または移動など）が要求されたとき、転送が要求されたコンテンツに対応する曲IDを転送処理部１０３に供給すると共に、コンテンツの転送を転送処理部１０３に要求する。

【００４６】GUI部１００は、使用者の操作によりコンテンツの録音（ドライブ２２に装着されたＣＤ（光ディスク４２に対応する）に記録されたコンテンツを曲ファイル格納部１０８－１，１０８－２（HDD２１に対応する）に格納させる処理）が要求されたとき、録音が要求されたコンテンツに対応する曲IDを録音管理部１０１に供給すると共に、コンテンツの録音を録音管理部１０１に要求する。また、GUI部１００は、プレイリストIDに対応するコンテンツの曲IDやファイル名を一覧にしたプレイリストをディスプレイ２０に表示させる。

【００４７】録音管理部１０１は、GUI部１００によりコンテンツの録音が要求されたとき、録音処理を実行する。録音管理部１０１は、録音しようとするＣＤがドライブ２２に装着されたとき、そのＣＤのTOC（Table of Contents）を読出し、そこに含まれるコンテンツの数

や、録音時間などの情報からメディア固有識別情報を生成する。

【００４８】また、録音管理部１０１は、ＣＤなどからコンテンツを曲ファイル格納部１０８に録音させる際に、ＣＤの各トラック毎の録音（記録）された回数を示す録音履歴情報を生成、または、（既に録音履歴情報が生成されていた場合）更新し、内蔵するメモリに記憶する。また、録音管理部１０１は、再び同じＣＤがドライブ２２に装着されると、録音履歴情報を読み出して、各トラックの録音回数の情報をGUI部１００に出力し、ディスプレイ２０に表示させる。また、録音管理部１０１は、そのＣＤを初めて録音処理する際に、通信部２５、および、ネットワーク２を介してWWWサーバ４などにアクセスして、各コンテンツのタイトル情報をダウンロードして、ダウンロードしたコンテンツのタイトル情報とメディア固有識別情報をタイトル保存情報として内蔵するメモリに記憶させる。また、録音管理部１０１は、１回の録音処理で録音される複数のコンテンツをまとめるインデックスとしてプレイリストIDを生成し、コンテンツと共に曲管理部１０４に出力して、曲ファイル格納部１０８に記録させる。尚、タイトル保存情報については、図４を参照して後述する。また、録音管理部１０１は、ネットワーク２および通信部２５を介して、EMDサーバ３より配信されるコンテンツを録音することもできる。

【００４９】コンテンツ管理処理部１０２は、GUI部１００からコンテンツの再生が要求されたとき、曲管理部１０４に、再生が要求されたコンテンツに対応する曲ID、または、再生が要求されたプレイリストに含まれるコンテンツに対応する曲ID（再生が要求されたプレイリストに対応するプレイリストIDと共に記録されたコンテンツの曲ID）を供給すると共に、コンテンツに対応するファイル名を要求する。コンテンツ管理処理部１０２は、曲管理部１０４からファイル名を取得したとき、曲管理部１０４、ファイル検索部１０６、およびデータベース１０７を介して、曲ファイル格納部１０８－１または１０８－２から、コンテンツを取得する。

【００５０】コンテンツ管理処理部１０２は、取得したコンテンツをPC（Protected Content）プラグイン１０９－１または１０９－２に供給する。

【００５１】PCプラグイン１０９－１は、コンテンツ管理処理部１０２からコンテンツが供給されたとき、コンテンツが暗号化されていない場合、符号化されているコンテンツを復号して、音声データを音声出力部１１０－１に供給する。PCプラグイン１０９－１は、コンテンツ管理処理部１０２からコンテンツが供給された場合、コンテンツが暗号化されているとき、暗号化されているコンテンツを復号するとともに、符号化されているコンテンツを復号して、音声データを音声出力部１１０－１に供給する。音声出力部１１０－１は、音声データを基に、音声信号を生成して、スピーカ２４に音声を出力させる。

【００５２】PCプラグイン１０９－２は、コンテンツ管理処理部１０２からコンテンツが供給されたとき、コンテンツが暗号化されていない場合、符号化されているコンテンツを復号して、音声データを音声出力部１１０－２に供給する。PCプラグイン１０９－２は、コンテンツ管理処理部１０２からコンテンツが供給されたとき、コンテンツが暗号化されている場合、暗号化されているコンテンツを復号するとともに、符号化されているコンテンツを復号して、音声データを音声出力部１１０－２に供給する。音声出力部１１０－２は、音声データを基に、音声信号を生成して、スピーカ２４に音声を出力させる。

【００５３】使用者は、PCプラグインを更に追加インストールすることができる。

【００５４】以下、PCプラグイン１０９－１またはPCプラグイン１０９－２を個々に区別する必要が無いとき、単に、PCプラグイン１０９と称する。

【００５５】転送処理部１０３は、GUI部１００からコンテンツの転送が要求されたとき、転送が要求されたコンテンツに対応する曲IDを曲管理部１０４に供給すると共に、コンテンツに対応するファイル名を要求する。転送処理部１０３は、曲管理部１０４からファイル名を取得したとき、曲管理部１０４、ファイル検索部１０６、およびデータベース１０７を介して、曲ファイル格納部１０８－１または１０８－２から、ファイル名に対応するコンテンツを取得する。

【００５６】転送処理部１０３は、取得したコンテンツをPDプラグイン１１１－１または１１１－２に供給する。

【００５７】PDプラグイン１１１－１は、ポータブルデバイス５－１にコンテンツを転送するとき、ポータブルデバイス５－１と相互認証する。相互認証されなかったとき、PDプラグイン１１１－１は、ポータブルデバイス５－１にコンテンツを転送しない。

【００５８】PDプラグイン１１１－１は、転送処理部１０３からコンテンツが供給されたとき、コンテンツが暗号化されている場合、コンテンツに関連するデータと共にコンテンツをポータブルデバイス５－１に供給する。PDプラグイン１１１－１は、転送処理部１０３からコンテンツが供給された場合、コンテンツが暗号化されていないとき、コンテンツを暗号化して、コンテンツに関連するデータと共に暗号化されたコンテンツをポータブルデバイス５－１に供給する。なお、相互認証の処理は、ポータブルデバイス５－１がパーソナルコンピュータ１に接続されたとき、実行されるようにしてもよい。

【００５９】PDプラグイン１１１－２は、ポータブルデバイス５－２にコンテンツを転送するとき、ポータブルデバイス５－２と相互認証する。相互認証されなかった

とき、PDプラグイン１１１－２は、ポータブルデバイス５－２にコンテンツを転送しない。

【００６０】PDプラグイン１１１－２は、転送処理部１０３からコンテンツが供給されたとき、コンテンツが暗号化されている場合、コンテンツに関連するデータと共にコンテンツをポータブルデバイス５－２に供給する。PDプラグイン１１１－２は、転送処理部１０３からコンテンツが供給されたとき、コンテンツが暗号化されていない場合、コンテンツを暗号化して、コンテンツに関連するデータと共に暗号化されたコンテンツをポータブルデバイス５－２に供給する。なお、相互認証の処理は、ポータブルデバイス５－２がパーソナルコンピュータ１に接続されたとき、実行されるようにしてもよい。

【００６１】使用者は、PDプラグインを更に追加インストールすることができる。

【００６２】以下、PDプラグイン１１１－１またはPDプラグイン１１１－２を個々に区別する必要がないとき、単に、PDプラグイン１１１と称する。

【００６３】曲管理部１０４は、データベース１０７に、コンテンツに対応する曲名、または、ファイル名、および、コンテンツに対応するメディア固有識別情報、および、プレイリストIDなどのデータを記録させると共に、データベース１０７から、指定された曲名またはファイル名などを読み出す。曲管理部１０４は、GUI部１００から曲名またはファイル名を受信したとき、データベース１０７にレコードを追加させ、レコードのアイテムとして、曲名またはファイル名を記録させるとともに、メディア固有識別情報、および、プレイリストIDも追加する。

【００６４】曲管理部１０４は、GUI部１００からの要求に対応して、データベース１０７に記録されている全ての曲名および曲IDなどをデータベース１０７から読み出して、GUI部１００に供給する。また、曲管理部１０４は、録音管理部１０１からメディア固有識別情報が供給されたとき、メディア固有識別情報に対応する曲IDやファイル名をデータベース１０７から読み出し、GUI部１００に供給する。さらに、曲管理部１０４は、録音管理部１０１からプレイリストIDが供給されたとき、プレイリストIDに対応する曲IDやファイル名をGUI部１００に供給する。

【００６５】曲管理部１０４は、コンテンツ管理処理部１０２から曲IDが供給されたとき、曲IDに対応するファイル名をデータベース１０７から読み出して、読み出したファイル名をコンテンツ管理処理部１０２に供給する。曲管理部１０４は、転送処理部１０３から曲IDが供給されたとき、曲IDに対応するファイル名をデータベース１０７から読み出して、読み出したファイル名を転送処理部１０３に供給する。

【００６６】ファイル検索部１０６は、曲管理部１０４の要求に対応して、データベース１０７から取得したファイル名を基に、曲ファイル格納部１０８－１または１０８－２からファイル名に対応するファイルを検索する。ファイル検索部１０６は、曲ファイル格納部１０８－１または１０８－２から読み出したファイルを曲管理部１０４に供給するか、またはファイルのファイル名を変更して、ファイル名を変更したファイルを曲管理部１０４に供給する。

【００６７】曲管理部１０４は、ファイル検索部１０６から供給された、コンテンツが格納されているファイルをコンテンツ管理処理部１０２または転送処理部１０３に供給する。

【００６８】データベース１０７は、コンテンツに関するデータ、例えば、曲のID、曲名、ファイル名、メディア固有識別情報、プレイリストID、またはその他の属性などを記録する。データベース１０７は、HDD２１に格納される。

【００６９】次に、図４を参照して、録音管理部１０１が内蔵するメモリに記憶するタイトル保存情報について説明する。タイトル保存情報は、録音管理部１０１の内蔵するメモリに記録される情報であり、録音されたCDのメディア固有識別情報、CDのアルバム名、各コンテンツのタイトル名、アーティスト名、および、各コンテンツの情報を提供するサーバのURL（Universal Resource Locater）といった情報が含まれている。また、タイトル保存情報は、GUI部１００により読み出され、録音処理などを実行する際の表示データとしての情報も保持している。

【００７０】今の場合、図４の第1行目には、「DISCID＝５５４４３３２２」と示されており、メディア固有識別情報が記録されている。メディア固有識別情報は、各CDのTOCに記録されたコンテンツの数（曲数）や全記録時間などから求められる値（今の場合、５５４４３３２２）であり、このメディア固有識別情報によりCDが識別される。

【００７１】第２行目には、「DTITLE＝KING／RIDING」と示されており、このCDのタイトルとして「KING／RIDING」が登録されていることが示されている。第３行目乃至第１０行目には、「TTITLE０＝ライディング」、「TTITLE１＝テン・ロング」、「TTITLE２＝キー」、「TTITLE３＝マリー」、「TTITLE４＝スリー」、「TTITLE５＝ヘルプ」、「TTITLE６＝アイ」、および、「TTITLE７＝ウォリード」が示されており、各トラック単位で、記録されているコンテンツのタイトル名が記録されている。今の場合、トラック番号が０に対応するコンテンツ（１曲目のコンテンツ）のタイトルが、「ライディング」であり、トラック番号が１に対応するコンテンツ（２曲目のコンテンツ）のタイトルが、「テン・ロング」であることが示されており、以下３曲目以降のコンテンツのタイトルが「キー」、「マリー」、「スリー」、「ヘルプ」、「アイ」、および、「ウォリード」と記録されて

いる。尚、今の場合、第１１行目、第１２行目に示されている、トラック番号が８，９番のタイトルは、ブランクになっている。

【００７２】第１３行目には、「EXTD＝ARTIST：KING」と示されており、アーティスト名が「KING」であることが示されている。第１４行目、第１５行目には、「EXTD＝URL１：アーティストディスコグラフィーhttp:www.cdnew.co.jp./artist.asp.artistID=1122」、「EXTD＝URL２：CDNEW JAPANホームhttp:www.cdnew.co.jp./index.asp」と示されており、それぞれ、上記の第1行目乃至第１３行目までの情報を入手したWWWサーバ４の情報が記録されている。「アーティストディスコグラフィー」、「CDNEW JAPANホーム」は、WWWサーバ４の名称であり、それ以下の「http:www.cdnew.co.jp./artist.asp.artistID=1122」、「http:www.cdnew.co.jp./index.asp」は、それぞれのURLを示している。

【００７３】次に、図５を参照して、ＣＤ（図２の光ディスク４２に対応する）がドライブ２２に装着されたときに、コンテンツ管理プログラム（アプリケーションプログラム）の録音管理部１０１からの指令に基づいて、GUI部１００がディスプレイ２０上に表示するウィンドウの表示例について説明する。ウィンドウ上には、ＣＤタブ２０１、インポートタブ２０２、プレイリストタブ２０３、チェックイン／チェックアウトタブ２０４、機器メディアタブ２０５、および、インターネットタブ２０６が設けられており、それぞれのタブをクリックすることにより、アクティブにされると、それぞれの表示画面がフィールド２３１上に表示される。今の場合、ＣＤタブ２０１がアクティブの状態となっており、ＣＤに関する情報が、フィールド２３１に表示されている。

【００７４】ＣＤタブ２０１の下には、取出しボタン２１１が表示されており、クリックされるとドライブ２２に装着されたＣＤが取り出される。取出しボタン２１１の右側には、録音停止ボタン２１２および、録音開始ボタン２１３が表示されており、録音開始ボタン２１３がクリックされるとフィールド２３１上で、指定されたＣＤのコンテンツのHDD２１への録音が開始され、録音中に録音停止ボタン２１２がクリックされると録音処理が停止される。

【００７５】録音開始ボタン２１３の右側には、ビットレート表示欄２１４が表示されており、クリックすると様々なビットレートがドロップダウンリストとして表示され、ポインタにより録音のビットレートを選択することができる。ビットレート表示欄２１４の右側には、ドライブ表示欄２１５が表示されており、録音されるCDが装着されているドライブが表示されており、クリックすることでドロップダウンリストとして選択可能なドライブ名が表示され、ポインタにより選択することができる。さらに、ドライブ表示欄２１５の右側には、録音先表示欄２１６が表示されており、クリックするとドロップダウンリストが表示され、録音先として、HDD２１やポータブルデバイス５－１乃至５－３などが表示され、ポインタにより選択することができる。

【００７６】各タブの上には、タスクバー２１７が表示されている。タスクバー２１７には、停止ボタン２１７ａ、再生ボタン２１７ｂ、および、その他の操作ボタンが表示されており、フィールド２３１上で指定されたコンテンツの再生、および、停止といった各種の操作をさせることができる。また、停止ボタン２１７ａの上には、アルバム名表示欄２１７ｃが表示されており、今の場合、アルバム名として「ライディング」が表示されている。

【００７７】取出しボタン２１１の下には、アルバム名表示欄２１１が表示されており、挿入されたＣＤのアルバム名が表示される。今の場合、アルバム名として、「ライディング」が表示されている。アルバム名表示欄２２１の右側には、アーティスト名表示欄２２２が表示されており、今の場合、アーティスト名として、「キング」が表示されている。アーティスト名表示欄２２２の右側には、ジャンル名表示欄２２３が表示されており、今の場合、「ロック」と表示されている。

【００７８】フィールド２３１には、挿入されたＣＤのコンテンツが示されており、上からＣＤトラック番号順に表示されている。各コンテンツ毎に、右側から、ＣＤトラック番号、タイトル名、アーティスト名、ジャンル、演奏時間、容量、および録音状態が表示されている。ＣＤトラック番号が表示されている欄には、ＣＤトラック番号の他に、左からチェックボックス２２４ａ乃至２２４ｈ、および、再生可能符号（今の場合、ト音記号）が表示されている。チェックボックス２２４ａ乃至２２４ｈは、クリックされるとチェックマークが表示され、さらにもう一度クリックするとチェックマークが非表示となる。チェックボックス２２４ａ乃至２２４ｈのうちチェックされた（チェックマークの入った）コンテンツがＣＤから録音される。今の場合、全てのコンテンツのチェックボックス２２４ａ乃至２２４ｈがチェックされているので、この状態で録音開始ボタン２１３がクリックされると、全てのコンテンツがＣＤからHDD２１に録音される。また、ト音記号で示される符号は、現在再生可能な状態であることを示す表示であり、再生不能であるときは、例えば、休符（図９）に表示が変わる。

【００７９】次に、図６のフローチャートを参照して、パーソナルコンピュータ１のCDのコンテンツを録音するときのＣＤ装着時の処理について説明する。ＣＤが、ドライブ２２に装着されると、ステップＳ１において、録音管理部１０１は、装着されたＣＤがオーディオＣＤ（音楽コンテンツが記録されたＣＤ）であるか否かを判定し、オーディオＣＤであると判定した場合、その処理は、ステップＳ２に進む。

【００８０】ステップＳ２において、録音管理部１０１

は、ＣＤ内に記録されているＴＯＣ（Table of Contents）の情報を読み込んで、コンテンツの数や、ＣＤの総録音時間などからメディア固有識別情報を生成する。

【００８１】ステップＳ３において、録音管理部１０１は、曲管理部１０４に対して、メディア固有識別情報を送出し、過去に登録された同じメディア固有識別情報に対応するプレイリストIDが存在するか否かを問い合わせる。同じメディア固有識別情報が存在せず、対応するプレイリストIDが存在しないと判定された場合、その処理は、ステップＳ４に進む。

【００８２】ステップＳ４において、録音管理部１０１は、自分自身に内蔵されたメモリに存在する録音履歴情報を検索し、装着されたＣＤの各トラックの録音履歴が存在するか否かを判定する。ＣＤの各トラックの録音履歴情報が存在すると判定された場合、ステップＳ５において、録音管理部１０１は、検索された録音履歴情報から、そのコンテンツの録音回数を集計してディスプレイ２０に表示する。このとき、例えば、フィールド２３１上の録音状態の欄に「録音済み」が表示される（図９）。さらに、例えば、履歴回数が２回である場合、録音状態表示欄には、「録音済み」の表示の右側に、［２］が履歴回数として表示される（図１１）。

【００８３】ステップＳ６において、録音管理部１０１は、GUI部１００に対して、未録音トラックのチェックボックスをチェックしてディスプレイに表示させる。例えば、全てのコンテンツが録音済みではない場合、図５に示すように、全てのトラックのチェックボックス２２４ａ乃至２２４ｈがチェックされることになる。

【００８４】ステップＳ７において、記録管理部１０１は、生成されたメディア固有識別情報に基づいて、内蔵するメモリに記憶されたタイトル保存情報を検索する。ステップＳ８において、録音管理部１０１は、内蔵するメモリに生成されたメディア固有識別情報を含むタイトル保存情報が存在するか否かを判定し、存在すると判定した場合その処理は、ステップＳ９に進む。

【００８５】ステップＳ９において、録音管理部１０１は、検索されたタイトル保存情報に保存されている各コンテンツのタイトルの情報を取得し、GUI部１００に出力して、ディスプレイ２０に表示させる。例えば、図４に示したタイトル保存情報が取得されると、図５に示すように、フィールド２３１上に、各コンテンツのタイトル名、アーティスト名、が表示されることになる。

【００８６】ステップＳ１０において、録音管理部１０１は、アルバム名を新規プレイリストとして登録し、対応するプレイリストIDと共に曲管理部１０４に転送し、格納させる。例えば、図５に示すような場合、「ライディング」がプレイリストとして登録されることになる。

【００８７】ステップＳ１１において、録音管理部１０１は、録音開始ボタン２１３がクリックされたか否かを判定し、クリックされたと判定された場合、ステップＳ１２において、録音管理部１０１は、録音処理を実行する。

【００８８】ここで、図７を参照して、録音処理について説明する。ステップＳ３１において、録音管理部１０１は、GUIに問い合わせて、選択されているコンテンツをＣＤから読み出す。例えば、図８に示すように、チェックボックス２２４ａ，２２４ｂ，２２４ｅ，２２４ｇがチェックされて、録音開始ボタン２１３がクリックされた場合、トラック番号１，２，５，７のコンテンツがＣＤから読み出されることになる。

【００８９】ステップＳ３２において、録音管理部１０１が、ＣＤから読み出したコンテンツを所定の方式で圧縮し、暗号化して、曲管理部１０４に出力する。ステップＳ３３において、曲管理部１０４は、権利化情報を権利格納部１０５に格納させて、暗号化したコンテンツをデータベース１０７に登録する。

【００９０】ステップＳ３４において、曲管理部１０４は、暗号化したコンテンツを曲ファイル格納部１０８に格納する。

【００９１】このステップＳ３１乃至Ｓ３４の処理がなされている間に、GUI部１００は、図９に示すように、ウィンドウ上に録音状態表示欄２４１を表示し、その中に録音状態表示バー２４１ａと、残り時間表示欄２４１ｂを表示する。録音時間表示バー２４１ａは、選択された全てのコンテンツが録音されるのに必要とされる時間の全体を示しており、処理が進むにつれて、処理終了の割合を示す所定の色のバーが図中左側から表示されていく。最終的に処理が全て終了するとき、録音状態表示バー２４１ａ全体に、所定の色のバーが表示される。また、録音が完了したコンテンツ、例えば、図９に示すトラック番号１，２のコンテンツは、録音状態の表示欄に「録音済み」が表示され、さらに、現在録音中のコンテンツには、そのコンテンツの録音処理の進捗状況を全体を１００％として表示する。今の場合、トラック番号５のコンテンツの録音状態の表示欄には「４％」が表示されており、トラック番号５のコンテンツの全体の４％の録音が完了していることが示されている。

【００９２】ステップＳ３５において、録音管理部１０１は、各トラックの録音回数を記録した録音履歴情報を更新する。また、GUI部１００は、図１０に示すように、ディスプレイ２０に、プレイリストタブ２０３がアクティブにされているプレイリストを表示する。図１０に示す、プレイリストのウィンドウでは、フィールド２３１には、録音されたコンテンツが一覧となって表示される。また、フィールド２３１の左側には、フィールド２５２が表示され、その上に、プレイリスト表示欄２５１が表示される。今の場合、プレイリスト表示欄２５１には、「ライディング」が表示されている。

【００９３】また、フィールド２５２は、複数に存在するプレイリストを樹形図状に表示している。すなわち、

フィールド２５２の最上段には、「すべてのプレイリスト」と表示された欄のブランチとして、「ペイント」と「ライディング」の２つのプレイリストが表示されている。今の場合、フィールド２５２では、「ライディング」がアクティブにされているので、フィールド２３１に表示されているコンテンツが「ライディング」のプレイリストに含まれるものであることが示されている。

【００９４】また、「すべてのプレイリスト」の下には、各コンテンツを「アルバム名」、「アーティスト名」、および、「ジャンル名」により分類して表示させるためのブランチが設けられている。

【００９５】ここで、図６のフローチャートの説明に戻る。

【００９６】ステップＳ１において、オーディオＣＤではないと判定された場合、ステップＳ１３において、録音管理部１０１は、GUI部１００にディスプレイ２０上にオーディオＣＤ以外のＣＤが装着されていることを表示させる。

【００９７】ステップＳ３において、メディア固有識別情報に対応するプレイリストIDが検索されたと判定された場合、ステップＳ１４において、GUI部１０１は、図１１に示すように検索されたプレイリストIDに対応するプレイリストに含まれるコンテンツをＣＤタブ２０１がアクティブにされたウィンドウに表示させ、さらに、プレイリスト選択を示すダイアログボックス２６１を表示させ、既存のプレイリストにＣＤの録音を追加するか、あるいは、新規のプレイリストを生成するかを問い合わせるウィンドウを表示する。

【００９８】このとき、図１１に示すように、ダイアログボックス２６１には、新規プレイリストを選択するときにクリックされる、ボタン２６２ａと、既存のプレイリストに追加するとき選択されるボタン２６２ｂが表示される。ボタン２６２ａがクリックされると、ボタン２６２ａがチェックされ（黒丸が表示され）、フィールド２６４に新たなプレイリスト（の名称）を入力することができる。２６２ｂがクリックされると、ボタン２６２ｂがチェックされ（今の場合）、フィールド２６５に登録されていたプレイリストが表示される。尚、フィールド２６５のプレイリストは、新たに上書きして登録することもできる。

【００９９】フィールド２６５の下には、録音開始ボタン２６３ａが表示されており、クリックされると録音が開始される。録音開始ボタン２６３ａの右側には、キャンセルボタン２６３ｂが表示されており、クリックされると処理がキャンセルされ、キャンセルボタン２６３ｂの右側には、ヘルプボタン２６３ｃが表示され、クリックされると、ヘルプ画面が表示される。

【０１００】ここで、図６のフローチャートの説明に戻る。

【０１０１】ステップＳ１５において、録音管理部１０１は、新規プレイリストが選択されて、録音開始ボタン２６３ａがクリックされたか否かを判定し、ボタン２６２ａがクリックされて、新規プレイリストが選択されて、録音開始ボタン２６３ａがクリックされた場合、その処理は、ステップＳ４に進み、それ以降の処理が繰り返される。

【０１０２】ステップＳ１５において、新規プレイリストが選択されず、録音開始ボタン２６３ａがクリックされたと判定された場合、すなわち、図１１に示すように、ボタン２６２ｂがクリックされ、既存のプレイリストが選択された状態で、録音開始ボタン２６３ａがクリックされた場合、その処理は、ステップＳ１２に進み、上記の録音処理が実行される。

【０１０３】ステップＳ４において、各トラックの録音履歴情報が存在しないと判定された場合、ステップＳ５における、録音履歴情報の集計処理がスキップされて、その処理は、ステップＳ６に進む。

【０１０４】ステップＳ８において、タイトル保存情報が存在しないと判定された場合、ステップＳ１６において、録音管理部１０１は、通信部２５、および、ネットワーク２を介して、WWWサーバ４にアクセスし、ドライブ２２に挿入されたＣＤに含まれるコンテンツのタイトル情報を検索する。

【０１０５】ステップＳ１７において、録音管理部１０１は、タイトル情報が検索されたか否かを判定し、タイトル情報が検索されたと判定された場合、その処理は、ステップＳ９に進み、それ以降の処理が繰り返される。ステップＳ１７において、タイトル情報が検索されなかったと判定された場合、ステップＳ１８において、GUI部１００は、図１２に示すように、フィールド２３１に表示される各コンテンツのタイトル名の欄には、「未タイトル」と表示し、アーティスト名、ジャンル名の欄には、「Unknown」を表示する。このとき、使用者は、必要に応じて、タイトル名、アーティスト名、および、ジャンル名を入力することができる。

【０１０６】以上の処理により、録音しようとするＣＤのコンテンツがドライブ２２に装着されると、使用者は、そのＣＤが過去に録音されたものであるか否かを意識しなくても、過去に録音されている場合には、そのコンテンツの録音回数やビットレートなどの情報が表示されることになるので、間違って同じコンテンツを複数回録音することが回避され、HDD２１の記憶領域を無駄に使用しないようにすることができる。また、例えば、同じコンテンツを異なるビットレートで録音しようとする場合、録音しようとするＣＤがドライブ２２に装着されると、過去に録音されたコンテンツの情報が検索されて、表示されるので、使用者は、検索処理を実行することなく、新たに録音しようとするコンテンツのビットレートのみを指定することができるようになる。

【０１０７】さらに、上記の処理により、過去に録音さ

れたプレイリスト単位でコンテンツの情報が検索されて、表示されるので、過去の録音処理で、例えば、プレイリストに登録された複数のコンテンツのうち、全部が録音できずに処理を途中で終了していた場合、同じＣＤをドライブ２２に装着するだけで、未録音のコンテンツだけを継続して、録音させることができ、その際、新たなタイトル名の検索や、編集といった処理を省くことができる。

【０１０８】次に、図１３のフローチャートを参照して、タイトル保存情報の保存処理について説明する。ステップＳ４１において、録音管理部１０１は、例えば、取出しボタン２１１がクリックされるなどして、ドライブ２２に装着されていたオーディオＣＤがイージェクトされたか（取出し処理がなされたか）否かを判定し、オーディオＣＤがイージェクトされていないと判定した場合、その処理は、ステップＳ４２に進む。

【０１０９】ステップＳ４２において、録音管理部１０１は、例えば、ＣＤドライブ標示欄２１５がクリックされるなどして、ドロップダウンリストが表示され、別のドライブに切り替えられたか否かを判定し、ＣＤドライブが切り替えられていないと判定した場合、その処理は、ステップＳ４３に進む。

【０１１０】ステップＳ４３において、録音管理部１０１は、録音処理が終了されたか、すなわち、例えば、プレイリストとして設定された複数のコンテンツの録音処理が終了したか否かを判定し、コンテンツの録音処理が終了していないと判定した場合、その処理は、ステップＳ４１の処理に戻り、それ以降の処理が繰り返される。

【０１１１】ステップＳ４１において、オーディオＣＤがイージェクトされたと判定された場合、ステップＳ４２において、ＣＤドライブが切り替えられたと判定された場合、および、ステップＳ４３において、録音処理が終了したと判定された場合、録音管理部１０１は、ステップＳ４４において、現状のＣＤのアルバム名、および、タイトル情報をタイトル保存情報として、内蔵するメモリに保存する（上書きする）。

【０１１２】すなわち、録音管理部１０１は、アプリケーションソフトウェアが起動している間に、ＣＤの取出し、ドライブの変更、および、録音処理の終了を常に監視し、いずれかの処理がなされた場合、タイトル保存情報を書き換える。

【０１１３】以上の処理により、例えば、図１０に示すウィンドウ上で、所望のコンテンツを選択して、再生ボタン２１７ｂをクリックすることで再生させることもできるが、アプリケーションソフトウェアが起動していない状態から、所定のアイコンをクリックするだけで、所望のプレイリストを一機に再生させることもできる。

【０１１４】次に、録音されたプレイリストに対応したショートカットアイコンを生成し、上記のウィンドウが立上っていない状態（アプリケーションソフトウェアが起動していない状態）から、そのショートカットアイコンがクリックされることにより、プレイリストに登録された複数のコンテンツが一機に再生される処理について説明する。

【０１１５】例えば、図１０の「ライディング」と表示されたプレイリスト名表示部２５２ａをドラッグして、アプリケーションソフトウェアのウィンドウ以外の画面（例えば、Windows98（商標）上のデスクトップ画面）上にドロップすることにより、「ライディング」に対応するプレイリストIDが登録されている、図１４に示すようなショートカットアイコン２８１が生成され、ディスプレイ２０上に表示される。

【０１１６】ここで、図１５のフローチャートを参照して、このショートカットアイコン２８１を使用した再生処理を説明する。

【０１１７】ステップＳ５１において、パーソナルコンピュータ１のCPU１１により実行されているOSは、ショートカットアイコンがクリックされたか否かを判定し、クリックされるまで、この処理を繰り返し、クリックされると、その処理は、ステップＳ５２に進む。

【０１１８】ステップＳ５２において、OSは、コンテンツ管理プログラムのアプリケーションソフトウェアを起動させる。ステップＳ５３において、起動したコンテンツ管理プログラムのGUI部１００は、所定のウィンドウを表示する。今の場合、ショートカットアイコン２８１には、「ライディング」と表示されているので、例えば、図１０に示すようにプレイリストタブ２０３がアクティブの状態のウィンドウが表示されるものとする。もちろん、それ以外のウィンドウが表示されるように設定しても良い。

【０１１９】ステップＳ５４において、コンテンツ管理部１０２は、ショートカットアイコン２８１に登録されていたプレイリストIDを持つコンテンツを曲管理部１０４に要求する。今の場合、ショートカットアイコン２８１は、「ライディング」と表示されており、プレイリストの「ライディング」に対応するプレイリストIDのコンテンツである「ライディング」、「テン・ロング」、「スリー」、および、「アイ」のコンテンツが、曲管理部１０４に要求されることになる。

【０１２０】ステップＳ５５において、曲管理部１０４は、要求されたプレイリストIDに対応するコンテンツを、ファイル検索部１０６にデータベース１０７から検索させ、曲ファイル格納部１０８より読み出させて、コンテンツ管理部１０２に送出する。すなわち、今の場合、曲管理部１０４は、「ライディング」、「テン・ロング」、「スリー」、および、「アイ」のコンテンツを順次、コンテンツ管理部１０２に送出する。

【０１２１】ステップ５６において、コンテンツ管理部１０２は、PCプラグイン１０９、および、音声出力部１１０を介してスピーカ２４より所定のコンテンツを再生

させる。今の場合、音声出力部１１０は、「ライディング」、「テン・ロング」、「スリー」、および、「アイ」のコンテンツを順次、スピーカ２４から出力させる。

【０１２２】このようにショートカットアイコン２８１を生成して、ディスプレイ上に表示させるようにすることにより、使用者は、このショートカットアイコン２８１をクリックするだけで、所望のプレイリストに登録された複数のコンテンツを再生させることができる。

【０１２３】また、以上のステップＳ５３における処理において、GUI部１００がディスプレイ２０に表示するウィンドウは、例えば、上述のように図１０に示すようなプレイリストタブ２０３がアクティブなったウィンドウでもよいし、それ以外のタブがアクティブとなっているウィンドウでもよく、例えば、図１６に示すように、GUI部１００が、シンプルモードウィンドウと呼ばれるタスクバー２１７だけを表示するように、設定できるようにしてもよい。さらに、GUI部１００がディスプレイ２０に表示するウィンドウは、前回のアプリケーションソフトウェアの起動において、最後に（アプリケーションソフトウェアが終了されたときに）表示されていたウィンドウを表示するように設定できるようにしてもよい。また、GUI部１００は、ステップＳ５３における処理において、ディスプレイ２０に表示するウィンドウを最小化した状態、すなわち、ディスプレイ上には表示させないようにして、コンテンツだけがスピーカ２４から再生されるように設定できるようにしてもよい。

【０１２４】さらに、ショートカットアイコン２８１は、例えば、プレイリストが、所定のＣＤのアルバムのコンテンツから構成されるようなときは、そのＣＤのジャケットとなる画像を表示させるようにしてもよい。

【０１２５】上述した一連の処理は、ハードウェアにより実行させることもできるが、ソフトウェアにより実行させることもできる。一連の処理をソフトウェアにより実行させる場合には、そのソフトウェアを構成するプログラムが、専用のハードウェアに組み込まれているコンピュータ、または、各種のプログラムをインストールすることで、各種の機能を実行することが可能な、例えば汎用のパーソナルコンピュータなどに、プログラム格納媒体からインストールされる。

【０１２６】コンピュータにインストールされ、コンピュータによって実行可能な状態とされるプログラムを格納するプログラム格納媒体は、図２に示すように、磁気ディスク４１（フロッピディスクを含む）、光ディスク４２（CD-ROM(Compact Disc-Read Only Memory)、ＤＶＤ(Digital Versatile Disc)を含む）、光磁気ディスク４３（ＭＤ(MiniDisc)を含む）、または半導体メモリ４４などよりなるパッケージメディア、または、プログラムが一時的若しくは永続的に格納されるROM１２や、ＨＤＤ２１などにより構成される。プログラム格納媒体へのプログラムの格納は、必要に応じて通信部２５などのインタフェースを介して、ローカルエリアネットワークまたはインターネットなどのネットワーク２、デジタル衛星放送といった、有線または無線の通信媒体を利用して行われる。

【０１２７】なお、本明細書において、プログラム格納媒体に格納されるプログラムを記述するステップは、記載された順序に沿って時系列的に行われる処理はもちろん、必ずしも時系列的に処理されなくとも、並列的あるいは個別に実行される処理をも含むものである。

【０１２８】また、本明細書において、システムとは、複数の装置により構成される装置全体を表すものである。

【０１２９】

【発明の効果】本発明の情報処理装置および方法、並びに、プログラム格納媒体によれば、第１の記録媒体に記録されたコンテンツを、第２の記録媒体に記録するとき、コンテンツの情報を記録履歴情報として記憶し、第１の記録媒体に記録されたコンテンツを、第２の記録媒体に再び記録するとき、記録履歴情報として記憶したコンテンツの情報を検索し、表示するようにしたので、過去に記録されたコンテンツを間違って複数回記録することが回避され、第２の記録媒体の記憶領域を無駄に使用しないようにすることが可能となり、さらに、複数回同じコンテンツを記録する際にも、コンテンツの情報を再入力する手間を省くことが可能となる。

【図面の簡単な説明】

【図１】本発明に係る音楽データ管理システムの一実施の形態を示す図である。

【図２】パーソナルコンピュータ１の構成を説明する図である。

【図３】図２のパーソナルコンピュータ１の機能の構成を説明するブロック図である。

【図４】タイトル保存情報を説明する図である。

【図５】ＣＤタブがアクティブのときのウィンドウの表示例を示す図である。

【図６】ＣＤ装着時の処理を説明するフローチャートである。

【図７】録音処理を説明するフローチャートである。

【図８】ＣＤタブがアクティブのときのウィンドウの表示例を示す図である。

【図９】ＣＤタブがアクティブのときのウィンドウの表示例を示す図である。

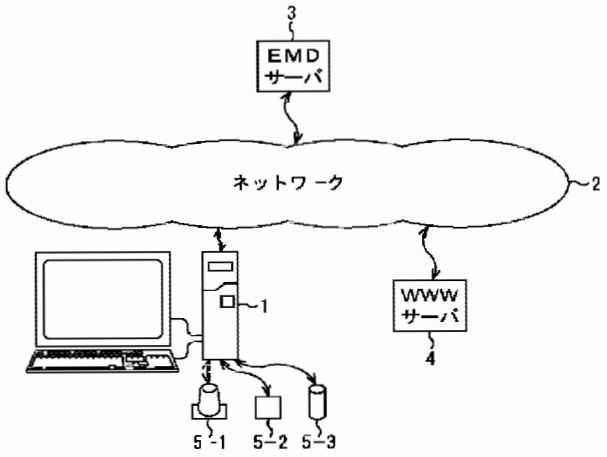
【図１０】プレイリストタブがアクティブのときのウィンドウの表示例を示す図である。

【図１１】ＣＤタブがアクティブのときのウィンドウ上に表示されるプレイリスト選択のダイアログボックスの表示例を示す図である。

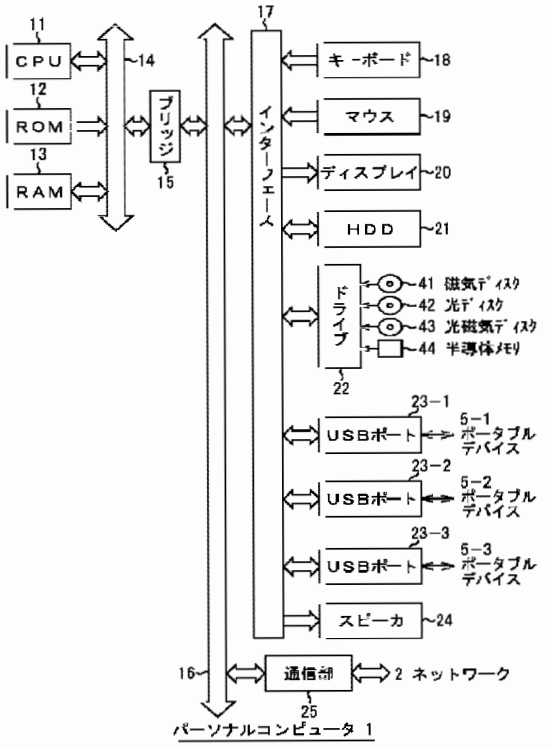
【図１２】ＣＤタブがアクティブのときのウィンドウの表示例を示す図である。

【図１３】タイトル保存情報の保存処理を説明するフローチャートである。
【図１４】ショートカットアイコンの表示例を示す図である。
【図１５】ショートカットアイコン再生処理を説明するフローチャートである。
【図１６】ショートカットアイコン再生処理時にディスプレイに表示されるウィンドウの表示例を示す図である。
【符号の説明】
１　パーソナルコンピュータ，　２　ネットワーク，　３　ＥＭＤサーバ，４　ＷＷＷサーバ，　５－１乃至５－３　ポータブルデバイス，　２１　ＨＤＤ，　２４　スピーカ，　２５　通信部，　１００　ＧＵＩ部，　１０１　録音管理部，　１０２　コンテンツ管理部，　１０３　転送処理部，　１０４　曲管理部，　１０５　権利格納部，　１０６　ファイル検索部，　１０７　データベース，　１０８－１，１０８－２　曲ファイル格納部，　２０１　ＣＤタブ，　２０３　プレイリストタブ，　２１１　取出しボタン，　２１２　録音停止ボタン，２１３　録音開始ボタン，　２２１　アルバム名表示欄，　２２２　アーティスト名表示欄，　２２３　ジャンル名表示欄，　２２４ａ乃至２２４ｈ　チェックボックス，　２３１　フィールド，　２４１　録音状態表示欄，　２４１ａ録音状態表示バー，　２４１ｂ　残り時間表示欄，　２５１　プレイリスト表示欄，　２５２　フィールド，　２５２ａ　プレイリスト表示部，　２６１　ダイアログボックス，　２８１　ショートカットアイコン

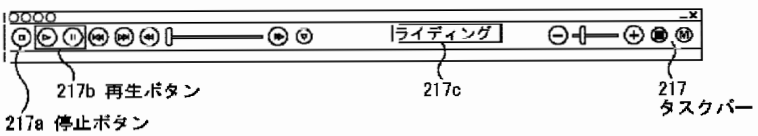
【図１】



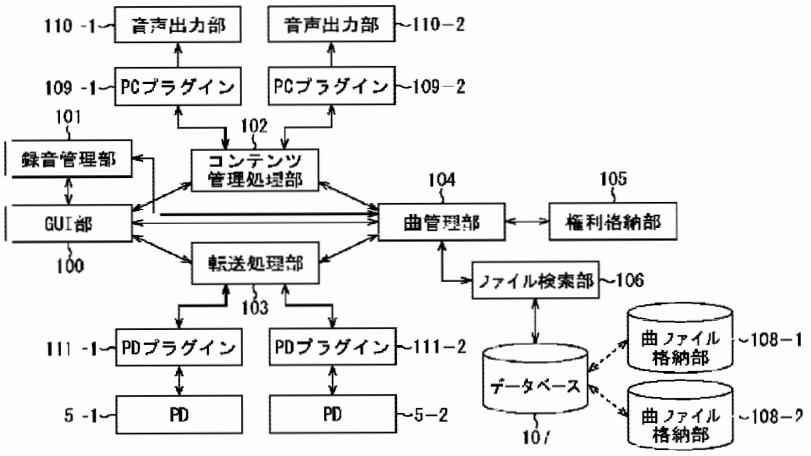
【図２】



【図１６】



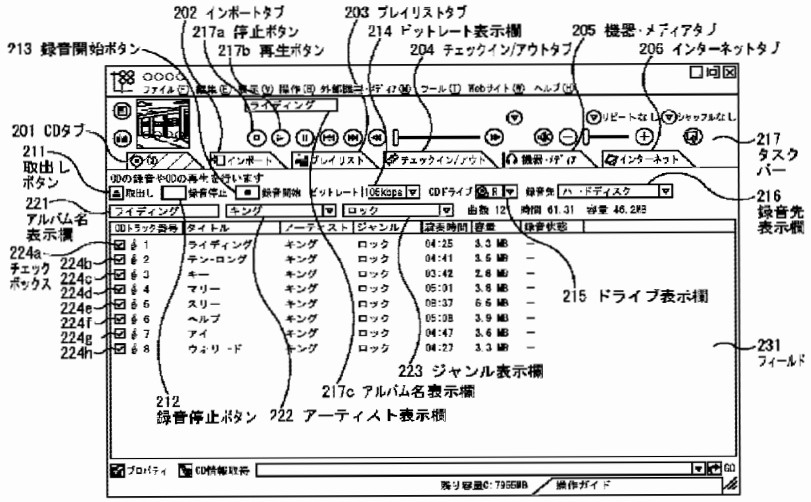
【図3】



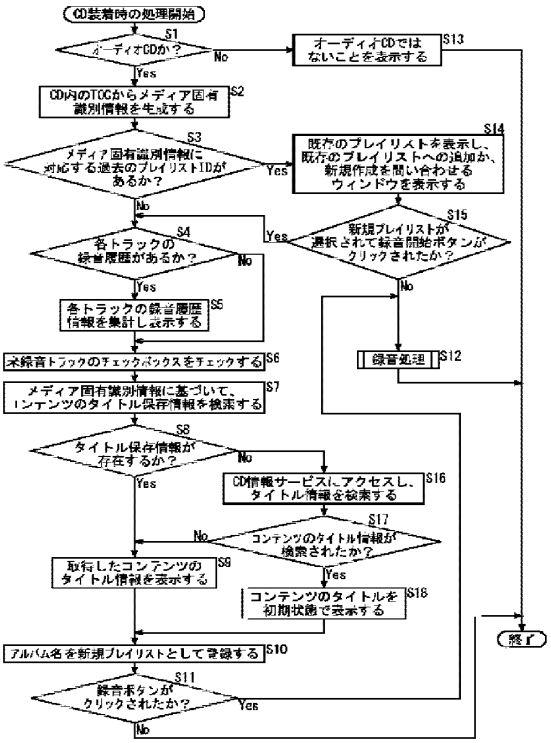
【図4】

```
DISCID=55443322
DTITLE=KING/RIDING
TITLE0=ライディング
TITLE1=テン・ロング
TITLE2=キー
TITLE3=マリー
TITLE4=スリー
TITLE5=ヘルプ
TITLE6=アイ
TITLE7=ウォリード
TITLE8=
TITLE9=
EXTD=ARTIST:KING
EXTD=URL1:アーティストディスコグラフィーhttp:www.cdnew.co.jp./artist.asp.artistid=1122
EXTD=URL2:CDNEW JAPANホームhttp:www.cdnew.co.jp./index.asp
```

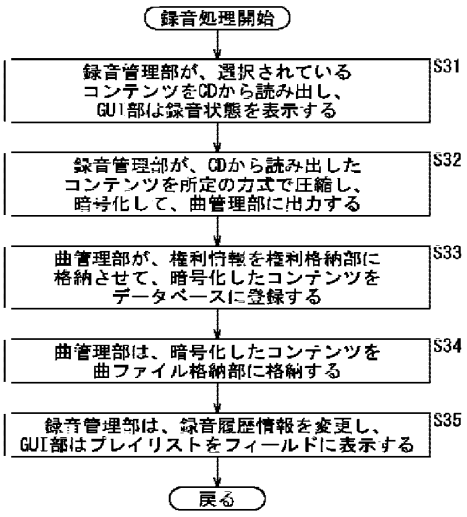
【図5】



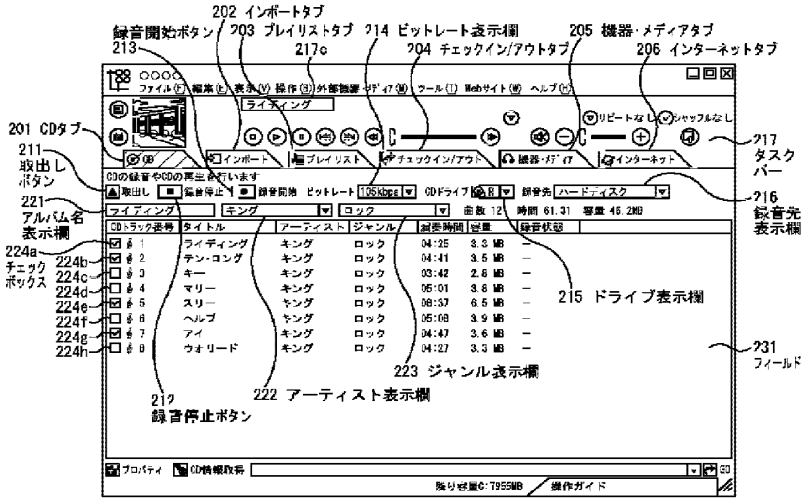
【図６】


CD装着時の処理開始
S1
オーディオCDか？
No
Yes
S13
オーディオCDではないことを表示する
S2
CD内のTOCからメディア固有識別情報を生成する
S3
メディア固有識別情報に対応する過去のプレイリストIDがあるか？
Yes
No
S14
既存のプレイリストを表示し、既存のプレイリストへの追加か、新規作成を問い合わせるウィンドウを表示する
S15
新規プレイリストが選択されて録音開始ボタンがクリックされたか？
Yes
No
S4
各トラックの録音履歴があるか？
No
Yes
S5
各トラックの録音履歴情報を集計し表示する
S6
未録音トラックのチェックボックスをチェックする
S7
メディア固有識別情報に基づいて、コンテンツのタイトル保存情報を検索する
S8
タイトル保存情報が存在するか？
No
Yes
S16
CD情報サービスにアクセスし、タイトル情報を検索する
S17
コンテンツのタイトル情報が検索されたか？
No
Yes
S9
取得したコンテンツのタイトル情報を表示する
S18
コンテンツのタイトルを初期状態で表示する
S10
アルバム名を新規プレイリストとして登録する
S11
録音ボタンがクリックされたか？
Yes
No
S12
録音処理
終了

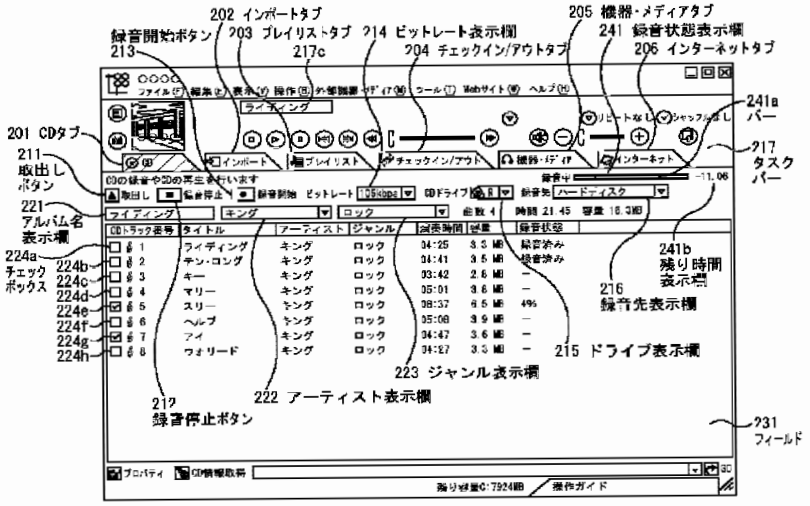
【図７】


録音処理開始
S31
録音管理部が、選択されているコンテンツをCDから読み出し、GUI部は録音状態を表示する
S32
録音管理部が、CDから読み出したコンテンツを所定の方式で圧縮し、暗号化して、曲管理部に出力する
S33
曲管理部が、権利情報を権利格納部に格納させて、暗号化したコンテンツをデータベースに登録する
S34
曲管理部は、暗号化したコンテンツを曲ファイル格納部に格納する
S35
録音管理部は、録音履歴情報を変更し、GUI部はプレイリストをフィールドに表示する
戻る

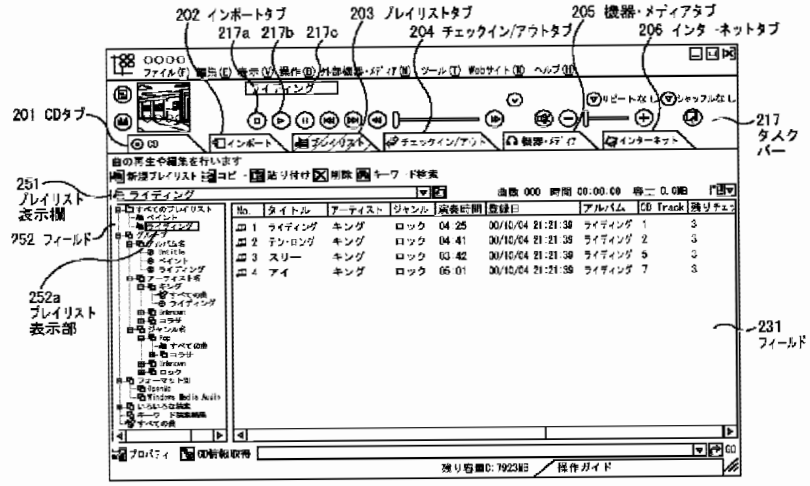
【図８】


202 インポートタブ
録音開始ボタン
213
203 プレイリストタブ
214 ビットレート表示欄
217c
204 チェックイン/アウトタブ
205 機器・メディアタブ
206 インターネットタブ
201 CDタブ
211 取出しボタン
221 アルバム名表示欄
224a チェックボックス
224b
224c
224d
224e
224f
224g
224h
217 タスクバー
216 録音先表示欄
215 ドライブ表示欄
231 フィールド
223 ジャンル表示欄
222 アーティスト表示欄
217 録音停止ボタン

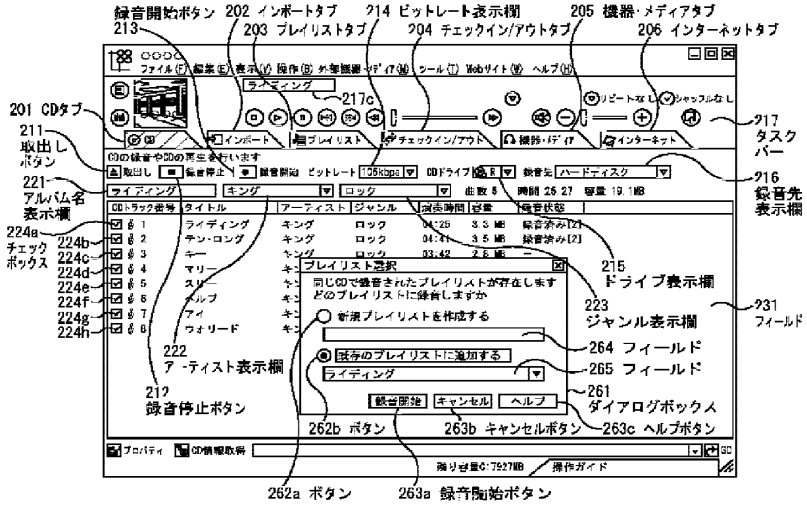
【図９】


202 インポートタブ
203 プレイリストタブ
214 ビットレート表示欄
205 機器・メディアタブ
241 録音状態表示欄
206 インターネットタブ
録音開始ボタン
213
217c
204 チェックイン/アウトタブ
241a バー
201 CDタブ
211 取出しボタン
217 タスクバー
221 アルバム名表示欄
224a チェックボックス
224b
224c
224d
224e
224f
224g
224h
241b 残り時間表示点
216 録音先表示欄
215 ドライブ表示欄
223 ジャンル表示欄
222 アーティスト表示欄
217 録音停止ボタン
231 フィールド

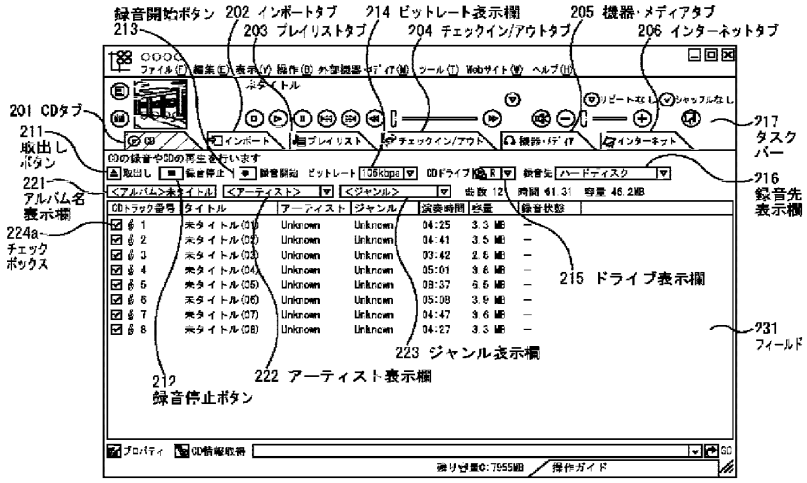
【図１０】


202 インポートタブ
217a 217b 217c
203 プレイリストタブ
204 チェックイン/アウトタブ
205 機器・メディアタブ
206 インターネットタブ
201 CDタブ
217 タスクバー
251 プレイリスト表示欄
252 フィールド
252a プレイリスト表示部
231 フィールド

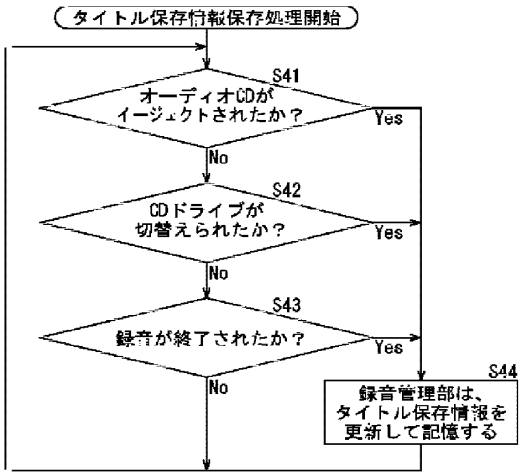
【図１１】


録音開始ボタン 213
202 インポートタブ
203 プレイリストタブ
214 ビットレート表示欄
204 チェックイン/アウトタブ
205 機器・メディアタブ
206 インターネットタブ
201 CDタブ
211 取出しボタン
221 アルバム名表示欄
224a チェックボックス
224b
224c
224d
224e
224f
224g
224h
217c
917 タスクバー
916 録音先表示欄
215 ドライブ表示欄
223 ジャンル表示欄
931 フィールド
264 フィールド
265 フィールド
261 ダイアログボックス
222 アーティスト表示欄
217 録音停止ボタン
262b ボタン
263b キャンセルボタン
263c ヘルプボタン
262a ボタン
263a 録音開始ボタン

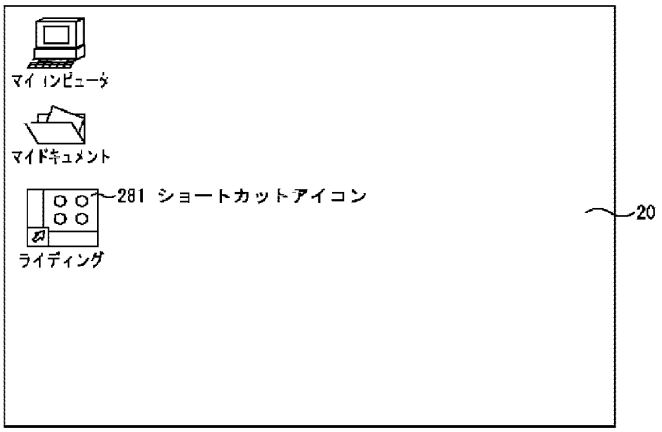
【図１２】


録音開始ボタン 213
202 インポートタブ
203 プレイリストタブ
214 ビットレート表示欄
204 チェックイン/アウトタブ
205 機器・メディアタブ
206 インターネットタブ
201 CDタブ
211 取出しボタン
221 アルバム名表示欄
224a チェックボックス
917 タスクバー
916 録音先表示欄
215 ドライブ表示欄
931 フィールド
223 ジャンル表示欄
222 アーティスト表示欄
217 録音停止ボタン

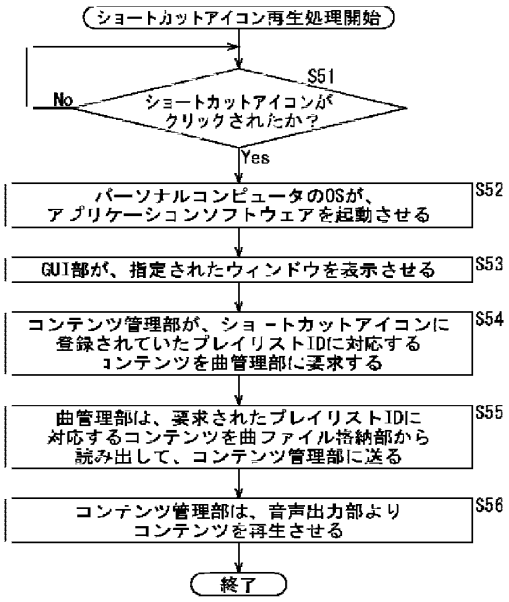
【図１３】



【図１４】



【図１５】



フロントページの続き

Ｆターム(参考)　5B017 AA06 BB09 CA09
5B082 EA08 GA20 GC01 GC03 GC04
5E501 AA20 AC20 AC35 BA05 FA03
FA13 FA23 FA43 FA46

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Bibliographic data: JP2005136457 (A) — 2005-05-26

MOBILE PHONE, REPRODUCING METHOD, AND PROGRAM

Inventor(s): KOIZUMI MICHIAKI; KIYOTA KENJI ± (KOIZUMI MICHIAKI, ; KIYOTA KENJI)

Applicant(s): SANYO ELECTRIC CO ± (SANYO ELECTRIC CO LTD)

Classification: - international: ***H04M1/00; H04M1/02; H04M1/21; H04M1/725; H04N5/64; H04R5/02; H04R5/04;*** (IPC1-7): H04M1/00; H04M1/02; H04M1/21; H04M1/725; H04N5/64; H04R5/02; H04R5/04

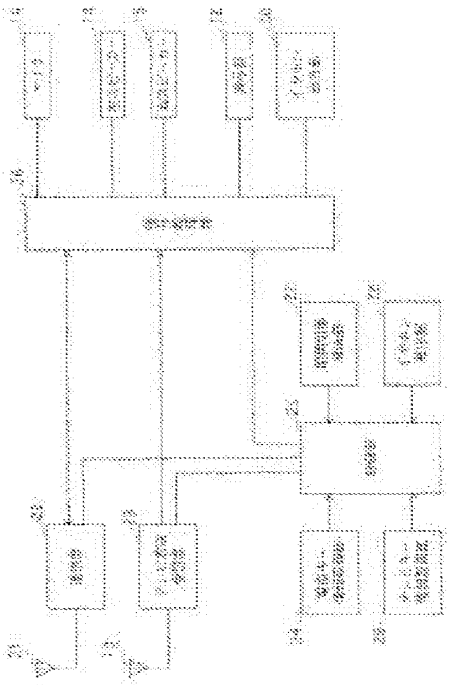
- cooperative:

Application number: JP20030366952 20031028

Priority number(s): JP20030366952 20031028

Abstract of JP2005136457 (A)

PROBLEM TO BE SOLVED: To provide a mobile phone for carrying out a natural sound output to a user whereby the user can easily view a television broadcast program in accordance with the display form of an image in the case of receiving and reproducing the television broadcast wave. ;SOLUTION: The mobile phone is provided with: a reception means for receiving a television broadcast signal; a display section; two speakers arranged at both sides of the display section; and a sound output means for using the two speakers to reproduce the received sound as a stereoscopic signal when the two speakers are located to the left and right of a displayed image or using the speakers to reproduce the received sound as a monaural signal when the two speakers are located to upper and lower parts of the displayed image. ;COPYRIGHT: (C)2005,JPO&NCIPI



(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2005-136457
(P2005-136457A)
(43)公開日　平成17年5月26日(2005.5.26)

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H04M 1/00	H04M 1/00	H	5K023
H04M 1/02	H04M 1/00	V	5K027
H04M 1/21	H04M 1/02	C	
H04M 1/725	H04M 1/21	Z	

審査請求 未請求　請求項の数 3　ＯＬ　（全 11 頁）　最終頁に続く

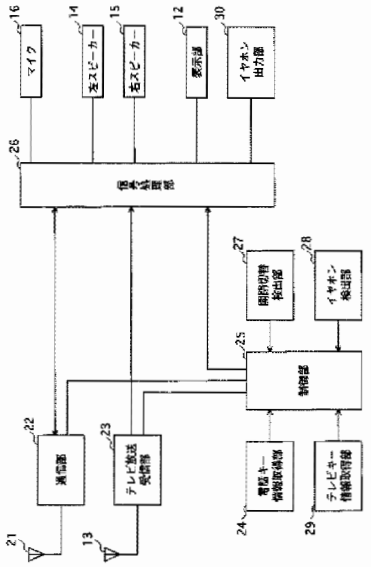
(21)出願番号　特願2003-366952 (P2003-366952)
(22)出願日　平成15年10月28日 (2003.10.28)

(71)出願人　000001889
三洋電機株式会社
大阪府守口市京阪本通２丁目５番５号
(74)代理人　100090446
弁理士　中島　司朗
(72)発明者　小泉　道明
大阪府大阪市北区野崎町７番８号梅田パークビル　株式会社新日本内
(72)発明者　清田　健二
大阪府大東市三洋町１番１号　三洋電機株式会社内

Ｆターム(参考)　5D011 AA02 AD02
5K023 AA07 BB11 DD08 HH07 LL06 MM20 MM25 PP16
5K027 AA11 BB02 HH29 MM17

(54)【発明の名称】携帯電話機、再生方法及びプログラム

(57)【要約】
【課題】　テレビ放送波を受信して再生する場合に、画像の表示形態に応じて、利用者に対し自然な音声出力がなされる、テレビ放送の視聴がしやすい携帯電話機を提供することを目的とする。
【解決手段】　携帯電話機であって、テレビ放送信号を受信する受信手段と、表示部と、表示部の両側に配された２つのスピーカと、前記２つのスピーカが表示画像の左右に位置する場合、受信音声を前記２つのスピーカでステレオ再生し、前記２つのスピーカが表示画像の上下に位置する場合、受信音声を前記２つのスピーカでモノラル再生する音声出力手段とを備える。
【選択図】　図３



【特許請求の範囲】
【請求項1】
テレビ放送信号を受信する受信手段と、
　前記テレビ放送信号中の映像を表示する表示部と、
　前記表示部の両側に配された２つのスピーカと、
　前記２つのスピーカが前記映像の左右に位置する場合、前記テレビ放送信号中の音声を前記２つのスピーカでステレオ再生し、前記２つのスピーカが前記映像の上下に位置する場合、前記音声を前記２つのスピーカでモノラル再生する音声出力手段と
　を備えることを特徴とする携帯電話機。
【請求項2】
表示部の両側に２つのスピーカを配した携帯電話機においてテレビ番組を再生する再生方法であって、
　テレビ放送信号を受信する受信ステップと、
　前記表示部により前記テレビ放送信号中の映像を表示する表示ステップと、
　前記２つのスピーカが前記映像の左右に位置する場合、前記テレビ放送信号中の音声を前記２つのスピーカでステレオ再生し、前記２つのスピーカが前記映像の上下に位置する場合、前記音声を前記２つのスピーカでモノラル再生する音声出力ステップと
　を含むことを特徴とする再生方法。
【請求項3】
表示部の両側に２つのスピーカを配した携帯電話機に適用されるプログラムであって、
　テレビ放送信号を受信する受信ステップと、
　前記表示部により前記テレビ放送信号中の映像を表示する表示ステップと、
　前記２つのスピーカが前記映像の左右に位置する場合、前記テレビ放送信号中の音声を前記２つのスピーカでステレオ再生し、前記２つのスピーカが前記映像の上下に位置する場合、前記音声を前記２つのスピーカでモノラル再生する音声出力ステップと
　の各ステップをコンピュータに実行させるプログラム。

【発明の詳細な説明】
【技術分野】
【0001】
　本発明は、テレビ放送波を受信して再生する携帯電話機に関し、特に音声モードを切替える技術に関する。
【背景技術】
【0002】
　近年、携帯電話機の多機能化が進み、例えばデジタルテレビ放送波を受信、再生する機能を備える携帯電話機も開発されている。
【0003】
　携帯電話機が備える液晶ディスプレイ等画面の形状はほとんどが縦長であり、デジタルテレビ放送波で送信される画像の多くは横長の形状を有するので、携帯電話機の一部機種は、前記画像を９０度回転させて表示し、前記液晶ディスプレイの表示領域を有効利用するモードを備えている（非特許文献１参照）。
【0004】
　一方、音声に関しては、デジタルテレビ放送においてはステレオ放送されるものがほとんどであり、ステレオ音声を適切に再生するためには、携帯電話機にスピーカを２つ備える必要がある。
【0005】
　ステレオ効果を得るために２つのスピーカを適度に離して配置すること及び一方のスピーカを前記縦長画面の上端外側に通常配置される通話用のスピーカと兼用することを考慮し、携帯電話機において、縦長画面の長手方向の両端外側にそれぞれ１つのスピーカを配置することが考えられている。
【非特許文献1】日経エレクトロニクス　２００３年８月１８日　日経ＢＰ社　Ｐ．９０

－９５
【発明の開示】
【発明が解決しようとする課題】
【0006】
しかしながら、前記携帯電話機は、テレビ放送受信時、上述のようには画像を９０度回転させずに画面に表示したい場合もあり、このような場合に受信した音声を単純にステレオ音声として出力すると、ステレオ音声の右音声が画像の上方から聞こえ、左音声が画像の下方から聞こえるといった利用者にとって不自然な音声出力がなされることとなる。
【0007】
上記の問題に鑑み、本発明は、テレビ放送を受信して再生する場合に、画像の表示形態に応じて、利用者に対し自然な音声出力がなされる、テレビ放送の視聴がしやすい携帯電話機を提供することを目的とする。
【課題を解決するための手段】
【0008】
上記課題を解決するために本発明は、携帯電話機であって、テレビ放送信号を受信する受信手段と、前記テレビ放送信号中の映像を表示する表示部と、前記表示部の両側に配された２つのスピーカと、前記２つのスピーカが前記映像の左右に位置する場合、前記テレビ放送信号中の音声を前記２つのスピーカでステレオ再生し、前記２つのスピーカが前記映像の上下に位置する場合、前記音声を前記２つのスピーカでモノラル再生する音声出力手段とを備える。
【発明の効果】
【0009】
（１）本発明の携帯電話機は、上述の構成を備えることにより、利用者から見て、表示する映像の左右にスピーカが位置する場合に、音声をステレオ出力するので、前記利用者は音声のステレオ効果を享受することができ、また表示する映像の左右以外の方向である上下方向等にスピーカが位置する場合、前記スピーカの少なくとも一方に音声をモノラル出力するので、映像の上方向からステレオ音声に係る右側音声、下方向からステレオ音声に係る左側音声を聞くといった不自然さや、聞き取りにくさを感じることなく、音声を聞くことができる。
【0010】
（２）本発明の再生方法は、表示部の両側に２つのスピーカを配した携帯電話機においてテレビ番組を再生する再生方法であって、テレビ放送信号を受信する受信ステップと、前記表示部により前記テレビ放送信号中の映像を表示する表示ステップと、前記２つのスピーカが前記映像の左右に位置する場合、前記テレビ放送信号中の音声を前記２つのスピーカでステレオ再生し、前記２つのスピーカが前記映像の上下に位置する場合、前記音声を前記２つのスピーカでモノラル再生する音声出力ステップとを含む。
【0011】
この構成によれば、利用者から見て、表示する映像の左右にスピーカが位置する場合に、音声をステレオ出力するので、前記利用者は音声のステレオ効果を享受することができ、また表示する映像の左右以外の方向である上下方向等にスピーカが位置する場合、前記スピーカの少なくとも一方に音声をモノラル出力するので、映像の上方向からステレオ音声に係る右側音声、下方向からステレオ音声に係る左側音声を聞くといった不自然さや、聞き取りにくさを感じることなく、音声を聞くことができる。
【0012】
（３）本発明のプログラムは、表示部の両側に２つのスピーカを配した携帯電話機に適用されるプログラムであって、テレビ放送信号を受信する受信ステップと、前記表示部により前記テレビ放送信号中の映像を表示する表示ステップと、前記２つのスピーカが前記映像の左右に位置する場合、前記テレビ放送信号中の音声を前記２つのスピーカでステレオ再生し、前記２つのスピーカが前記映像の上下に位置する場合、前記音声を前記２つのスピーカでモノラル再生する音声出力ステップとの各ステップをコンピュータに実行させ

る。
【0013】
この構成によれば、利用者から見て、表示する映像の左右にスピーカが位置する場合に、音声をステレオ出力するので、前記利用者は音声のステレオ効果を享受することができ、また表示する映像の左右以外の方向である上下方向等にスピーカが位置する場合、前記スピーカの少なくとも一方に音声をモノラル出力するので、映像の上方向からステレオ音声に係る右側音声、下方向からステレオ音声に係る左側音声を聞くといった不自然さや、聞き取りにくさを感じることなく、音声を聞くことができる。
【発明を実施するための最良の形態】
【0014】
本発明の最良の形態について、図を参照しながら説明する。
＜１．概要＞
図１は、本発明に係る携帯電話機１の概略を示す図である。
【0015】
携帯電話機１は、電話としての通話を行う電話機能に加え、テレビ放送波を受信するテレビ機能を備える。
【0016】
携帯電話機１の筐体は、表示部１２を備える第１筐体１０と、第１筐体１０に電気的に接続した第２筐体１１とから成る。
【0017】
携帯電話機１は、スライド開閉式の構造を有し、図１（ａ）に示す第１筐体１０と第２筐体１１とが全体的に重なった状態である閉状態と、図１（ｂ）に示す第１筐体１０が第２筐体１１上を平行移動した開状態との２状態を取る。
【0018】
図１（ａ）に示す第１筐体１０の一部であるスライド部２２には突状のレールが備わり、前記突状レールは、第２筐体１１に備わる溝２１と咬み合っており、溝２１に沿ってスライドする。
【0019】
溝２１の一端には、検出スイッチ２３が備わり、携帯電話機１が前記閉状態の場合には、前記突状レールが検出スイッチ２３を押下する。
【0020】
携帯電話機１は、検出スイッチ２３が押下されていない場合が、開状態であるとする。
【0021】
携帯電話機１の利用者は、電話機能を使用する場合やテレビ放送を簡易視聴する場合には、電話機能の操作に必要なキー等により多様な操作が可能であり、また把持し易い前記開状態で携帯電話機１を利用する。
【0022】
ここで、前記簡易視聴とは、テレビ放送を比較的短い時間視聴することであり、例えば、プロ野球中継における得点のチェック、数分間のニュースの視聴、現在放送中の番組をチェックするためのザッピング視聴等を指す。
【0023】
また、前記利用者は、プロ野球中継を試合終了まで見る、或いはテレビドラマを視聴する等、長時間に渡りテレビを視聴する場合には、携帯電話機１を前記閉状態にして使用する。
【0024】
図２は、携帯電話機１が、受信したテレビ放送を表示部１２に表示している様子を示す図である。
【0025】
図２（ａ）は、前記閉状態の携帯電話機１がテレビ放送を受信し、表示部１２にテレビ映像を映す様子を示している。

【0026】
図２（ｂ）は、前記開状態の携帯電話機１がテレビ放送を受信し、表示部１２にテレビ映像を映す様子を示している。
【0027】
表示部１２は、前記開状態においては、表示すべき情報を、縦長画面として表示し、前記閉状態においては、表示すべき情報を、横長画面として表示する。
【0028】
放送局からテレビ放送される映像は、アスペクト比が横長である映像であり、携帯電話機１は、図２（ａ）に示すように表示部１２一杯に映像を映すよう制御する。
【0029】
横長の映像を前記開状態の携帯電話機１で映す場合には、図２（ｂ）に示すように、前記映像を、図２（ａ）で表示部１２に映されている状態から９０度回転、縮小し、表示部１２に映すこととなり、画面一杯に映像を映すことなく、画面の表示領域を有効利用できない。
【0030】
また、前記利用者は、携帯電話機１を使用しない場合は、携帯電話機１を前記閉状態にしておく。
【0031】
第１筐体１０は、表示部１２と、アンテナ１３と、左スピーカ１４と、右スピーカ１５と、イヤホンジャック１８と、テレビキー２０とを備える。
【0032】
表示部１２は、受信しているテレビ放送や、電話機能による通話時に必要な情報等を表示する液晶ディスプレイ等である。
【0033】
アンテナ１３は、テレビ放送波を受信するアンテナであり、電話機能による通話を行うための無線を送受信するアンテナは、筐体に内蔵されているものとする。
【0034】
左スピーカ１４は、ステレオ音声の左音声や、モノラル音声の出力を行うためのスピーカである。
【0035】
右スピーカ１５は、ステレオ音声の右音声の出力を行うためのスピーカである。
【0036】
テレビキー２０は、当該携帯電話機１の利用者がテレビの視聴を行うために最低限必要なキーを集めたものであり、テレビ放送受信のオン、オフを切り替えるテレビ機能オンオフキー、受信チャネルを選択するためのチャネルアップダウンキー、テレビ音量の調整を行う音量アップダウンキー等から成る。
【0037】
第２筐体１１は、マイク１６と、電話キー１７とを備える。
【0038】
マイク１６は、通話時に、利用者が発する音声を集音する。
【0039】
電話キー１７は、通話先の電話番号を入力するためのテンキーや、オンフックキー、オフフックキーなど通話を行うのに必要なキーから成り、前記テンキーは、テレビ機能がオンになっている場合にはテレビ放送受信時のチャネル番号の入力など、テレビの視聴を行うためのキーとしても使用される。
【0040】
イヤホンジャック１８には、図１（ｂ）に示すようにイヤホン１９の接続が可能である。
【0041】
イヤホンジャック１８は、イヤホンが接続された場合及び接続されたイヤホンが抜かれ

た場合を検出し、また、接続されたイヤホンが、ステレオ用であるかモノラル用であるかを前記イヤホンの接続端子の形状等により識別する。

＜２．構成＞

図３は、携帯電話機１の内部構成を示すブロック図である。

【0042】

表示部１２は、信号処理部２６から入力される、赤色出力信号、緑色出力信号、青色出力信号と、水平、垂直の各同期信号とに基づき、映像表示を行う。

【0043】

通信部２２は、アンテナ２１を介して、携帯電話機に関する基地局（図示せず）と、通話のための無線通信を行う。

【0044】

通信部２２は、受信した信号を復調した結果である音声信号を、信号処理部２６に送信する。

【0045】

テレビ放送受信部２３は、地上波デジタル放送チューナであり、チューナ、復調、誤り訂正、デスクランブル、多重信号分離、復号部、ＤＡコンバータ等から成る。

【0046】

テレビ放送受信部２３は、アンテナ１３を介して、放送局（図示せず）が送信した放送波を受信し、受信した放送波から復号した画像フレーム情報、音声信号を信号処理部２６に出力する。

【0047】

電話キー情報取得部２４は、前記利用者が電話キー１７を押下したことを検出し、押下されたキーに対応する電話キー情報を取得する。

【0048】

信号処理部２６は、前記利用者が通話している場合、通信部２２から受信した音声信号を、増幅処理を施した後、左スピーカ１４に出力する。

【0049】

また、信号処理部２６は、マイク１６が集音した入力音声を増幅処理し、通信部２２、アンテナ２１を介して、前記基地局に送信する。

【0050】

信号処理部２６は、前記利用者がテレビ放送を視聴する場合、テレビ放送受信部２３から受信した映像信号を、前記映像信号を表示部１２に表示させる。

【0051】

信号処理部２６は、制御部２５からの出力制御指示により、前記左音声信号と前記右音声信号とを、左スピーカ１４と右スピーカ１５とを用いて出力するか、又は前記左音声信号と、前記右音声信号とを合成してモノラル音声とし、左スピーカ１４に出力する。

【0052】

信号処理部２６は、ＶＲＡＭ（Ｖｉｄｅｏ　Ｒａｎｄｏｍ　Ａｃｃｅｓｓ　Ｍｅｍｏｒｙ）とワークＲＡＭとを備える。

【0053】

信号処理部２６は、テレビ放送受信部２３から画像フレーム情報を取得する。

【0054】

前記画像フレーム情報は、例えば、ビットマップのように１枚の画像を符号化したものである。

【0055】

信号処理部２６は、取得した画像フレーム情報を、ＶＲＡＭへ書き込む。

【0056】

但し、信号処理部２６は、制御部２５から画像を９０度回転させるよう指示を受けている場合には、前記受信した画像フレーム情報が示す画像を９０度回転させた画像をワークＲＡＭを用いて生成し、前記回転させた画像フレーム情報を前記ＶＲＡＭに展開する。

【0057】
信号処理部２６は、前記ＶＲＡＭ中の情報に対応する、赤出力信号、緑出力信号、青出力信号と、同期信号とを表示部１２に出力する。
【0058】
開閉切替検出部２７は、検出スイッチ２３が押下されている場合に、携帯電話機１が前記閉状態であると判定し、押下されていない場合には携帯電話機１が前記開状態であると判定し、携帯電話機１のテレビ機能がオンされた場合と、携帯電話機１が前記閉状態から前記開状態に変わった場合と、前記開状態から前記閉状態に変わった場合とに、制御部２５に対し携帯電話機１が閉状態と開状態のいずれであるかを示す開閉情報を送信する。
【0059】
また、開閉切替検出部２７は、携帯電話機１の電源がオンになった場合にも、携帯電話機１が開状態と閉状態のいずれであるかを検出し、検出結果を開閉情報として、制御部２５に対し出力する。
【0060】
イヤホン検出部２８は、イヤホンジャック１８にイヤホンが接続された場合及び接続されたイヤホンが抜き取られた場合に、イヤホンが接続されているか否か、接続されている場合には当該イヤホンがステレオ音声用であるかアナログ音声用であるかを判定し、前記判定結果に基づきイヤホン無、ステレオ、アナログのいずれかを示すイヤホン情報を、制御部２５に出力する。
【0061】
また、イヤホン検出部２８は、携帯電話機１の電源がオンになった場合にも、上述の通りイヤホンの接続有無、接続されたイヤホンの種類を判定し、判定結果をイヤホン情報として、制御部２５に対し送信する。
【0062】
テレビキー情報取得部２９は、前記利用者によるテレビキー２０の押下を検出し押下されたキーに対応するテレビキー情報を取得する。
【0063】
イヤホン出力部３０は、信号処理部２６から出力される音声信号を、イヤホンジャック１８に接続されたイヤホンに対し、出力する。
【0064】
制御部２５は、開閉切替検出部２７から取得する開閉情報と、イヤホン検出部２８から取得するイヤホン情報とから、音声モード判定処理を行い、判定結果を出力制御情報として、信号処理部２６に出力する。
【0065】
前記音声モード判定処理については、後述する。
【0066】
制御部２５は、受信したテレビキー情報に基づき、テレビ放送受信部２３に対するチューニングの指示、信号処理部２６に対する音声出力のゲイン調整指示、テレビ放送に係る映像の出力指示等を行う。
【0067】
制御部２５は、受信したキー情報に応じて、電話機能を動作させるため、通信部２２に対し無線通信を行うよう指示する。
【0068】
制御部２５は、携帯電話機１の主電源がオンされた場合には、イヤホン情報、開閉情報を、初期値として取得しておく。
＜３．動作＞
制御部２５は、音声モード判定処理を、（ａ）テレビ機能がオフからオンに変更された場合、（ｂ）イヤホンの接続、抜き取りを検出した場合、（ｃ）携帯電話機１の開閉状態が変更された場合の３つの場合に行う。
【0069】

図４は、音声モード判定処理の内容を示すフローチャートである。

【0070】

制御部２５は、前記イヤホン情報がステレオ或いはモノラルを示すか否かを判定する（Ｓ４０１）。

【0071】

制御部２５は、前記イヤホン情報がイヤホン無を示す場合（Ｓ４０１：ＮＯ）、Ｓ４０２に進む。

【0072】

制御部２５は、前記イヤホン情報がステレオ或いはモノラルを示す場合（Ｓ４０１：ＹＥＳ）、左スピーカ１４及び右スピーカ１５への音声出力を停止するスピーカミュートを示す出力制御指示を信号処理部２６に送信し（Ｓ４０５）、前記イヤホン情報がステレオを示す場合（Ｓ４０６：ＹＥＳ）、イヤホンステレオ出力を示す出力制御指示を信号処理部２６に送信する（Ｓ４０７）。

【0073】

前記イヤホン情報がモノラルを示す場合（Ｓ４０６：ＮＯ）、イヤホンモノラル出力を示す出力制御指示を信号処理部２６に対し送信する（Ｓ４０８）。

【0074】

制御部２５は、前記開閉情報が開状態を示す場合（Ｓ４０２：ＹＥＳ）、信号処理部２６に対し左スピーカモノラル出力を示す出力制御指示を出力する（Ｓ４０４）。

【0075】

前記開閉状態が閉状態を示す場合（Ｓ４０２：ＮＯ）、信号処理部２６に対し、両スピーカステレオ出力を示す出力制御指示を信号処理部２６に対し出力する（Ｓ４０３）。

【0076】

なお、制御部２５は、電話機能がオンになった場合には、イヤホン情報がイヤホン無しを示すか否かを判定する。

イヤホン情報が、イヤホン無しを示す場合左スピーカ出力を示す出力制御情報を信号処理部２６に対し送信し、イヤホン情報がモノラル及びステレオを示す場合には、イヤホンモノラル出力を示す出力制御指示を信号処理部２６に対し送信する。

【0077】

信号処理部２６は、制御部２５から受信した出力制御指示に従い、音声出力を行う。

＜４．変形例＞

なお、本発明を上記の実施の形態に基づいて説明してきたが、本発明は、上記の実施の形態に限定されないのはもちろんである。

以下のような場合も本発明に含まれる。

【0078】

本発明について、スライド式で開閉する携帯電話機の例で説明してきたが、映像を所定の角度回転させるなどしてスピーカの位置と、映像の上下との対応関係が変化するように構成されてあれば、本発明の適用は可能である。

【0079】

図５は、回転式構造を有する携帯電話機の概略を示す図である。

【0080】

例えば、図５（ａ）及び（ｂ）に示す携帯電話機のように、第１筐体１０１が、第２筐体１０２に対して９０度回転する回転式の構造を有してもよい。

【0081】

図５に示す携帯電話機においては、第１筐体１０１が回転したような図５（ａ）で示した状態が前記閉状態に相当し、左スピーカ１０４及び右スピーカ１０５が、ステレオ音声を出力する。

【0082】

図５（ｂ）で示した状態は前記開状態に相当し、ステレオ音声をモノラル音声に変換した後、左スピーカ１０４又は右スピーカ１０５の少なくとも一方から前記モノラル信号を

出力する。

【0083】

また、水平及び垂直ジャイロセンサーにより、携帯電話機の姿勢を検出し、利用者から見て、２つのスピーカが表示部の左右に位置する場合と、表示部の上下に位置する場合とを検出する構成としてもよい。

【図面の簡単な説明】

【0084】

【図1】本発明に係る携帯電話機１の概略を示す図である。

【図2】携帯電話機１が、テレビ放送を受信し、表示部１２に表示している様子を示す図である。

【図3】携帯電話機１の内部構成を示すブロック図である。

【図4】音声モード判定処理の内容を示すフローチャートである。

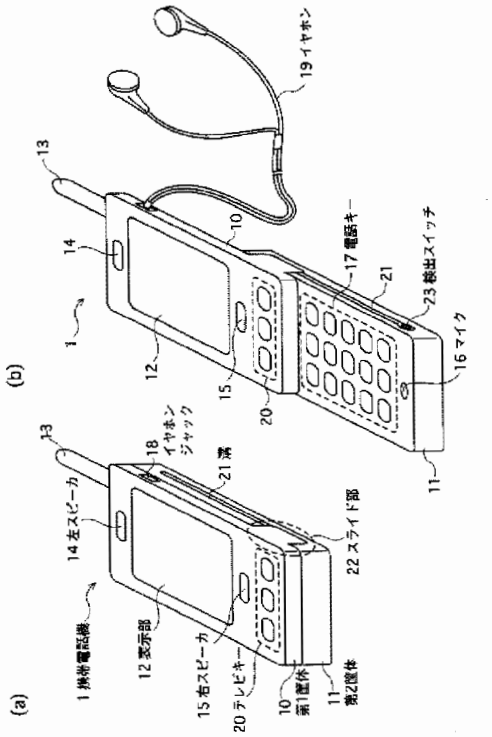
【図5】回転式構造を有する携帯電話機の概略を示す図である。

【符号の説明】

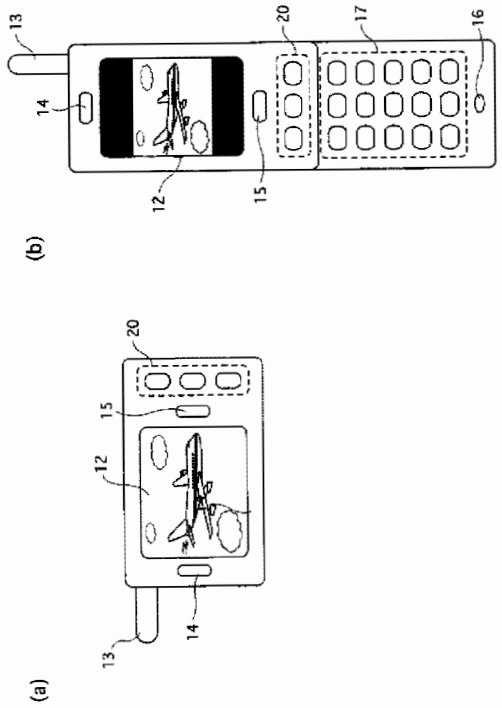
【0085】

１　携帯電話機
１０　第１筐体
１１　第２筐体
１２　表示部
１４　左スピーカ
１５　右スピーカ
１７　電話キー
２０　テレビキー
２１　溝
２３　検出スイッチ

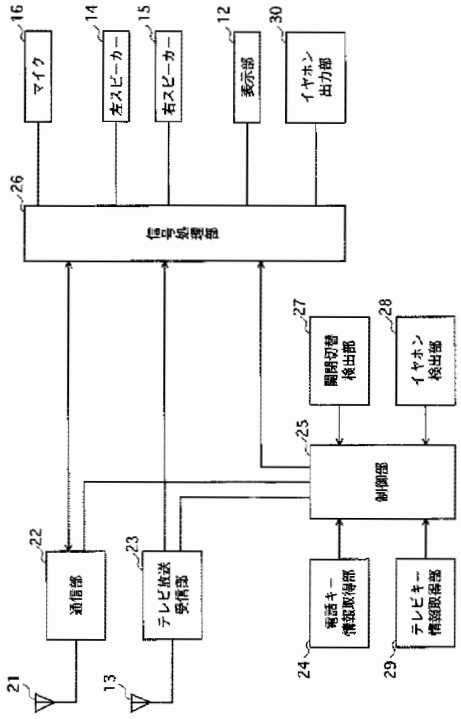
【図1】



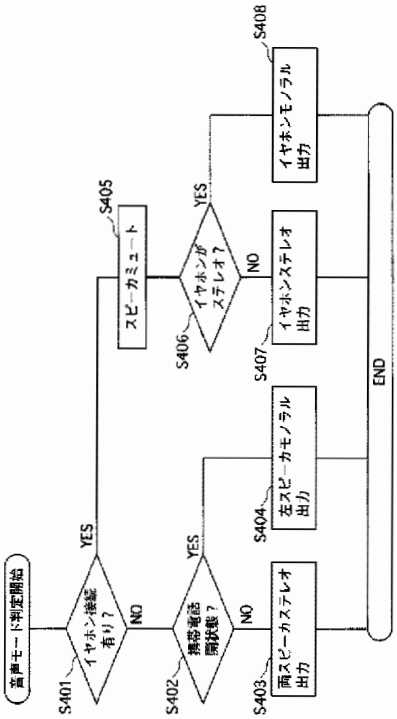
【図2】



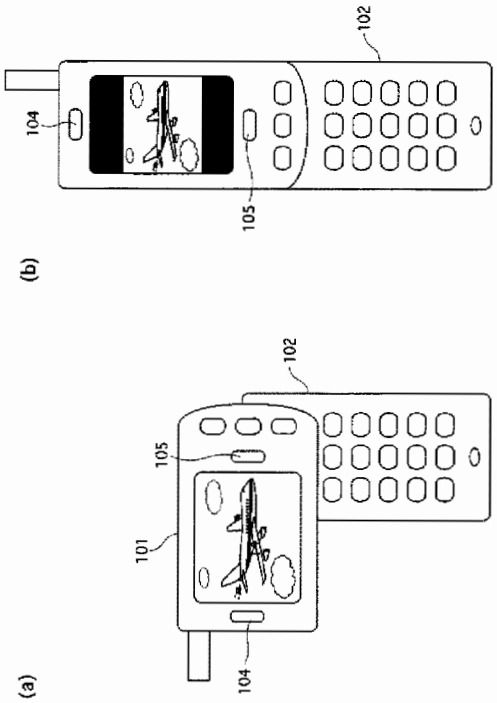
【図3】


マイク
左スピーカー
右スピーカー
表示部
イヤホン出力部
音声処理部
開閉切替検出部
イヤホン検出部
制御部
通信部
テレビ放送受信部
電話キー情報取得部
テレビキー情報取得部
16
14
15
12
30
26
27
28
25
22
23
24
29
21
13

【図4】


音声キー下判定開始
イヤホン接続有り？
スピーカミュート
イヤホンがステレオ？
携帯電話開状態？
両スピーカステレオ出力
左スピーカモノラル出力
イヤホンステレオ出力
イヤホンモノラル出力
YES
NO
S401
S402
S403
S404
S405
S406
S407
S408
END

【図5】


(b)
102
104
105
(a)
102
105
101
104

(51)Int.Cl.⁷		FI			テーマコード（参考）
Ｈ０４Ｒ	5/02	Ｈ０４Ｍ	1/725		
// Ｈ０４Ｎ	5/64	Ｈ０４Ｒ	5/02	Ｚ	
		Ｈ０４Ｎ	5/64	５３１	
		Ｈ０４Ｎ	5/64	５４１Ｎ	

Espacenet

Bibliographic data: JP2007241652 (A) — 2007-09-20

CONTENT DISTRIBUTION SYSTEM

Inventor(s): KIKO HIDEAKI ± (KIKO HIDEAKI)

Applicant(s): CORE COLORS INC ± (CORE COLORS INC)

Classification: **- international:** ***G06F13/00; G10K15/02; H04N21/258; H04N21/262; H04N21/482; H04N7/173***

- cooperative:

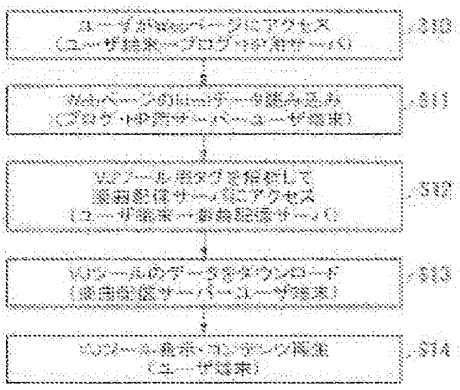
Application number: JP20060063096 20060308

Priority number(s): JP20060063096 20060308

Abstract of JP2007241652 (A)

PROBLEM TO BE SOLVED: To provide a content distribution system which enables a user to freely edit the combination of music and images and share edited contents with other users. ;SOLUTION: The content distribution system relating to this embodiment is constituted of a content distribution server 10, a user terminal 20 and a server 30 for blogs/HP connected through a network 50. The content distribution server 10 includes a database for storing the program of a reproduction tool for reproducing the contents in which the image is clipped to the music, music data, image data, a music play list indicating the music selected by the user from the music and a clipping setting specifying the image to be clipped to the music. The user terminal 20 reproduces the contents according to the music play list and the clipping setting downloaded from the server. ;COPYRIGHT: (C)2007,JPO&INPIT

[図4]



(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
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(P2007-241652A)
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(51)Int.Cl.		F I			テーマコード（参考）
G06F 13/00	(2006.01)	G06F	13/00	540A	5C164
H04N 7/173	(2006.01)	H04N	7/173	610Z	
G10K 15/02	(2006.01)	G10K	15/02		

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(22)出願日　平成18年3月8日 (2006.3.8)

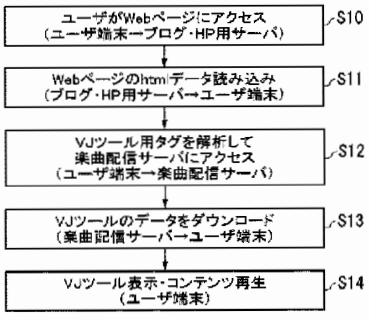
(71)出願人　500173608
コアカラーズ株式会社
東京都渋谷区西原１－３８－３
(74)代理人　100121773
弁理士　相原　正
(72)発明者　木香　英朗
東京都渋谷区西原１－３８－３　コアカラーズ株式会社内

Fターム(参考)　5C164 FA12 MA02S MA07S MC07S SC11P SC28P UB94S UD54P YA08

(54)【発明の名称】コンテンツ配信システム

(57)【要約】
【課題】　楽曲と映像の組み合わせをユーザが自由に編集できると共に、編集したコンテンツを他のユーザと共有することも可能なコンテンツ配信システムを提供する。
【解決手段】　本実施の形態に係るコンテンツ配信システムは、ネットワーク５０を介して接続されたコンテンツ配信サーバ１０、ユーザ端末２０及びブログ・ＨＰ用サーバ３０とから構成される。コンテンツ配信サーバ１０は、楽曲に映像がクリッピングされたコンテンツを再生するための再生ツールのプログラムと、楽曲データと、映像データと、楽曲の中からユーザが選択した楽曲を示す楽曲プレイリストと、楽曲にクリッピングされる映像を特定したクリッピング設定と、を格納するデータベースを備えており、ユーザ端末２０は、サーバからダウンロードした楽曲プレイリスト及びクリッピング設定に従って、コンテンツの再生を行う。
【選択図】　図４

【図4】



【特許請求の範囲】
【請求項1】
ネットワークを介して接続されたコンテンツ配信サーバ、ユーザ端末及びＷｅｂページ用サーバを備え、ユーザに対して楽曲に映像がクリッピングされたコンテンツを配信するサービスを提供するコンテンツ配信システムであって、
前記コンテンツ配信サーバは、
前記コンテンツを再生するための再生ツールのプログラムを格納するプログラムデータベースと、
前記コンテンツの素材となる楽曲データを格納する楽曲データベースと、
前記コンテンツの素材となる映像データを格納する映像データベースと、
前記楽曲の中からユーザが選択した楽曲を示す楽曲プレイリストと、ユーザが設定した前記楽曲プレイリスト中の楽曲にクリッピングされる映像を特定したクリッピング設定と、を各ユーザに関連付けて格納する設定情報データベースと、を備え、
前記Ｗｅｂページ用サーバは、所定のＷｅｂページにおいて、前記楽曲プレイリスト及び前記クリッピング設定に従ったコンテンツを前記再生ツールにより再生するための再生ツール用タグが埋め込まれたＨＴＭＬデータを記憶する記憶手段を備え、
前記ユーザ端末は、前記所定のページにアクセスした際に前記再生ツール用タグを解析し、前記コンテンツ配信サーバにアクセスして前記コンテンツを再生する演算手段を備えたことを特徴とするコンテンツ配信システム。
【請求項2】
前記クリッピング設定には、前記楽曲に前記映像をクリッピングするタイミングを示す情報が含まれていることを特徴とする請求項１記載のコンテンツ配信システム。
【請求項3】
前記設定情報データベースには、前記コンテンツが提供されているＷｅｂページのＵＲＬ情報に関連付けて、前記楽曲プレイリスト及び前記クリッピング設定が格納されており、
前記再生ツール用タグは、このタグが埋め込まれたＷｅｂページのＵＲＬ情報を前記コンテンツ配信サーバに送信するためのスクリプトを含んでおり、
前記コンテンツ配信サーバは、前記再生ツール用タグを解析してアクセスしてきたユーザ端末に対して、取得した前記ＵＲＬ情報に関連付けられている前記楽曲プレイリスト及び前記クリッピング設定を送信するように構成されていることを特徴とする請求項１又は２記載のコンテンツ配信システム。
【請求項4】
ネットワークを介してコンテンツ配信サーバに接続されたユーザ端末を使用するユーザに対して、所定のＷｅｂページにおいて、楽曲に映像がクリッピングされたコンテンツを提供するコンテンツ配信方法であって、
前記ユーザ端末が、前記所定のＷｅｂページを提供するＷｅｂページ用サーバにアクセスし、前記Ｗｅｂページ用サーバが保持する前記所定のＷｅｂページを構築するＨＴＭＬデータ内に挿入されている再生ツール用タグであって、前記コンテンツ配信サーバが保持する前記コンテンツを再生するためのデータにアクセスするための再生ツール用タグを解析する解析工程と、
解析の結果に基づき、前記ユーザ端末が、前記コンテンツ配信サーバにアクセスし、前記コンテンツに含まれる楽曲を示す楽曲プレイリストと、前記楽曲プレイリスト中の楽曲にクリッピングされる映像を特定したクリッピング設定とをダウンロードするダウンロード工程と、
前記ユーザ端末が、前記楽曲プレイリスト及び前記クリッピング設定に従って、楽曲に映像がクリッピングされたコンテンツを再生する再生工程と、
を備えたことを特徴とするコンテンツ配信方法。
【請求項5】

ネットワークを介して接続されたユーザ端末を使用するユーザに対して、所定のＷｅｂページにおいて、楽曲に映像がクリッピングされたコンテンツを提供するコンテンツ配信サーバであって、
前記コンテンツを再生するための再生ツールのプログラムを格納するプログラムデータベースと、
前記コンテンツの素材となる楽曲データを格納する楽曲データベースと、
前記コンテンツの素材となる映像データを格納する映像データベースと、
前記楽曲の中からユーザが選択した楽曲を示す楽曲プレイリストと、ユーザが設定した前記楽曲プレイリスト中の楽曲にクリッピングされる映像を特定したクリッピング設定と、を各ユーザに関連付けて格納する設定情報データベースと、
前記コンテンツが提供されるホームページで前記コンテンツを再生するために、当該ホームページを構築するＨＴＭＬデータ内に挿入される再生ツール用タグであって、前記コンテンツ配信サーバの前記プログラムデータベース、前記楽曲データベース、前記映像データベース、前記設定情報データベースにアクセスするための情報が記述された再生ツール用タグを発行する発行手段と、を備えていることを特徴とするコンテンツ配信サーバ。
【請求項6】
楽曲に映像がクリッピングされたコンテンツを再生するコンピュータであって、
前記コンテンツの素材である複数の楽曲データと、前記コンテンツの素材である複数の映像データと、前記複数の楽曲データの中から選択された楽曲を特定する楽曲プレイリストと、前記楽曲にクリッピングされる映像及びクリッピングされるタイミングが設定されたクリッピング設定と、を記憶する記憶手段と、
前記楽曲プレイリスト及び前記クリッピング設定に従って、所定の楽曲に所定の映像をクリッピングしながら前記コンテンツの再生を行う演算手段と、を備えたことを特徴とするコンピュータ。
【発明の詳細な説明】
【技術分野】
【0001】
本発明は、インターネット等のネットワークに接続されたコンピュータに楽曲等のコンテンツを配信するコンテンツ配信システムに関し、特に、楽曲に映像をクリッピングしたコンテンツを配信するコンテンツ配信システムに関する。
【背景技術】
【0002】
従来、ネットワークを介して、クライアント端末のパソコンに種々の音楽データを配信し、パソコン上でストリーミング再生させる音楽配信システムが数多く提案されている。
【0003】
ところが、従来の音楽配信システムは、単に、サーバに保存されている楽曲の中からユーザによって選択された曲のデータが端末に送信されて、端末上で再生されるだけであり、エンターテイメント性に欠けていた。
【0004】
また、インターネット上では、インターネット放送局も提供されており、放送局のサイトにアクセスしたユーザに対して、音楽、映像等をネット上で放送配信するサービスが提供されているが、これも、多数のユーザに対して、画一的なコンテンツを提供するに過ぎなかった。
【0005】
そこで、エンターテイメント性を向上させるべく、ユーザ毎に設定されたユーザプロファイル情報やプレイリスト情報に基づき、各ユーザに異なる音楽や映像のコンテンツをネット配信し、ユーザ端末上で再生させる配信システムが、下記特許文献に開示されている。
【特許文献1】特表２００５－５３１２０５号公報
【特許文献2】特表２００５－５３５９７９号公報
【発明の開示】

【発明が解決しようとする課題】
【0006】
しかしながら、上記特許文献１及び特許文献２に記載の装置においては、予め作成されサーバに格納されている音楽や映像等のコンテンツの中から、所定のコンテンツを所定の順序でユーザ端末に配信するだけであり、ユーザがコンテンツを編集したり、また、編集したコンテンツを他のユーザに配信したりするといったことはできない。
【0007】
本発明は、このような課題を解決するためになされたものであり、楽曲と映像の組み合わせをユーザが自由に編集できると共に、編集したコンテンツを他のユーザと共有することも可能なコンテンツ配信システムを提供することを目的とする。
【課題を解決するための手段】
【0008】
上記課題を解決するために、本発明に係るコンテンツ配信システムは、ネットワークを介して接続されたコンテンツ配信サーバ、ユーザ端末及びＷｅｂページ用サーバを備え、ユーザに対して楽曲に映像がクリッピングされたコンテンツを配信するサービスを提供するコンテンツ配信システムであって、前記コンテンツ配信サーバは、前記コンテンツを再生するための再生ツールのプログラムを格納するプログラムデータベースと、前記コンテンツの素材となる楽曲データを格納する楽曲データベースと、前記コンテンツの素材となる映像データを格納する映像データベースと、前記楽曲の中からユーザが選択した楽曲を示す楽曲プレイリストと、ユーザが設定した前記楽曲プレイリスト中の楽曲にクリッピングされる映像を特定したクリッピング設定と、を各ユーザに関連付けて格納する設定情報データベースと、を備え、前記Ｗｅｂページ用サーバは、所定のＷｅｂページにおいて、前記楽曲プレイリスト及び前記クリッピング設定に従ったコンテンツを前記再生ツールにより再生するための再生ツール用タグが埋め込まれたＨＴＭＬデータを記憶する記憶手段を備え、前記ユーザ端末は、前記所定のページにアクセスした際に前記再生ツール用タグを解析し、前記コンテンツ配信サーバにアクセスして前記コンテンツを再生する演算手段を備えたことを特徴とする。
【0009】
また、本発明に係るコンテンツ配信方法は、ネットワークを介してコンテンツ配信サーバに接続されたユーザ端末を使用するユーザに対して、所定のＷｅｂページにおいて、楽曲に映像がクリッピングされたコンテンツを提供するコンテンツ配信方法であって、前記ユーザ端末が、前記所定のＷｅｂページを提供するＷｅｂページ用サーバにアクセスし、前記Ｗｅｂページ用サーバが保持する前記所定のＷｅｂページを構築するＨＴＭＬデータ内に挿入されている再生ツール用タグであって、前記コンテンツ配信サーバが保持する前記コンテンツを再生するためのデータにアクセスするための再生ツール用タグを解析する解析工程と、解析の結果に基づき、前記ユーザ端末が、前記コンテンツ配信サーバにアクセスし、前記コンテンツに含まれる楽曲を示す楽曲プレイリストと、前記楽曲プレイリスト中の楽曲にクリッピングされる映像を特定したクリッピング設定とをダウンロードするダウンロード工程と、前記ユーザ端末が、前記楽曲プレイリスト及び前記クリッピング設定に従って、楽曲に映像がクリッピングされたコンテンツを再生する再生工程と、を備えたことを特徴とする。
【0010】
また、本発明に係るコンテンツ配信サーバは、ネットワークを介して接続されたユーザ端末を使用するユーザに対して、所定のＷｅｂページにおいて、楽曲に映像がクリッピングされたコンテンツを提供するコンテンツ配信サーバであって、前記コンテンツを再生するための再生ツールのプログラムを格納するプログラムデータベースと、前記コンテンツの素材となる楽曲データを格納する楽曲データベースと、前記コンテンツの素材となる映像データを格納する映像データベースと、前記楽曲の中からユーザが選択した楽曲を示す楽曲プレイリストと、ユーザが設定した前記楽曲プレイリスト中の楽曲にクリッピングされる映像を特定したクリッピング設定と、を各ユーザに関連付けて格納する設定情報デー

タベースと、前記コンテンツが提供されるホームページで前記コンテンツを再生するために、当該ホームページを構築するＨＴＭＬデータ内に挿入される再生ツール用タグであって、前記コンテンツ配信サーバの前記プログラムデータベース、前記楽曲データベース、前記映像データベース、前記設定情報データベースにアクセスするための情報が記述された再生ツール用タグを発行する発行手段と、を備えていることを特徴とする。

また、本発明に係るコンピュータは、楽曲に映像がクリッピングされたコンテンツを再生するコンピュータであって、前記コンテンツの素材である複数の楽曲データと、前記コンテンツの素材である複数の映像データと、前記複数の楽曲データの中から選択された楽曲を特定する楽曲プレイリストと、前記楽曲にクリッピングされる映像及びクリッピングされるタイミングが設定されたクリッピング設定と、を記憶する記憶手段と、前記楽曲プレイリスト及び前記クリッピング設定に従って、所定の楽曲に所定の映像をクリッピングしながら前記コンテンツの再生を行う演算手段と、を備えたことを特徴とする。

【発明の効果】

【0011】

本発明に係るコンテンツ配信システムによれば、楽曲と映像の素材データの組み合わせをユーザが指定するという簡単な方法で、楽曲に所定の映像がクリッピングされたコンテンツを作成し、公開することが可能である。また、楽曲と素材の組み合わせを変更するという簡単な方法で、公開されているコンテンツを編集し、編集したコンテンツを公開することができる。

【発明を実施するための最良の形態】

【0012】

以下、添付図面を参照しながら本発明の実施の形態について詳細に説明する。図１は、本実施の形態に係るコンテンツ配信システム１の概略構成を示す図である。同図に示すように、コンテンツ配信システム１は、コンテンツ配信を提供するための種々のデータが格納されているコンテンツ配信サーバ１０と、コンテンツ配信サービスを利用するユーザが使用するパソコン等の複数のユーザ端末２０と、ユーザが自分で編集したコンテンツを公開するためのホームページ（ＨＰ）やブログ（Ｂｌｏｇ）等を構築するHTMLデータが格納されているブログ・ＨＰ用サーバ３０と、を備えている。これらコンテンツ配信サーバ１０、ユーザ端末２０及びブログ・ＨＰ用サーバ３０は、インターネット等のネットワーク５０を介して接続されており、それぞれの通信インターフェースを介して、互いにデータの送受信が可能である。

【0013】

本実施形態に係るコンテンツ配信システム１は、ユーザのホームページやブログ等のＷｅｂページを構築するHTML（Hypertext Markup Language）データ内に、映像がクリッピングされた楽曲を編集・再生するためのアプリケーションであるＶＪ（Visual Jockey又はVideo Jockey）ツール用のHTMLタグを埋め込んでおくことで、ユーザが当該Ｗｅｂページにアクセスして、楽曲に映像をクリッピングしたＶＪコンテンツを作成・編集をしたり、当該Ｗｅｂページにアクセスしたユーザがこのコンテンツを視聴したりする機能を、Ｗｅｂページ内に実装するように構成されている。

【0014】

また、このＶＪコンテンツは、楽曲と映像が合体した一つのコンテンツファイルとして作成されるのではなく、ＶＪコンテンツを作成するユーザは、ＶＪコンテンツ用の素材である楽曲データの中からＶＪコンテンツとして使用したい楽曲を選択した楽曲プレイリストと、同じく素材としての映像データの中から楽曲プレイリスト中の楽曲にクリッピングしたい映像及びクリッピングするタイミング（映像の切り替えタイミングを含む）を設定したクリッピング設定と、を作成するだけで良い。

【0015】

よって、本システムによれば、ユーザは、ディスクジョッキー（ＤＪ）やＶＪのように、楽曲に好みの映像をクリッピングしたＶＪコンテンツを手軽に作成できると共に、自分のＷｅｂページ上で公開して他のユーザに披露することができる。また、作成したＶＪコ

ンテンツの編集も、楽曲プレイリストやクリッピング設定を変更するだけで、手軽に行うことが可能である。なお、本実施形態に係るＶＪツールは、Flash（登録商標）を利用したFlashプレーヤであるが、Java（登録商標）、ActiveX（登録商標）等を利用して実装するようにしても良い。

【0016】

コンテンツ配信サーバ１０は、コンテンツ配信サービスを提供する事業者が設置するサーバであり、各種演算を行うための図示しない演算装置と、各種データを記憶しておくための記憶装置とを備えるコンピュータによって構成されている。図２は、コンテンツ配信サーバ１０の記憶装置に格納されているデータベース（ＤＢ）１１の内容を示す図である。同図に示すように、ＤＢ１１には、楽曲ＤＢ１１１、映像ＤＢ１１２、ユーザＤＢ１１３、ステーションＤＢ１１４、楽曲プレイリストＤＢ１１５、クリッピング設定ＤＢ１１６、プログラムＤＢ１１７が含まれている。

【0017】

楽曲ＤＢ１１１は、コンテンツ配信サービスにおいて提供される楽曲の素材データを格納するＤＢである。楽曲ＤＢ１１１内の各楽曲レコードには、各楽曲を識別するための「楽曲ＩＤ」、「楽曲データ」、「アーティスト名」、「楽曲名」、「楽曲ジャンル」等の情報が含まれている。映像ＤＢ１１２は、コンテンツ配信サービスにおいて、ユーザがＶＪ編集する際に楽曲にクリッピングされる映像の素材データを格納するＤＢである。映像ＤＢ１１２内の各映像レコードには、各映像を識別するための「映像ＩＤ」、「映像データ」等の情報が含まれている。なお、本実施形態では、楽曲ＤＢ１１１内の楽曲データは、ＭＰ３形式のデータを採用しているが、これに限られるものではなく、ＷＭＡ、ＡＡＣ等、適宜他の形式の音楽ファイルを採用しても良い。

【0018】

ユーザが設定した設定情報を保持するデータベースであるユーザＤＢ１１３～クリッピング設定ＤＢ１１６については、図３を参照しながら説明する。図３は、ユーザＤＢ１１３、ステーションＤＢ１１４、楽曲プレイリストＤＢ１１５及びクリッピング設定ＤＢ１１６に記録されている各レコードの内容を示す図である。

【0019】

ユーザＤＢ１１３は、コンテンツ配信サービスを利用する登録ユーザに関する情報を格納するＤＢである。図３に示すように、ユーザＤＢ１１３の各ユーザレコードには、各ユーザを識別するための「ユーザＩＤ」と「パスワード」の情報が格納されている。このパスワードは、コンテンツ配信サービスの登録ユーザがサービスにログインする際のログイン認証で使用されるものであり、登録時にユーザが設定したものである。

【0020】

ステーションＤＢ１１の各レコードには、「ステーションＩＤ」、「ユーザＩＤ」、「ＵＲＬ」の情報が格納されている。「ステーションＩＤ」とは、「ＵＲＬ」の設定に基づき振り分けられるものであり、同じステーションＩＤを有するＷｅｂページに実装されているＶＪツールには、同じ楽曲プレイリスト及びクリッピング設定が割り当てられることになる。

【0021】

ステーションの設定・変更は、ユーザがユーザ端末２０からコンテンツ配信サーバ１０へアクセスし、ＵＲＬを設定・変更・追加等することで、適宜行うことができるように構成されている。例えば、あるユーザが、ＵＲＬ「http://fogma.net/」にステーションＡを設定すると、後述する同じＶＪツール用タグにより、「http://fogma.net/」以下の全てのＷｅｂページのＶＪツールに、ステーションＡの楽曲プレイリスト及びこの楽曲プレイリスト内の楽曲に対するクリッピング設定が配信されることになる。また、さらに、同じユーザが、ＵＲＬ「http://fogma.net/stationB/」にステーションＢを設定すると、「http://fogma.net/stationB/」以下のＷｅｂページのＶＪツールには、ステーションＢに楽曲プレイリスト及びこの楽曲プレイリスト内の楽曲に対するクリッピング設定が配信され、それ以外のＷｅｂページのＶＪツールには、ステーションＡのものが配信されること

になる。

【0022】

このように、本コンテンツ配信システムでは、ユーザは、自分のブログサイト及びホームページ等、複数のＷｅｂページにＶＪツールを実装可能であり、ページ毎に異なるＶＪコンテンツの公開を行うことが可能である。

【0023】

楽曲プレイリストＤＢ１１５内の各レコードには、「ユーザＩＤ」、「ステーションＩＤ」、「楽曲ＩＤ」の情報が格納されている。楽曲プレイリストとは、各ステーションのＶＪツールにおいて、再生される楽曲のリストを表すものである。「楽曲ＩＤ」には、楽曲ＤＢ１１１に格納されている曲の中からユーザが選択した楽曲ＩＤが演奏される順に保持されている。もちろん、楽曲プレイリスト中の楽曲が１つであっても良い。

【0024】

クリッピング設定ＤＢ１１６内の各レコードには、「ユーザＩＤ」、「楽曲ＩＤ」、「クリッピング設定」の情報が格納されている。「クリッピング設定」とは、各ステーションのＶＪツールにおいて楽曲が再生される際に、同ツール内に楽曲と一緒に表示される映像及び当該映像を表示するタイミングを設定した情報であり、各ユーザの楽曲毎に設定されている。本コンテンツ配信システム１では、タイミングを指定して楽曲の再生中に映像を切り替えたり、映像を切り替える際にエフェクトをかけたりすることが可能であり、「クリッピング設定」には、当該ＶＪツールの楽曲プレイリストに記録されている楽曲毎に、表示される映像の映像ＩＤが切り替えのタイミング、すなわち何秒から何秒まで当該映像を表示するかの情報と共に保持されている。また、映像を切り替える際のエフェクト情報も保持されている。

【0025】

ここで、エフェクトとしては、映像Ａから映像Ｂに徐々に映像が切り替わる「フェードイン」、映像Ａから映像Ｂに瞬時に映像が切り替わる「カットイン」、映像Ａの上に映像Ｂを所定期間重ね合わせる「パートイン」等がある。もちろん、適宜、その他のエフェクトを設定できるようにしても良い。

【0026】

この「クリッピング設定」も、後述する編集モードにおいて、映像ＤＢ１１２に格納されている映像の中から、タイミングと共にユーザが設定するものである。また、当該ＶＪツールに設定されている楽曲プレイリストの楽曲が複数の場合には、楽曲毎にクリッピング設定が行われる。なお、ユーザがクリッピング設定を行っていない場合には、この「クリッピング設定」の欄は空白となる。

【0027】

プログラムＤＢ１１７は、本コンテンツ配信サービスを提供するために必要な各種プログラムを格納するＤＢである。例えば、上述したＶＪツールのアプリケーションプログラムや、ユーザのサービス登録処理、サービスにログインするユーザの認証等を行う際のプログラムが格納されている。

【0028】

ユーザ端末Ａ２０－１、ユーザ端末Ｂ２０－２、…、は、本コンテンツ配信サービスを利用するユーザが使用するパソコン等の端末であり、ディスプレイ、ＰＣ本体、キーボード、マウス等を備えており、ＰＣ本体は、図示しない演算装置や記憶装置を備えている。もちろん、ユーザ端末としては、ＰＣに限らず、ＶＪツールを使用でき、ネットワークに接続してコンテンツ配信サーバ１０と通信できる端末であれば、ＰＤＡ、携帯電話、ゲーム端末等、その他のコンピュータであっても良い。

【0029】

ブログ・ＨＰ用サーバＡ３０－１、ブログ・ＨＰ用サーバＢ３０－２、…、は、ホームページやブログを開設しているユーザの加入するプロバイダ（ＩＳＰ）が所有するサーバや、ユーザが自宅に設置しているＷｅｂサーバ等である。この、ブログ・ＨＰ用サーバ３０は、図示しない演算装置や記憶装置を備えており、この記憶装置内には、ブログやＨＰ

を構築するHTMLデータが保存されている。なお、本実施形態では、ユーザ端末２０とブログ・ＨＰ用サーバ３０を別々のコンピュータで構成したものとして説明しているが、ユーザが自宅のパソコンをＷｅｂサーバとして使用している場合等、単一のコンピュータに、ユーザ端末及びＷｅｂサーバとしての機能を持たせるようにしても良い。

【0030】

このHTMLデータ内には、ＶＪツールをユーザのＷｅｂページ内に実装するためのＶＪツール用タグが埋め込まれている。このＶＪツール用タグは、例えば、『<script type="text/javascript" language="javascript" src="http://fogma.net/ID001000000001"></script>』と記述される。このように、このＶＪツール用タグには、コンテンツ配信サーバ１０のアドレス、当該ＷｅｂページにおいてＶＪツールを提供しているユーザのユーザＩＤが含まれている。なお、このＶＪツール用タグは、ユーザが最初に本コンテンツ配信サービスに入会した際に、コンテンツ配信サーバ１０によって発行される。発行の形態は、入会時にコンテンツ配信サーバ１０が提供する登録ページ上に表示されるようにしても良いし、ユーザに対してこのＶＪツール用タグが記載されたメールを送信するようにしても良い。これらの処理は、プログラムＤＢ１１７内の所定のプログラムをコンテンツ配信サーバ１０の演算装置が実行することで実現される。

【0031】

ＶＪツール用タグを取得したユーザは、自分が提供しているＷｅｂページを構築するHTMLデータ内に、このタグを記述する。このＶＪツール用タグが挿入されたHTMLデータは、ブログ・ＨＰ用サーバ３０内の記憶装置に格納され、当該Ｗｅｂページにアクセスしたユーザのユーザ端末２０上には、ＶＪツールが実装されたページが表示されることになる。

【0032】

以上のような構成において、ＶＪツールが埋め込まれているＷｅｂページにアクセスしたユーザのユーザ端末２０は、端末にインストールされているブラウザがこのＶＪツール用タグを解析することで、コンテンツ配信サーバ１０にアクセスし、ＶＪツールのプログラム、当該ステーションの楽曲プレイリスト、クリッピング設定等のデータをコンテンツ配信サーバ１０からダウンロードする。これにより、ユーザ端末２０のディスプレイ上には、ＶＪツールが表示され、当該Ｗｅｂページを開設しているユーザによって編集された映像クリッピング付き楽曲（ＶＪコンテンツ）が端末上で再生されることになる。なお、ＶＪツールのプログラムは、一度、ユーザ端末２０にダウンロードされた後は、ユーザ端末２０内の記憶装置に格納しておき、次回からは、毎回サーバからダウンロードするのではなく、ユーザ端末２０内に格納されているＶＪツールのプログラムを使用するようにしても良い。

【0033】

以上、本実施形態に係るコンテンツ配信システム１の構成について説明したが、続いて、本コンテンツ配信システムを用いてＶＪ編集されたコンテンツをユーザが視聴する際の処理の流れの詳細について説明する。図４は、本実施形態に係るコンテンツ配信システム１においてユーザがコンテンツを視聴する際の処理の流れを示すフローチャートである。

【0034】

まず、ステップ１０（Ｓ１０）において、コンテンツを視聴したいユーザが、自分のユーザ端末２０を使って、ＶＪツールが埋め込まれているＷｅｂページにアクセスする。すなわち、当該ユーザのユーザ端末２０が、ネットワーク５０を介して、ブログ・ＨＰ用サーバ３０にアクセスする。そうすると、Ｓ１１において、ブログ・ＨＰ用サーバ３０の記憶装置に格納されているＷｅｂページのHTMLデータが、当該ユーザのユーザ端末２０にダウンロードされる。

【0035】

続いて、Ｓ１２では、ユーザ端末２０の演算装置が取得したHTMLデータを解析し、当該Ｗｅｂページのコンテンツをディスプレイ上に表示するように処理する。このとき、HTMLデータ内のＶＪツール用タグもユーザ端末２０によって解析され、ＶＪツール用タグを解

析したユーザ端末２０は、タグ内にアドレスが記載されているコンテンツ配信サーバ１０へとアクセスする。上述したように、ＶＪツール用タグには、当該Ｗｅｂページにおいて、ＶＪコンテンツを公開しているユーザのユーザＩＤ記述されており、ユーザ端末２０は、ユーザＩＤを特定したうえで、コンテンツ配信サーバ１０へとアクセスする。

【0036】

コンテンツ配信サーバ１０にアクセスしたユーザ端末２０には、Ｓ１３において、コンテンツ配信サーバ１０のＤＢ１１から、当該Ｗｅｂページに対してＶＪツールを表示してＶＪコンテンツを再生するためのデータがダウンロードされる。このデータには、ＶＪツールのプログラム本体と、当該Ｗｅｂページを公開しているユーザによって設定された楽曲プレイリスト及びクリッピング設定と、当該楽曲プレイリスト及びクリッピング設定に設定されている楽曲及び映像データと、が含まれている。

【0037】

このとき、そのユーザＩＤのユーザが複数のステーションを設定している場合には、コンテンツ配信サーバ１０が、アクセスしてきたユーザ端末２０がどこのＷｅｂページのＶＪツールにアクセスしたかを上記ＶＪツール用タグに挿入されているスクリプトを用いてＵＲＬで把握し、当該ＵＲＬに割り振られているステーションＩＤをステーションＤＢ１４から抽出し、これのステーションＩＤに関連付けられている楽曲プレイリスト及びクリッピング設定をユーザ端末２０へ送信するように処理する。

【0038】

また、楽曲プレイリストに複数の楽曲が設定されている場合には、Ｓ１３においては、最初の楽曲データのみがダウンロードされ、残りの楽曲については、前の楽曲の再生中にダウンロードされるように構成されており、コンテンツの再生開始までの時間が短縮されている。また、クリッピング設定に複数の映像がクリッピングされている場合も、順次、ＶＪコンテンツの再生に必要な映像がダウンロードされるように構成されている。もちろん、一曲分の楽曲データが最初に全てダウンロードされるのではなく、ストリーミング再生されるように、最初の１０数秒程度の楽曲データがダウンロードされた時点でコンテンツの再生を開始し、残りはコンテンツを再生しながら順次ダウンロードされるように構成すれば、さらに最初のコンテンツ再生までの時間を短縮できる。映像データについても同様である。

【0039】

なお、楽曲及び映像データについては、Ｓ１３で送信されるのではなく、ユーザ端末１０が楽曲プレイリスト及びクリッピング設定を解析した後で、再度、コンテンツ配信サーバ１０へアクセスしてダウンロードされるように、サーバ側のプログラムを構成しても良い。

【0040】

続いて、Ｓ１４に進み、ユーザ端末２０の演算装置が、ダウンロードしたＶＪツールのプログラムを実行し、ディスプレイのＷｅｂページ内にＶＪツールを表示し、ダウンロードした楽曲プレイリスト及びクリッピング設定に従って、楽曲に映像がクリッピングされたＶＪコンテンツを再生する。ユーザは、ユーザ端末２０のスピーカから流れる楽曲を聴きながら、ディスプレイに表示される映像を楽しむことができる。なお、クリッピング設定がされていないステーションのＶＪツールにおいては、映像ＤＢ１１４からランダムに映像が選択され、ＶＪツールに表示されるように構成されている。

【0041】

図５は、Ｓ１４において、Ｗｅｂページ上に表示されるＶＪツール（通常モード）の内容を示す図である。同図に示すように、ＶＪツール画面の中心に映像が表示され、図示はしていないが、右下部分には、楽曲名、アーティスト名、楽曲のジャンルが横方向にスクロールしながら表示されるウィンドウが配置されている。

【0042】

また、このウィンドウの下には、演奏されている楽曲のお気に入り度を５段階の星の数（ランク１～ランク５）で評価する評価欄（RATE）が配置されており、ユーザがユーザ端

末２０のマウスで所望の段階をクリックすることで、当該ユーザの当該楽曲に対する評価を行うことができる。この評価情報は、ユーザＩＤと楽曲ＩＤと関連づけられたうえで、コンテンツ配信サーバ１０のユーザＤＢ１１１内に格納されるように構成されており（図３では不図示）、この評価情報を利用して種々のサービスをユーザに提供することが可能である。

【0043】

例えば、あるＷｅｂページ上のＶＪコンテンツを視聴しているユーザに対して、当該ユーザが過去にランク１又はランク２の評価をした楽曲を、当該Ｗｅｂページに設定されているＶＪコンテンツの楽曲プレイリストから除いて再生するといったことや、反対に、そのＶＪコンテンツの楽曲プレイリストの中から、当該ユーザがランク４又はランク５と評価した楽曲のみを取り出して再生するといった処理を行うことが可能である。このような処理は、コンテンツ配信サーバ１０内のプログラムを書き換えることで実現可能である。

【0044】

また、ＶＪコンテンツをＷｅｂページ上で公開しているユーザに対しては、当該ＶＪコンテンツを視聴したユーザの楽曲毎の評価を定期的に提示することが可能であり、今後のＶＪコンテンツ作成に生かしてもらうこともできる。

【0045】

なお、この評価情報のサービスは、コンテンツ配信サービスに登録してユーザＩＤを取得しているユーザのみが利用可能である。ユーザＩＤを取得しているユーザは、ＶＪツールが埋め込まれているＷｅｂページに最初にアクセスした時に表示されるログインアイコン（図６参照）をクリックすると、ログインウィンドウが表示されるので、このログインウィンドウにユーザＩＤ及びパスワードを入力することで、ログインモードに移行し、評価情報サービスや、後述する編集モードを利用することができる。

【0046】

このとき、ユーザＩＤ及びパスワードの入力を受け付けたユーザ端末２０は、コンテンツ配信サーバ１０にアクセスし、ユーザＤＢ１１１を参照して、ログイン認証を行う。一度、ログイン認証を行うと、ユーザ端末２０内にcookie情報として記録されるので、その後は、当該ユーザが同じ端末を使ってＶＪツールが埋め込まれたＷｅｂページにアクセスしたとしてもログイン認証を行う必要はない。

【0047】

さらに、ＶＪツールの上述したウィンドウの右上部分には、モード切替アイコンが表示されており、他人のＶＪコンテンツを視聴しているユーザが、このボタンをマウスでクリックすることにより、編集モードに切り替えることが可能である。図７は、編集モードの際にユーザ端末２０のディスプレイに表示されるＶＪツールの表示内容を示す図である。

【0048】

同図に示すように、編集モードでは、ＶＪツールの下側部分に、映像素材リストが表示されており、その左側には、サブ映像ウィンドウが表示されている。この映像素材リストには、映像ＤＢ１１２内に格納されている各映像データの一画面が複数表示されている。この映像素材リストの端部をクリックすることで、順次、他の映像素材リストに切り替えることが可能である。ユーザが、映像素材リストの中から所望の映像素材をクリックすると、その映像データが若干拡大されてサブ映像ウィンドウに表示される。ＶＪツールに表示される映像を切り替えたい場合には、サブ映像ウィンドウをクリックすれば、ＶＪツールに表示される映像が、サブ映像ウィンドウに表示されていた映像に切り替わる。

【0049】

通常、ＶＪツール内の映像は、当該ＶＪコンテンツを作成したユーザが設定したクリッピング設定に従って表示されるが、このように、編集モードにおいては、ＶＪコンテンツを視聴しているユーザが、適宜、ＶＪツール内の映像を自分の好みの映像に切り替えることも可能である。

【0050】

映像素材リストの上側には、エフェクトを設定するためのエフェクトリストのアイコン

が表示されており、所望のアイコンをクリックすることで、クリッピング映像が切り替わる際のエフェクトを所望のエフェクトに設定することも可能である。本実施形態では、上述したように、「フェードイン」、「カットイン」又は「パートイン」のエフェクトを設定可能である。

【0051】

次に、本実施形態に係るコンテンツ配信システム１において、ユーザがＶＪツールを用いて、自己のＷｅｂページ上で公開する映像がクリッピングされた楽曲データを編集するＶＪ編集モードにおける処理の流れについて説明する。図８は、ＶＪ編集モードにおける処理の流れを示すフローチャートである。このＶＪ編集モードには、自分のＶＪコンテンツにアクセスしているユーザが、上記モード切替アイコンをクリックすることで移行できる。

【0052】

なお、ＶＪ編集モードにおいても、図４に示したＳ１０～Ｓ１４までの流れは同じであるが、ＶＪ編集モードにおいては、Ｓ１０で、ユーザがＶＪツール用タグを埋め込んだ自分のＷｅｂページにアクセスする必要がある。また、最初のＶＪコンテンツ作成時には、Ｓ１３及びＳ１４については、楽曲プレイリスト及びクリッピング設定が設定されていないため実行されない。

【0053】

Ｓ２０において、まず、上述したようにユーザ認証が行われる。もし、既にユーザ認証が行われており、認証記録が当該ユーザのユーザ端末２０にcookieとして保存されている場合には、Ｓ２０はスキップされる。

【0054】

続いて、Ｓ２１において、ユーザによってＶＪ編集が行われる。ＶＪ編集では、新規ＶＪコンテンツ作成時には、楽曲プレイリスト及びクリッピング設定が新規に設定され、既に作成されているＶＪコンテンツを編集する場合には、楽曲プレイリスト及びクリッピング設定の変更が行われる。

【0055】

楽曲プレイリストの設定においては、ユーザ端末２０のディスプレイ上に、図示しない楽曲選択画面に楽曲ＤＢ１１１内に格納されている楽曲素材データの一覧が表示されるので、ユーザが所望の順序で楽曲を指定することで設定される。設定された楽曲プレイリストは、ユーザＩＤ及びステーションＩＤに関連付けられた楽曲プレイリストとして、コンテンツ配信サーバ１０の楽曲プレイリストＤＢ１１５に格納される。

【0056】

クリッピング設定においては、楽曲プレイリストに従って順次楽曲が再生されている際に、リアルタイムでユーザがクリッピング設定を行う。このとき、上記図７に示した編集モードと同じ画面がユーザ端末２０上に表示されるので、同様の手法によって、ユーザが楽曲にクリッピングする映像及び映像切り替え時のエフェクトを選択すれば良い。但し、ＶＪ編集モードにおいては、エフェクトリストの右側に「クリップ録画ボタン」（図７では不図示）が表示されるので、ユーザは、このボタンをクリックすることで、クリッピング設定を開始することができる。

【0057】

このとき、ＶＪツールにより、ユーザが操作した、楽曲中のどこでどの映像をクリッピングするかの情報及び映像を切り替える際にどのエフェクトを用いるかの情報が、クリッピング設定情報として、ユーザ端末２０からコンテンツ配信サーバ１０へと送られ、ユーザＩＤ及び楽曲ＩＤに関連付けられ、クリッピング設定ＤＢ１１６内に格納される。

【0058】

なお、ＶＪ編集モードにおいて、あるユーザがクリッピング設定を行っている際に、再生されている楽曲の楽曲ＩＤと、編集されているクリッピング設定情報とを、当該ユーザのＷｅｂページにアクセスしている他のユーザのユーザ端末にリアルタイムで配信するように構成すれば、他のユーザは、ライブで当該ユーザの編集しているＶＪコンテンツを視

聴することが可能である。このとき、当該ユーザのユーザ端末２０から送信される情報は、楽曲ＩＤとクリッピング設定のデータだけであり、楽曲及び映像データ本体は、サーバから他のユーザの端末に配信されることになるので、当該ユーザ端末のトラフィックに負荷をかけることなく、効率良くライブ配信が可能である。

【0059】

以上、詳細に説明した本実施形態によれば、楽曲データと映像データが独立したデータとして管理されており、端末側において、クリッピング設定に従って楽曲データに映像データをクリッピングすることでＶＪコンテンツの再生を実現しており、その後の編集も容易な自由度の高いコンテンツ配信システムを提供することができる。すなわち、音声と映像とがミックスした一つのファイルとして作成されたＶＪコンテンツであれば、一度作成した後は、作成したユーザがその内容を後で変更することや、ＶＪコンテンツを視聴しているユーザが自分好みにクリップ映像を変更したりすることはできないが、本実施形態によれば、容易にＶＪコンテンツの変更・編集が可能である。

【0060】

また、ユーザは、自分のＷｅｂページにＶＪツール用のタグを埋め込むだけで、コンテンツ配信サーバ内に保存されている楽曲及び映像データを利用して、ユーザ端末で手軽にＶＪコンテンツを作成することができる共に、作成したＶＪコンテンツを簡単にＷｅｂページ上に公開でき、他のユーザと共有することが可能である。また、既に作成したＶＪコンテンツの修正・編集も、ユーザ端末を使って容易に行うことができ、修正・編集作業を行うだけで、自動的にＷｅｂページ上の公開ＶＪコンテンツも更新されることになる。

【0061】

なお、本発明の実施形態は、上述した形態に限定されるものではなく、本発明の趣旨を逸脱しない範囲内で種々の変形が可能である。例えば、本実施形態においては、楽曲及び映像データをコンテンツ配信サーバ内に格納し、ＶＪコンテンツを再生するたびに、サーバからユーザ端末へとデータを送信するように構成したが、ユーザ端末側にも楽曲及び映像データを格納するように構成しても良い。ユーザ端末側に格納しておけば、ＶＪコンテンツを再生したり編集したりするたびに、データをダウンロードする必要がなく、ＶＪコンテンツ再生・編集の際の通信トラフィックを減らして、処理スピードを上げることができる。

【0062】

また、本実施形態においては、ユーザが複数のＷｅｂページにＶＪツールを埋め込んでいる場合に、それぞれのＷｅｂページ毎に異なるＶＪコンテンツを提供できるように、楽曲プレイリスト及びクリッピング設定を、ユーザＩＤに加えてＷｅｂページを特定するためのステーションＩＤに関連付けて、楽曲プレイリスト及びクリッピング設定をユーザＤＢに格納するように構成したが、Ｗｅｂページ毎に異なるＶＪコンテンツを提供する必要がない場合等には、ユーザＩＤにのみ関連付けて格納するように構成しても良い。

【0063】

また、楽曲及び映像データに加えて、楽曲プレイリスト及びクリッピング設定のデータをユーザ端末側にも保存するようにすれば、ネットワークに接続していないオフラインのときでも、自分で作成したＶＪコンテンツを手軽楽しむことができる。なお、この場合には、自分で作成したＶＪコンテンツを他のユーザと共有することはできない。但し、オンライン時に、サーバ上とユーザ端末上の楽曲プレイリスト及びクリッピング設定のデータ同期を行えるように構成しておけば、オンライン時には、オフライン時に作成、編集したＶＪコンテンツを、他のユーザと共有できるようになる。

【0064】

また、ＰＤＡ、携帯電話、携帯オーディオプレーヤ等のモバイル端末に、ＶＪツールのプログラム、楽曲データ、映像データ、楽曲プレイリスト及びクリッピング設定をダウンロードできるように構成しても良い。このようにすれば、ＶＪコンテンツを持ち運んで、様々な場所で楽しむこと可能である。

【0065】

また、例えば、ユーザ端末とモバイル端末をケーブルやネットワークを介して接続した際に、ユーザ端末内のＶＪコンテンツに関するデータと、モバイル端末内の同データとを同期するように構成しておけば、ユーザは、ユーザ端末で作成したＶＪコンテンツや、他のユーザのＷｅｂページ上で見つけたお気に入りのＶＪコンテンツを手軽にモバイル端末で楽しむことが可能である。

【図面の簡単な説明】

【0066】

【図1】図１は、本実施の形態に係るコンテンツ配信システム１の概略構成を示す図である。

【図2】図２は、コンテンツ配信サーバの記憶装置に格納されているデータベース（ＤＢ）の内容を示す図である。

【図3】図３は、ユーザＤＢ、ステーションＤＢ、楽曲プレイリストＤＢ及びクリッピング設定ＤＢに記録されているレコードの内容を示す図である。

【図4】図４は、コンテンツ配信システムにおいてユーザがコンテンツを視聴する際の処理の流れを示すフローチャートである。

【図5】図５は、ＶＪツールの通常モードの表示内容を示す図である。

【図6】図６は、ＶＪツールのログインアイコンを示す図である。

【図7】図７は、ＶＪツールの編集モードの表示内容を示す図である。

【図8】図８は、ＶＪ編集モードにおける処理の流れを示すフローチャートである。

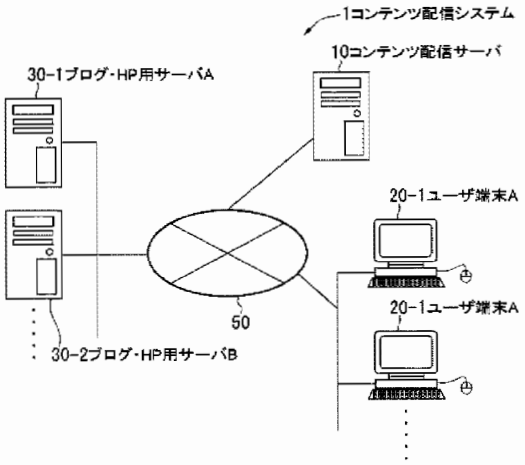
【符号の説明】

【0067】

１　　コンテンツ配信システム
１０　　コンテンツ配信サーバ
１１　　ＤＢ
２０　　ユーザ端末
３０　　ブログ・ＨＰ用サーバ
５０　　ネットワーク

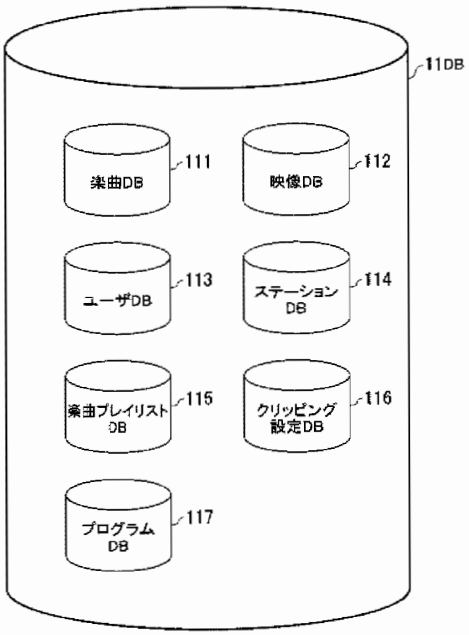
【図1】

【図1】



【図2】

【図2】



【図3】

【図3】

111ユーザDB

ユーザID	パスワード

114ステーションDB

ステーションID	ユーザID	URL

115楽曲プレイリストDB

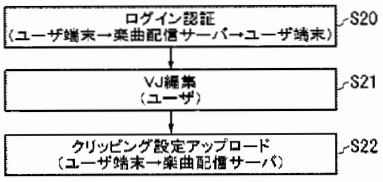
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116クリッピング設定DB

ユーザID	楽曲ID	クリッピング設定

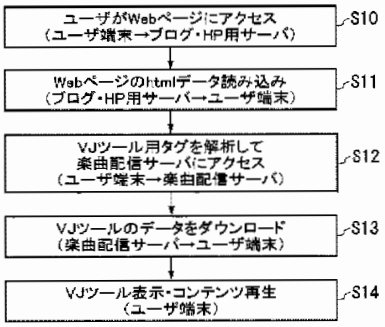
【図8】

【図8】



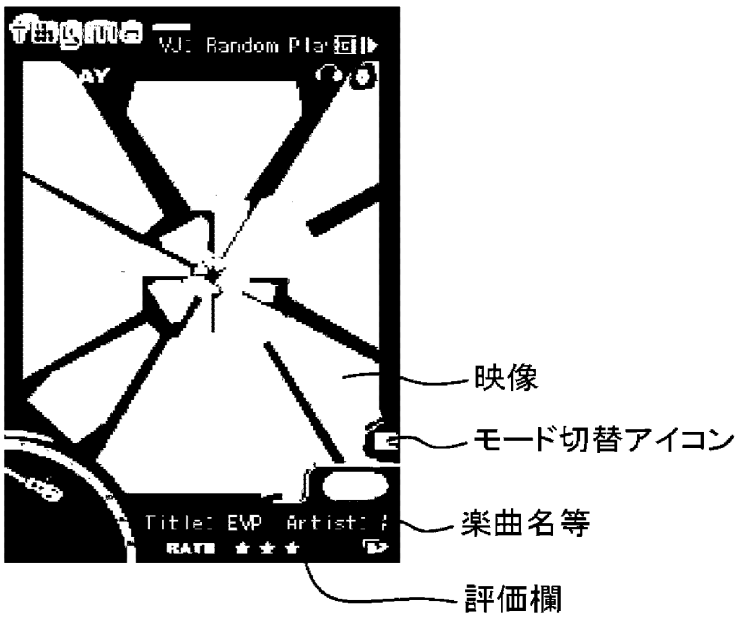
【図4】

【図4】



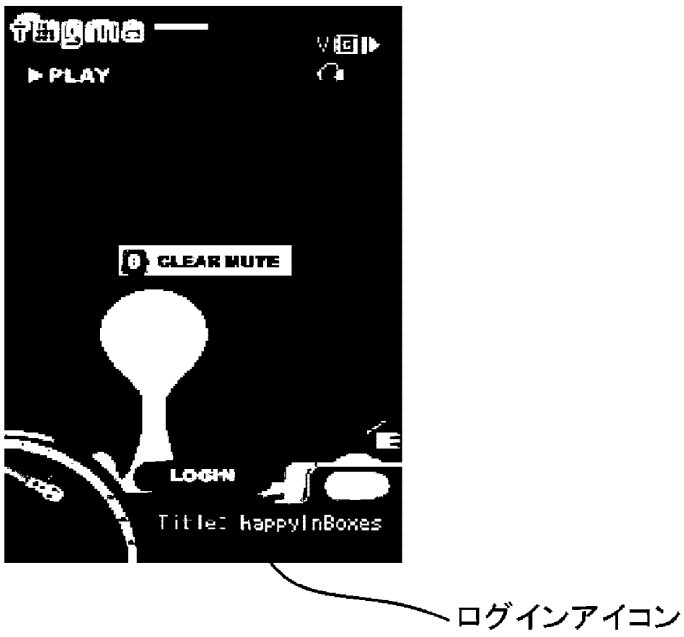
【図5】

【図5】



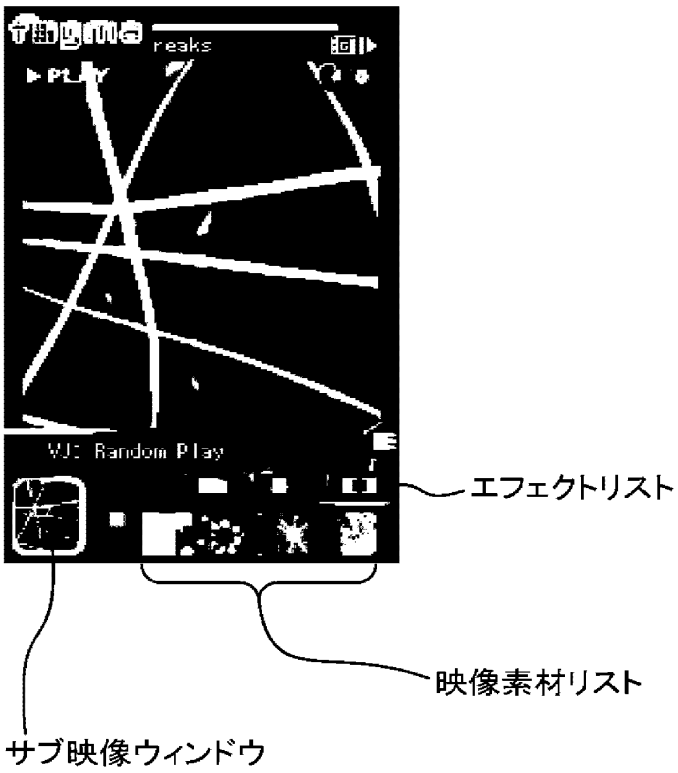
【図6】

【図6】



【図7】

【図7】



Espacenet

Bibliographic data: JP2009135750 (A) — 2009-06-18

REPRODUCTION SYSTEM, REPRODUCTION CONTROL DEVICE, REPRODUCTION CONTROL METHOD AND REPRODUCTION CONTROL PROGRAM

Inventor(s): HIRAKO KENICHI ± (HIRAKO KENICHI)

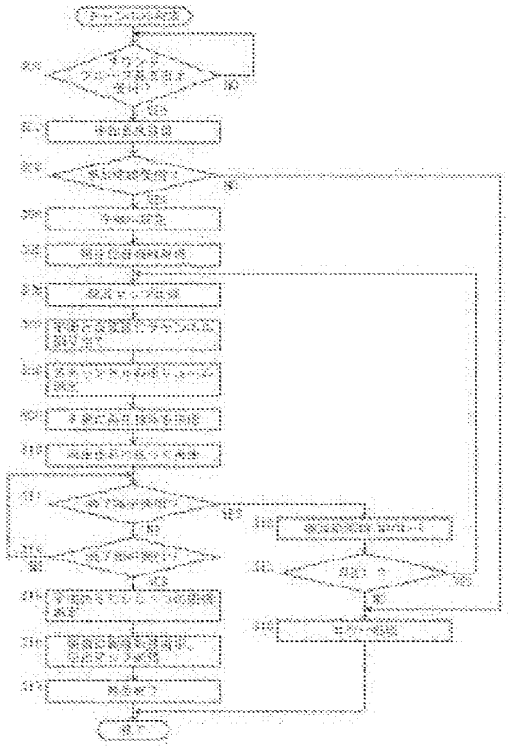
Applicant(s): KYOCERA CORP ± (KYOCERA CORP)

Classification: **- international:** ***H04M1/00; H04S5/02***
- cooperative:

Application number: JP20070310187 20071130

Priority number(s): JP20070310187 20071130

Abstract of JP2009135750 (A)



PROBLEM TO BE SOLVED: To reproduce a sound with presence. ;SOLUTION: The reproduction system is composed of a plurality of mobile phones, and each of the plurality of mobile phones comprises an AV decoder for reproducing sound data of 5.1 channel, a GPS sensor for detecting a current location, and a wireless LAN circuit for communicating with any other mobile phone among the plurality of mobile phones. A master unit of one of the plurality of mobile phones comprises: location acquiring means (S03, S05) for acquiring locations of the plurality of mobile phones; an assignment means (S08) for assigning one or more channels of a plurality of channels to the plurality of mobile phones, respectively, based on locations of the plurality of mobile phones; and reproduction instruction means (S09, S10) for reproducing sound data of the one or more channels assigned to the plurality of mobile phones, respectively. ;COPYRIGHT: (C)2009,JPO&INPIT

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特開2009-135750
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H04S	5/02	(2006.01)	H04S	5/02	P	5D062
H04M	1/00	(2006.01)	H04S	5/02	L	5K027
			H04M	1/00	V	

審査請求 未請求　請求項の数 7　OL　（全 16 頁）

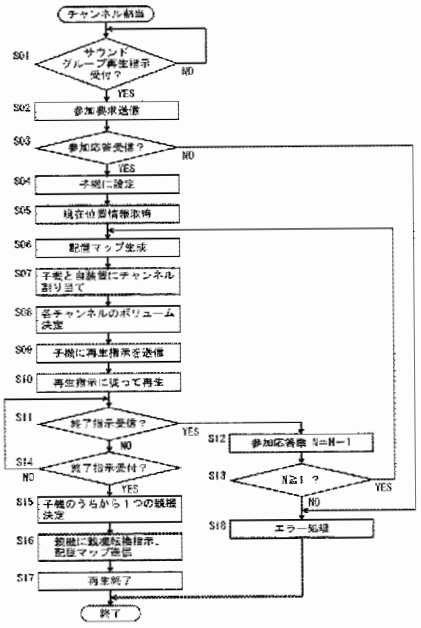
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(71)出願人　000006633
京セラ株式会社
京都府京都市伏見区竹田鳥羽殿町６番地
(74)代理人　100108523
弁理士　中川　雅博
(72)発明者　平子　賢一
大阪府守口市京阪本通２丁目５番５号　三洋電機株式会社内

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5K027 AA11　BB01　DD14　DD16　HH01
HH26

(54)【発明の名称】再生システム、再生制御装置、再生制御方法および再生制御プログラム

(57)【要約】
【課題】　臨場感のある音を再生すること。
【解決手段】　再生システムは、複数の携帯電話機からなり、複数の携帯電話機それぞれは、５．１チャンネルの音声データを再生するためのＡＶデコーダと、現在位置を検出するＧＰＳセンサと、複数の携帯電話機のうち他の携帯電話機と通信するための無線ＬＡＮ回路と、を備え、複数の携帯電話機のうち１の親機は、複数の携帯電話機それぞれの位置を取得する位置取得手段（Ｓ０３，Ｓ０５）と、複数の携帯電話機それぞれの位置に基づいて、複数の携帯電話機それぞれに複数チャンネルのうちの１以上のチャンネルを割り当てる割当手段（Ｓ０８）と、複数の携帯電話機それぞれに割り当てられた１以上のチャンネルの音声データを再生させる再生指示手段（Ｓ０９，Ｓ１０）と、を備える。
【選択図】　図３



【特許請求の範囲】
【請求項1】
複数の再生装置からなる再生システムであって、
前記複数の再生装置それぞれは、複数チャンネルの音声データを再生するための再生手段と、
現在位置を検出する位置検出手段と、
前記複数の再生装置のうち他の再生装置と通信するための通信手段と、を備え、
前記複数の再生装置のうち少なくとも１つの再生装置は、前記複数の再生装置それぞれの位置を取得する位置取得手段と、
前記複数の再生装置それぞれの位置に基づいて、前記複数の再生装置それぞれに前記複数チャンネルのうちの１以上のチャンネルを割り当てる割当手段と、
前記複数の再生装置それぞれに前記割り当てられた前記１以上のチャンネルの音声データを再生させる再生指示手段と、を備えた再生システム。
【請求項2】
前記少なくとも１つの再生装置は、前記複数の再生装置の位置に基づいて、前記複数の再生装置それぞれに割り当てられた１以上のチャンネルの音声データそれぞれを再生する音量を決定する音量決定手段をさらに備え、
前記再生指示手段は、前記複数の再生装置それぞれに割り当てられた前記１以上のチャンネルを前記決定された音量で再生させる、請求項１に記載の再生システム。
【請求項3】
前記複数の再生装置の１つの親装置は、前記位置取得手段と、前記割当手段と、前記再生指示手段とを備え、
前記再生指示手段は、前記複数の再生装置のうち前記親装置以外の１以上の子装置それぞれに、該子装置に割り当てられた前記１以上のチャンネルを再生させるための再生指示を送信する再生指示送信手段を含み、
前記１以上の子装置それぞれの前記再生手段は、前記親装置から受信される前記再生指示に従って、前記複数チャンネルの音声データのうち前記１以上のチャンネルの音声データを再生する、請求項１に記載の再生システム。
【請求項4】
前記複数の再生装置の１つの親装置は、前記位置取得手段と、前記割当手段と、前記再生指示手段とを備え、
前記親装置は、さらに、参加要求を送信する参加要求送信手段と、
前記参加要求の送信に応じて参加することを示す１以上の参加応答を受信することを条件に、前記受信された１以上の参加応答をそれぞれ送信してきた１以上の再生装置を前記１以上の子装置として含む前記複数の再生装置を決定するシステム構成手段と、を備え、
前記複数の再生装置のうち前記親装置以外の１以上の子装置それぞれは、さらに、
前記親装置から参加要求を受信することに応じて、前記参加応答を送信するか否かをユーザに問合せる問合手段と、
前記参加応答を送信するか否かを示すユーザによる操作を受け付ける操作受付手段と、
前記操作受付手段により前記参加応答を送信することを示す操作が受け付けられることを条件に、前記位置検出手段により検出された現在位置を示す位置情報を含む前記参加応答を前記親装置に送信する参加応答送信手段と、を備える請求項１に記載の再生システム。
【請求項5】
複数チャンネルの音声データを再生可能な複数の再生装置それぞれの位置を取得する位置取得手段と、
前記複数の再生装置それぞれの位置に基づいて、前記複数の再生装置それぞれに前記複数チャンネルのうちの１以上のチャンネルを割り当てる割当手段と、
前記複数の再生装置それぞれに前記割り当てられた前記１以上のチャンネルを再生させ

る再生指示手段と、を備えた再生制御装置。
【請求項6】
複数チャンネルの音声データを再生可能な複数の再生装置それぞれの位置を取得するステップと、
前記複数の再生装置それぞれの位置に基づいて、前記複数の再生装置それぞれに前記複数チャンネルのうちの１以上のチャンネルを割り当てるステップと、
前記複数の再生装置それぞれに前記割り当てられた前記１以上のチャンネルを再生させるステップと、を含む再生制御方法。
【請求項7】
複数チャンネルの音声データを再生可能な複数の再生装置それぞれの位置を取得するステップと、
前記複数の再生装置それぞれの位置に基づいて、前記複数の再生装置それぞれに前記複数チャンネルのうちの１以上のチャンネルを割り当てるステップと、
前記複数の再生装置それぞれに前記割り当てられた前記１以上のチャンネルを再生させるステップと、をコンピュータに実行させる再生制御プログラム。
【発明の詳細な説明】
【技術分野】
【0001】
この発明は、再生システム、再生制御装置、再生制御方法および再生制御プログラムに関し、特にマルチチャンネルの音声を再生するための再生システム、再生制御装置、その再生制御装置により実行される再生制御方法および再生制御プログラムに関する。
【背景技術】
【0002】
近年、５．１チャンネル等のマルチチャンネルのデジタル音声が放送される場合がある。この５．１チャンネルのデジタル音声を再生するサラウンドシステムが、特開２００７－４３３２０号公報（特許文献１）に記載されている。従来のサラウンドシステムは、オーディオ信号再生装置より出力された各チャンネルのオーディオ信号を配置されたスピーカから各々再生することによりサラウンド音場を形成するサラウンドシステムであり、リスニングポイントから各スピーカまでの距離を測定し、その距離データをオーディオ信号再生装置に伝送するカメラのオートフォーカス機能とＵＳＢ接続を利用した測距装置と、伝送された距離データを取得し比較することにより、各チャンネルのオーディオ信号の音量調整データとディレイ時間設定データとを生成し、この音量調整データとディレイ時間設定データに応じてオーディオ信号に対する音量とディレイ時間を制御するオーディオ信号再生装置と、を備える。このように、５．１チャンネルのデジタル音声を臨場感のある音で再生するためには、異なる位置に配置された６つのスピーカが必要となる。
【0003】
一方、携帯電話機は、５．１チャンネルのデジタル音声放送を受信可能であるが、音声を再生するためのスピーカを多くても２つしか備えていない。このため、最大で２チャンネルの音声しか出力できず、臨場感のある音を再生することができないといった問題がある。
【特許文献1】特開２００７－４３３２０号公報
【発明の開示】
【発明が解決しようとする課題】
【0004】
この発明は上述した問題点を解決するためになされたもので、この発明の目的の一つは、臨場感のある音を再生することが可能な再生システムを提供することである。
【0005】
この発明の他の目的は、臨場感のある音を再生することが可能な再生制御装置を提供することである。
【0006】
この発明のさらに他の目的は、臨場感のある音を再生することが可能な再生制御方法を

提供することである。
【0007】
この発明のさらに他の目的は、臨場感のある音を再生することが可能な再生制御プログラムを提供することである。
【課題を解決するための手段】
【0008】
この発明は上述した目的を達成するためになされたもので、この発明のある局面によれば、再生システムは、複数の再生装置からなる再生システムであって、複数の再生装置それぞれは、複数チャンネルの音声データを再生するための再生手段と、現在位置を検出する位置検出手段と、複数の再生装置のうち他の再生装置と通信するための通信手段と、を備え、複数の再生装置のうち少なくとも１つの再生装置は、複数の再生装置それぞれの位置を取得する位置取得手段と、複数の再生装置それぞれの位置に基づいて、複数の再生装置それぞれに複数チャンネルのうちの１以上のチャンネルを割り当てる割当手段と、複数の再生装置それぞれに割り当てられた１以上のチャンネルの音声データを再生させる再生指示手段と、を備える。
【0009】
この局面に従えば、複数の再生装置のうち少なくとも１つの再生装置において、複数の再生装置それぞれの位置が取得され、複数の再生装置それぞれの位置に基づいて、複数の再生装置それぞれに複数チャンネルのうちの１以上のチャンネルが割り当てられ、複数の再生装置それぞれにおいて割り当てられた１以上のチャンネルの音声データが再生される。このため、複数の再生装置が一度に複数のチャンネルを再生することができない場合であっても、複数の再生装置で異なるチャンネルを分担して再生するので、複数のチャンネルを複数の再生装置で再生することができる。その結果、臨場感のある音を再生することが可能な再生システムを提供することができる。
【0010】
好ましくは、少なくとも１つの再生装置は、複数の再生装置の位置に基づいて、複数の再生装置それぞれに割り当てられた１以上のチャンネルの音声データそれぞれを再生する音量を決定する音量決定手段をさらに備え、再生指示手段は、複数の再生装置それぞれに割り当てられた１以上のチャンネルを決定された音量で再生させる。
【0011】
この局面に従えば、複数の再生装置の位置に基づいて、複数の再生装置それぞれに割り当てられた１以上のチャンネルの音声データそれぞれを再生する音量が決定され、決定された音量でチャンネルの音声データが再生される。このため、複数のチャンネルの音をバランスよく再生することができる。
【0012】
好ましくは、複数の再生装置の１つの親装置は、位置取得手段と、割当手段と、再生指示手段とを備え、再生指示手段は、複数の再生装置のうち親装置以外の１以上の子装置それぞれに、該子装置に割り当てられた１以上のチャンネルを再生させるための再生指示を送信する再生指示送信手段を含み、１以上の子装置それぞれの再生手段は、親装置から受信される再生指示に従って、複数チャンネルの音声データのうち１以上のチャンネルの音声データを再生する。
【0013】
好ましくは、複数の再生装置の１つの親装置は、位置取得手段と、割当手段と、再生指示手段とを備え、親装置は、さらに、参加要求を送信する参加要求送信手段と、参加要求の送信に応じて参加することを示す１以上の参加応答を受信することを条件に、受信された１以上の参加応答をそれぞれ送信してきた１以上の再生装置を１以上の子装置として含む複数の再生装置を決定するシステム構成手段と、を備え、複数の再生装置のうち親装置以外の１以上の子装置それぞれは、さらに、親装置から参加要求を受信することに応じて、参加応答を送信するか否かをユーザに問合せる問合手段と、参加応答を送信するか否かを示すユーザによる操作を受け付ける操作受付手段と、操作受付手段により参加応答を送

信することを示す操作が受け付けられることを条件に、位置検出手段により検出された現在位置を示す位置情報を含む参加応答を親装置に送信する参加応答送信手段と、を備える。

【0014】

この局面に従えば、１以上の子装置それぞれは、親装置から参加要求を受信することに応じて、参加応答を送信するか否かをユーザに問合せ、参加応答を送信することを示す操作がユーザにより指示され、受け付けられることを条件に、参加応答を親装置に返信する。このため、ユーザにより音声データを再生するか否かが決定される。その結果、ユーザの意に反して音声が再生されるのを防止することができる。

【0015】

この発明の他の局面に従えば、再生制御装置は、複数チャンネルの音声データを再生可能な複数の再生装置それぞれの位置を取得する位置取得手段と、複数の再生装置それぞれの位置に基づいて、複数の再生装置それぞれに複数チャンネルのうちの１以上のチャンネルを割り当てる割当手段と、複数の再生装置それぞれに割り当てられた１以上のチャンネルの音声データを再生させる再生指示手段と、を備える。

【0016】

この局面に従えば、複数の再生装置に異なるチャンネルを分担して再生させるので、複数のチャンネルを複数の再生装置で再生させることできる。その結果、臨場感のある音を再生することが可能な再生制御装置を提供することができる。

【0017】

この発明のさらに他の局面に従えば、再生制御方法は、複数チャンネルの音声データを再生可能な複数の再生装置それぞれの位置を取得するステップと、複数の再生装置それぞれの位置に基づいて、複数の再生装置それぞれに複数チャンネルのうちの１以上のチャンネルを割り当てるステップと、複数の再生装置それぞれに割り当てられた１以上のチャンネルを再生させるステップと、を含む。

【0018】

この局面に従えば、臨場感のある音を再生することが可能な再生制御方法を提供することができる。

【0019】

この発明のさらに他の局面によれば、再生制御プログラムは、複数チャンネルの音声データを再生可能な複数の再生装置それぞれの位置を取得するステップと、複数の再生装置それぞれの位置に基づいて、複数の再生装置それぞれに複数チャンネルのうちの１以上のチャンネルを割り当てるステップと、複数の再生装置それぞれに割り当てられた１以上のチャンネルを再生させるステップと、をコンピュータに実行させる。

【0020】

この局面に従えば、臨場感のある音を再生することが可能な再生制御プログラムを提供することができる。

【発明を実施するための最良の形態】

【0021】

以下、本発明の実施の形態について図面を参照して説明する。以下の説明では同一の部品には同一の符号を付してある。それらの名称および機能も同じである。したがってそれらについての詳細な説明は繰返さない。

【0022】

図１は、本発明の実施の形態の１つにおける再生システムの全体概要を示す図である。図１を参照して、再生システム１００は、再生装置として５台の携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄを含む。携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれは、マルチチャンネルのラジオ放送を受信し、マルチチャンネルの少なくとも１つのチャンネルを選択して再生することが可能である。さらに、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれは、他の携帯電話機と通信することが可能である。携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄの機能および構成は、同一なのでここでは、特に言及しない限り携帯電話機１を例に説

明する。

【0023】

図２は、携帯電話機の機能の一例を示す機能ブロック図である。図２を参照して、携帯電話機１は、携帯電話機１の全体を制御するための制御部２１と、アンテナ２２Ａと接続された無線回路２２と、アンテナ２３Ａと接続された無線ＬＡＮ回路２３と、音声データを処理するためのコーデック部２８と、それぞれがコーデック部２８に接続されたマイクロフォン１３および第１スピーカ１１と、アンテナ２４Ａに接続されたチューナ２４と、ＡＶデコーダ２９と、ユーザの操作の入力を受付ける操作部２５と、ＧＰＳセンサ２６と、カードインターフェース（Ｉ／Ｆ）２７と、液晶表示装置（ＬＣＤ）１６の表示を制御するための表示制御部３０と、制御部２１で実行するプログラム等を記憶するためのＲＯＭ（Ｒｅａｄ　Ｏｎｌｙ　Ｍｅｍｏｒｙ）３１と、制御部２１の作業領域として使用されるＲＡＭ（Ｒａｎｄｏｍ　Ａｃｃｅｓｓ　Ｍｅｍｏｒｙ）３２と、データを不揮発的に記憶するＥＥＰＲＯＭ（Ｅｌｅｃｔｒｏｎｉｃａｌｌｙ　Ｅｒａｓａｂｌｅ　ａｎｄ　Ｐｒｏｇｒａｍｍａｂｌｅ　ＲＯＭ）３３と、を含む。

【0024】

無線回路２２は、Ｗ－ＣＤＭＡ（Ｗｉｄｅｂａｎｄ　Ｃｏｄｅ　Ｄｉｖｉｓｉｏｎ　Ｍｕｌｔｉｐｌｅ　Ａｃｃｅｓｓ）の通信方式のネットワークに接続する。具体的には、無線回路２２は、Ｗ－ＣＤＭＡのネットワークに接続された基地局装置と無線通信する。基地局装置が送信する無線信号は、アンテナ２２Ａにより受信される。無線回路２２は、アンテナ２２Ａにより受信された無線信号が入力され、無線信号を復調した信号を制御部２１に出力する。無線信号を復調した信号が音声信号の場合、制御部２１は、音声信号をコーデック部２８に出力する。

【0025】

無線回路２２は、制御部２１から信号が入力されると、その信号を変調した無線信号をアンテナ２２Ａに出力する。制御部２１は、コーデック部２８から音声信号が入力されると、音声信号を第１の無線回路２２に出力する。アンテナ２２Ａから送信される無線信号は、Ｗ－ＣＤＭＡの基地局装置で受信され、Ｗ－ＣＤＭＡの基地局装置に入力される。

【0026】

なお、ここでは無線回路２２がＷ－ＣＤＭＡのネットワークに接続する例を示すが、ＰＤＣ（Ｐｅｒｓｏｎａｌ　Ｄｉｇｉｔａｌ　Ｃｅｌｌｕｌａｒ）方式、ＧＳＭ（Ｇｌｏｂａｌ　Ｓｙｓｔｅｍ　ｆｏｒ　Ｍｏｂｉｌｅ
）方式、ＣＤＭＡ（Ｃｏｄｅ　Ｄｉｖｉｓｉｏｎ　Ｍｕｌｔｉｐｌｅ　Ａｃｃｅｓｓ）方式のネットワーク、ＰＨＳ（Ｐｅｒｓｏｎａｌ　Ｈａｎｄｙｐｈｏｎｅ　Ｓｙｓｔｅｍ）のネットワークであってもよい。

【0027】

無線ＬＡＮ回路２３は、通信手段の一例であり、ＷｉＭＡＸ（Ｗｏｒｌｄｗｉｄｅ　Ｉｎｔｅｒｏｐｅｒａｂｉｌｉｔｙ　ｆｏｒ　Ｍｉｃｒｏｗａｖｅ　Ａｃｃｅｓｓ）の通信方式のネットワークに接続する。ＷｉＭＡＸの通信方式は、Ｗｉｒｅｌｅｓｓ　ＭＡＮ（Ｗｉｒｅｌｅｓｓ　Ｍｅｔｒｏｐｏｌｉｔａｎ　Ａｒｅａ　Ｎｅｔｗｏｒｋ）とも呼ばれ、ＩＥＥＥ８０２．１６という都市規模のエリアを対象として高速無線通信を提供する規格である。無線ＬＡＮ回路２３は、具体的には、ＷｉＭＡＸのネットワークに接続された別の携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄまたはアクセスポイントと無線通信する。携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄまたはアクセスポイントが送信する無線信号は、アンテナ２３Ａにより受信される。無線ＬＡＮ回路２３は、アンテナ２３Ａにより受信された無線信号が入力され、無線信号を復調した信号を制御部２１に出力する。

【0028】

無線ＬＡＮ回路２３は、制御部２１から送信の信号が入力されると、その信号を変調した無線信号をアンテナ２３Ａに出力する。アンテナ２３Ａから送信される無線信号は、携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄまたはアクセスポイントで受信される。

【0029】

なお、ここでは無線ＬＡＮ回路２３がＷｉＭＡＸのネットワークに接続する例を示すが、無線ＬＡＮであれば、ＷｉＭＡＸのネットワークに限定されるものではなく、例えば、ＢＬＵＥＴＯＯＴＨ（登録商標）、ＷｉＦｉ（登録商標）等のネットワークであってもよい。

【0030】

コーデック部２８は、制御部２１から入力される音声信号を復号し、復号したデジタルの音声信号をアナログに変換し、増幅し、そしてレシーバとしての第１スピーカ１１に出力する。また、コーデック部２８は、マイクロフォン１３からアナログの音声信号が入力され、音声信号をデジタルに変換し、符号化し、そして符号化した音声信号を制御部２１に出力する。

【0031】

チューナ２４は、アンテナ２４Ａに接続されており、アンテナ２４Ａにより受信されたデジタル音声の放送信号が入力される。放送信号は、高周波デジタル変調信号であり、ラジオ放送の場合は音声データを含み、テレビ放送の場合は映像データおよび音声データを含む。チューナ２４は、アンテナ２４Ａから入力される高周波デジタル変調信号から特定の周波数の信号を取り出す。また、チューナ２４は、逆インターリーブ回路、誤り訂正回路を備えており、取り出した特定の周波数の高周波デジタル変調信号を復調して可変長符号をＡＶデコーダ２９に出力する。

【0032】

ＡＶデコーダ２９は、再生手段の一例であり、ビデオデコーダおよびオーディオデコーダを備えており、チューナ２４から入力された可変長符号を復号して映像信号および音声信号を生成し、映像信号をＤ／Ａ（デジタル／アナログ）変換して表示制御部３０に出力し、音声信号をＤ／Ａ変換して第２スピーカ１２に与える。以下の説明では、５．１チャンネルの音声信号を含むデジタル音声放送の放送電波を受信して再生する例を示す。なお、ここではデジタルの音声信号を受信する例を示すが、アナログの音声信号を受信して再生するようにしてもよい。

【0033】

また、ＡＶデコーダ２９は、音声信号が５．１チャンネルの場合、制御部２１により制御され、５．１チャンネルのうちから１つを選択し、選択されたチャンネルの音声信号をＤ／Ａ変換し、増幅し、第２スピーカ１２に与える。携帯電話機１が第２スピーカ１２を２つ備える場合、ＡＶデコーダ２９は、５．１チャンネルのうちから２つを選択し、選択された２つのチャンネルの音声信号をＤ／Ａ変換し、増幅し、２つの第２スピーカ１２にそれぞれ与える。

【0034】

表示制御部３０は、制御部２１により制御され、制御部２１から入力される指示に従ってＬＣＤ１６を制御して、ＬＣＤ１６に画像を表示させる。ＬＣＤ１６に表示させる画像は、動画像と静止画像とを含む。

【0035】

カードＩ／Ｆ２７には、着脱可能なフラッシュメモリ２７Ａが装着される。制御部２１は、カードＩ／Ｆ２７を介して、フラッシュメモリ２７Ａにアクセスが可能である。なお、ここでは制御部２１で実行するためのプログラムをＲＯＭ３１に記憶しておく例を説明するが、プログラムをフラッシュメモリ２７Ａに記憶しておき、フラッシュメモリ２７Ａからプログラムを読み出して、制御部２１で実行するようにしてもよい。プログラムを記憶する記録媒体としては、フラッシュメモリ２７Ａに限られず、フレキシブルディスク、カセットテープ、光ディスク（ＣＤ－ＲＯＭ（Ｃｏｍｐａｃｔ　Ｄｉｓｃ－ＲＯＭ）／ＭＯ（Ｍａｇｎｅｔｉｃ　Ｏｐｔｉｃａｌ　Ｄｉｓｃ）／ＭＤ（Ｍｉｎｉ　Ｄｉｓｃ）／ＤＶＤ（Ｄｉｇｉｔａｌ　Ｖｅｒｓａｔｉｌｅ　Ｄｉｓｃ））、ＩＣカード（メモリカードを含む）、光カード、マスクＲＯＭ、ＥＰＲＯＭ、ＥＥＰＲＯＭなどの半導体メモリ等でもよい。また、携帯電話機１をインターネットに無線回路２２または無線ＬＡＮ回路２３を介して接続し、インターネットに接続されたコンピュータからプログラムをダウンロー

ドして、制御部２１で実行するようにしてもよい。ここでいうプログラムは、制御部２１により直接実行可能なプログラムだけでなく、ソースプログラム形式のプログラム、圧縮処理されたプログラム、暗号化されたプログラム等を含む。

【0036】

ＧＰＳセンサ２６は、位置検出手段の一例であり、全地球測位システム（ＧＰＳ）におけるＧＰＳ衛星からの電波を受信し、現在の地図上の位置を計測する。ＧＰＳセンサ２６は、計測して得た地図上の位置を示す位置情報を制御部２１に出力する。

【0037】

操作部２５は、操作キー１４と、ランプ２５Ａとを含む。操作キー１４は、ユーザによる操作の入力を受け付け、受付けた操作を制御部２１に出力する。ランプ２５Ａは、制御部２１により制御されて発光する。これにより、ユーザは、暗い場所でも操作キー１４を確認することができる。

【0038】

制御部２１は、操作キー１４から操作が入力されると、入力された操作に応じて処理を実行する。制御部２１は、ＲＯＭ３１に記憶されている複数のアプリケーションプログラムを読出して実行する。アプリケーションプログラムには、後述する再生プログラム、携帯電話機１をラジオとして機能させるためのアプリケーションプログラムを含む。これらのアプリケーションプログラムは、Ｃ言語やＪＡＶＡ（登録商標）などのプログラム言語で記述されるが、アプリケーションプログラムが記述されるプログラム言語は、これらに限定されることなく、他のいかなるプログラム言語で記述されてもよい。また、複数のアプリケーションプログラムがＲＯＭ３１に記憶されて携帯電話機１に搭載されるが、複数のアプリケーションプログラムは、単一のプログラム言語で記述されたものであってもよいし、異なるプログラム言語で記述されたものであってもよい。すなわち、複数のプログラム言語で記述されたアプリケーションプログラムが混在してもよい。

【0039】

制御部２１は、複数のアプリケーションプログラムを同時に実行することが可能である。ここでは、携帯電話機１をラジオとして機能させるためのアプリケーションプログラムと、複数の携帯電話機で分担してラジオ放送を再生させるためのアプリケーションプログラム（以下、「再生プログラム」という）と、を同時に実行する場合を例に説明する。

【0040】

本実施の形態における再生システム１００においては、ラジオ放送のマルチチャンネルの少なくとも１つを携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれに割り当て、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄの全体でマルチチャンネルのラジオ放送を再生する。このために携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄのいずれか１つが親機（親装置）に設定され、他の携帯電話機が子機（子装置）に設定される。ここでは、携帯電話機１が親機に設定され、他の携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄが子機に設定される場合を例に説明する。親機に設定された携帯電話機１は、子機に設定された携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれからそれらの地図上の位置を示す位置情報を取得し、取得した子機の位置情報と親機である携帯電話機１の位置情報とから携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄの位置関係を示す配置マップを生成する。携帯電話機１は、生成した配置マップに基づいて、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれに５．１チャンネルのいずれを割り当てるか決定し、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれに割り当てられたチャンネルの音を再生させる。

【0041】

図３は、チャンネル割当処理の流れの一例を示すフローチャートである。チャンネル割当処理は、親機である携帯電話機１の制御部２１が再生プログラムおよび携帯電話機１をラジオとして機能させるためのアプリケーションプログラムを実行することにより制御部２１により実行される処理である。

【0042】

図３を参照して、制御部２１は、サウンドグループ再生指示を受け付けたか否かを判断

する（ステップＳ０１）。ユーザが、操作部２５が有する操作キー１４のうちサウンドグループ再生指示を指示するために予め割り当てられたキーを指示すれば、サウンドグループ再生指示を受け付ける。そして、無線ＬＡＮ回路２３を介してブロードキャストで参加要求を送信する（ステップＳ０２）。制御部２１がステップＳ０２を実行することにより、参加要求送信手段が構成される。参加要求は、複数の携帯電話機でマルチチャンネルの音声を、チャンネルを分担して再生するサウンドグループへの参加を要求するための信号である。無線ＬＡＮ回路２３が送信する電波の伝播距離が限られていれば、携帯電話機から伝播距離の範囲内に位置する携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄが参加要求を受信する。ここでは、携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄが参加要求を受信した場合を例に説明する。

【0043】

そして、所定時間内に参加要求を受信した携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄから参加応答を受信したか否かを判断する（ステップＳ０３）。参加応答は、参加要求に対する応答であり、マルチチャンネルの音声を再生するサウンドグループに参加することを示す信号である。また、参加応答は、その参加応答を送信してきた携帯電話機の現在の地図上の位置を示す位置情報を含む。さらに、参加応答は、参加応答を送信してきた携帯電話機の装置情報を含む。装置情報は、スピーカ数、スピーカの性能情報（ｄｂ）、スピーカがステレオかモノラルかを示すスピーカ構成、指向性調整可否等の情報を含む。

【0044】

ステップＳ０３においては、所定時間が経過するまで参加要求の受信を継続し、所定時間内に１以上の参加要求を受信したならば処理をステップＳ０４に進め、所定時間内に参加要求を１つも受信しない場合には、処理をステップＳ１８に進める。ステップＳ１８においては、マルチチャンネルの音声をサウンドグループで再生できないことを示すエラーメッセージをＬＣＤ１６に表示し、処理を終了する。参加応答が１つもなければ、複数台でサウンドグループを構成することができないからである。

【0045】

ステップＳ０４においては、参加応答を送信してきた装置を子機に設定する。制御部２１がステップＳ０４を実行することにより、サウンドグループを構成する親機と子機とを決定するシステム構成手段が構成される。具体的には、参加応答とともに装置を識別するための装置識別情報を受信するので、その装置識別情報をＥＥＰＲＯＭ３３に記憶する。装置識別情報は、例えば、ＩＰ（Ｉｎｔｅｒｎｅｔ　Ｐｒｏｔｏｃｏｌ）アドレスを用いることができる。ここでは、携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄのすべてから参加応答を受信した場合を例に説明する。

【0046】

次のステップＳ０５においては、現在の地図上の位置を示す位置情報を取得する。ＧＰＳセンサ２６が出力する位置情報を取得する。ステップＳ０３において参加応答が受信される参加応答は子機の位置情報を含むため、ステップＳ０３において参加応答が受信され、ステップＳ０５において自機の位置情報が取得されると、親機および参加応答を送信してきた子機の位置情報が取得される。したがって、制御部２１がステップＳ０３とステップＳ０５が実行することにより位置取得手段が構成される。次のステップＳ０６においては、子機の位置情報と、親機の位置情報とに基づいて、配置マップを生成する。配置マップは、サウンドグループを構成する携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄの相対的な位置を示す図である。

【0047】

図４は、配置マップの一例を示す図である。図４を参照して、配置マップは、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれの位置を示す印と、各位置を結んだ線分とを含む。

【0048】

図３に戻って、ステップＳ０７においては、生成された配置マップに従って、５．１チャンネルを、子機と自装置とにそれぞれ割り当てる。制御部２１がステップＳ０７を実行

することにより割当手段が構成される。具体的には、図４に示した配置マップを用いて説明すると、まず、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄの隣接する２つを線で結んだ線分で形成される形状を分析する。形状の長手方向を左右方向、それに直交する方向を前後方向に決定する。また、形状の長手方向の線分のうち最も長い線分側を前方向とする。より具体的には、配置マップにおいて携帯電話機１と携帯電話機１Ａを結ぶ線分と、携帯電話機１と携帯電話機１Ｃとを結ぶ線分と、携帯電話機１Ｂと携帯電話機１Ｄとを結ぶ線分とを左右方向の線分と判断し、携帯電話機１Ａと携帯電話機１Ｂとを結ぶ線分と、携帯電話機１Ｃと携帯電話機１Ｄとを結ぶ線分とを前後方向の線分と判断する。さらに、長手方向の３本の線分のうち最も長い携帯電話機１Ｂと携帯電話機１Ｄとを結ぶ線分を前方向と判断し、他の携帯電話機１と携帯電話機１Ａを結ぶ線分と、携帯電話機１と携帯電話機１Ｃとを結ぶ線分とを後方向と判断する。

【0049】

５．１チャンネルは、視聴者から見て中央の音を示す中央チャンネル、前方かつ左の音を示す前左チャンネル、前方かつ右の音を示す前右チャンネル、後方かつ左の音を示す後左チャンネル、後方かつ右の音を示す後右チャンネル、およびサブウーファーの音を示すサブウーファチャンネルを含む。

【0050】

このため、配置マップで携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄの中央に位置する携帯電話機１に中央チャンネルを割り当て、携帯電話機１Ａに後左チャンネルを割り当て、携帯電話機１Ｂに前左チャンネルを割り当て、携帯電話機１Ｃに後右チャンネルを割り当て、携帯電話機１Ｄに前右チャンネルを割り当てる。図４に示す配置マップにおいては、サブウーファチャンネルは、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄいずれにも割り当てない。なお、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄのうちにステレオで再生する機能を有するものがあれば、その携帯電話機が２つのチャンネルを再生するようにすることができる。例えば、携帯電話機１がステレオで再生する機能を有すれば、携帯電話機１に中央チャンネルと、サブウーファチャンネルとが割り当てられる。

【0051】

親機が５．１チャンネルを割り当てる割当パターンは、再生システム１００を構成する携帯電話機の台数、および携帯電話機が有する機能に基づき定まる。

【0052】

図５は、チャンネル割当パターンの一例を示す図である。図５を参照して、第１行目～第５行目は、サウンドグループがモノラルの音声を再生する機能を有する携帯電話機で構成される場合における割当パターンを示している。第１行目は、サウンドグループが６台の携帯電話機で構成される場合における割当パターンを示し、６台の携帯電話機に中央チャンネル、前左チャンネル、前右チャンネル、後左チャンネル、後右チャンネルおよびサブウーファチャンネルがそれぞれ割り当てられる。第２行目は、サウンドグループが５台の携帯電話機で構成される場合における割当パターンを示し、５台の携帯電話機に中央チャンネル、前左チャンネル、前右チャンネル、後左チャンネルおよび後右チャンネルがそれぞれ割り当てられる。

【0053】

第３行目は、サウンドグループが４台の携帯電話機で構成される場合における割当パターンを示し、４台の携帯電話機に前左チャンネル、前右チャンネル、後左チャンネルおよび後右チャンネルがそれぞれ割り当てられる。第４行目は、サウンドグループが３台の携帯電話機で構成される場合における割当パターンを示し、３台の携帯電話機に中央チャンネル、前左チャンネルおよび前右チャンネルがそれぞれ割り当てられる。第５行目は、サウンドグループが２台の携帯電話機で構成される場合における割当パターンを示し、２台の携帯電話機に前左チャンネルおよび前右チャンネルがそれぞれ割り当てられる。

【0054】

第６行目および第７行目は、サウンドグループがステレオの音声を再生する機能を有する携帯電話機で構成される場合における割当パターンを示している。第６行目は、サウン

ドグループが２台の携帯電話機で構成される場合における割当バターンを示し、前左チャンネル、前右チャンネル、後左チャンネルおよび後右チャンネルのうちから選ばれた２つが１つの携帯電話機に割り当てられ、残りの２つが他の携帯電話機に割り当てられる。第７行目は、サウンドグループが３台の携帯電話機で構成される場合における割当バターンを示し、中央チャンネル、前左チャンネル、前右チャンネル、後左チャンネルおよび後右チャンネルのうちから選ばれた２つが１つの携帯電話機に割り当てられ、残りのチャンネルから選ばれた２つが別の携帯電話機に割り当てられ、残りの１チャンネルが残りの携帯電話機に割り当てられる。
る。

【0055】

図３に戻って、ステップＳ０８においては、ステップＳ０７において割り当てられたチャンネルごとにボリュームを決定する。制御部がステップＳ０７を実行することにより音量決定手段が構成される。ボリュームは、配置マップに含まれる携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれの位置に基づき決定される。配置マップにおいて、視聴者の位置を前方の中央に設定し、その視聴者の位置で音のバランスが取れるように、各チャンネルの音を再生するボリュームを決定する。この場合、参加応答とともに受信される装置情報に含まれる携帯電話機が備えるスピーカの性能情報に基づいてボリュームを決定する。これにより、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄ間でスピーカの性能が違うことにより、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄで再生される音がばらつくのを防止することができ、バランスの取れた音を複数の携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄで再生することができる。なお、音量に加えて遅延時間を設定するようにしてもよい。

【0056】

次のステップＳ０９においては、子機に再生指示を送信する。制御部２１がステップＳ９を実行することにより再生指示手段に含まれる再生指示送信手段が構成される。再生指示は、子機により異なり、ステップＳ０７において子機に割り当てられたチャンネルと、ステップＳ０８においてチャンネルに対応して決定されたボリュームとを含む。具体的には、携帯電話機１Ａに送信する再生指示は、後左チャンネルを所定のボリュームで再生する指示であり、携帯電話機１Ｂに送信する再生指示は、前左チャンネルを所定のボリュームで再生する指示であり、携帯電話機１Ｃに送信する再生指示は、後右チャンネルを所定のボリュームで再生する指示であり、携帯電話機１Ｄに送信する再生指示は、前右チャンネルを所定のボリュームで再生する指示である。

【0057】

そして、自装置に対する再生指示に従ってラジオ放送の音を再生する（ステップＳ１０）。制御部２１がステップＳ１０を実行することにより再生指示手段が構成される。具体的には、ＡＶデコーダ２９に、チューナ２４から入力される５．１チャンネルの音声信号のうちで再生指示に含まれるチャンネルの音声信号をＤ／Ａ変換させ、再生指示に含まれる音量に増幅させる。ここでは、ＡＢデコーダ２９に中央チャンネルを所定のボリュームで再生させる。これにより、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄによって、中央チャンネル、後左チャンネル、前左チャンネル、後右チャンネル、前右チャンネルの音がそれぞれ所定のボリュームで再生されるので、視聴者は、バランスのとれた５チャンネルの音を視聴することができる。

【0058】

ステップＳ１１にいては、サウンドグループに属する子機のいずれかから終了指示を受信したか否かを判断する。終了指示は、子機により送信され、子機がラジオ放送の音の再生を終了し、サウンドグループを抜けることを示す信号である。無線ＬＡＮ回路２３が子機に設定されている携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄのいずれかから終了指示を受信すると、処理をステップＳ１２に進め、そうでなければ処理をステップＳ１４に進める。

【0059】

ステップＳ１２においては、子機数Ｎを１減算し、処理をステップＳ１３に進める。ステップＳ１３においては、子機数Ｎが１以上か否かを判断する。子機数が１以上ならば処

理をステップＳ０６に戻し、子機数が０ならば処理をステップＳ１８に進める。サウンドグループに属する装置が複数台なければ、複数台でサウンドグループを構成することができないからである。例えば、携帯電話機１Ａが終了指示を送信した場合、処理はステップＳ０６に戻り、サウンドグループに残された携帯電話機１，１Ｂ，１Ｃ，１Ｄの４台でサウンドグループが構成され、新たなサウンドグループについて、サウンドグループに含まれる携帯電話機１，１Ｂ，１Ｃ，１Ｄそれぞれにチャンネルが割り当てられ（ステップＳ０８）、チャンネルごとのボリュームが決定され（ステップＳ０９）、再生指示に従って携帯電話機１，１Ｂ，１Ｃ，１Ｄそれぞれにおいて各々に割り当てられたチャンネルの音が再生される。このため、サウンドグループを構成する子機のいずれかがチャンネルの音を再生するのを中止した場合であっても、サウンドグループを構成する残りの親機と子機とで、５．１チャンネルのうち2以上のチャンネルの音を再生することができる。

【0060】

ステップＳ１４においては、終了指示を受け付けたか否かを判断する。ユーザが、操作部２５が有する操作キー１４のうち終了を指示するために予め割り当てられたキーを指示すれば、終了指示を受け付ける。また、内蔵バッテリの電圧が低下した場合、内蔵バッテリの電圧を検出する検出センサから終了指示を受け付ける。終了指示を受け付けたならば処理をステップＳ１５に進め、そうでなければ処理をステップＳ１１に戻す。ステップＳ１５においては、サウンドグループに属する子機のうちから１つの親機を決定する。親機は、複数の子機のうちから任意に選択することが可能である。

【0061】

ステップＳ１６においては、ステップＳ１５において親機に決定した装置に親機転換指示と配置マップとを送信し、処理をステップＳ１７に進める。ステップＳ１７においては、ラジオ放送の再生を終了し、処理を終了する。

【0062】

図６は、チャンネル再生処理の流れの一例を示すフローチャートである。チャンネル再生処理は、子機である携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれが備える制御部２１が再生プログラムおよびラジオとして機能させるためのアプリケーションプログラムを実行することにより制御部２１により実行される処理である。ここでは、携帯電話機１Ｂがチャンネル再生処理を実行する場合を例に説明する。

【0063】

図６を参照して、携帯電話機１Ｂの制御部２１は、参加要求を親機である携帯電話機１から受信したか否かを判断する（ステップＳ５１）。無線ＬＡＮ回路２３が携帯電話機１から参加要求を受信するまで待機状態となり（ステップＳ５１でＮＯ）、参加要求を受信したならば、処理をステップＳ５２に進める。すなわち、チャンネル再生処理は、親機から参加要求を受信することを条件に実行される処理である。なお、親機から参加要求を受信することをトリガーとして再生プログラムを実行するようにしてもよい。

【0064】

ステップＳ５２においては、問合せ画面をＬＣＤ１６に表示し、ユーザにより指示が入力されるまで待機する。制御部２１がステップＳ５２を実行することにより問合手段が構成される。問合せ画面は、ユーザにラジオ放送を再生するサウンドグループに参加するか否かを問合せるための画面であり、例えば、サウンドグループへの参加を要請するためのメッセージとして「この端末でマルチチャンネル音声出力を開始してもよいですか？」を含む。

【0065】

ステップＳ５３においては、参加指示を受け付けたか否かを判断する。制御部２１がステップＳ５３を実行することにより操作受付手段が構成される。ユーザが、操作部２５が有する操作キー１４のうち参加を指示するために予め割り当てられたキーを指示すれば、参加指示を受け付ける。参加指示を受け付けたならば処理をステップＳ５４に進めるが、そうでなければ処理を終了する。

【0066】

ステップＳ５４においては、現在の地図上の位置を示す位置情報を取得する。ＧＰＳセンサ２６が出力する位置情報を取得する。次のステップＳ５５においては、参加要求を送信してきた親機である携帯電話機１に無線ＬＡＮ回路２３を介して参加応答を送信する。制御部２１がステップＳ５５を実行することにより参加応答送信手段が構成される。参加応答は、ステップＳ５４において取得された位置情報と、携帯電話機１Ｂの装置情報とを含む。装置情報は、スピーカ数、スピーカの性能情報（ｄｂ）、スピーカがステレオかモノラルかを示すスピーカ構成、指向性調整可否等の情報を含む。

【0067】

そして、無線ＬＡＮ回路２３が親機である携帯電話機１から再生指示を受信するまで待機状態となり（ステップＳ５６でＮＯ）、再生指示を受信したならば処理をステップＳ５７に進める。次のステップＳ５７においては、受信された再生指示に従って、再生指示に含まれるチャンネルの音声を、再生指示に含まれるボリュームで再生する。具体的には、ＡＶデコーダ２９に、チューナ２４から入力される５．１チャンネルの音声信号のうちで再生指示に含まれるチャンネルの音声信号をＤ／Ａ変換させ、再生指示に含まれる音量に増幅させる。

【0068】

次のステップＳ５８においては、無線ＬＡＮ回路２３が親機である携帯電話機１から親機転換指示を受信したか否かを判断する。親機転換指示を受信したならば処理をステップＳ５９に進めるが、そうでなければ処理をステップＳ６１に進める。ステップＳ５９においては、親機転換指示と共に受信する配置マップに基づき、新たな配置マップを生成する。配置マップに含まれる親機である携帯電話機１を除いた残りの携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄを含む配置マップを生成する。

【0069】

そして、携帯電話機１Ｂを親機として機能させるために、親機処理を実行する（ステップＳ６０）。親機処理は、図３に示したステップＳ０７～ステップＳ１７に示した処理と同じ処理であり、ここでは説明を繰り返さない。

【0070】

ステップＳ６１においては、終了指示を受け付けたか否かを判断する。ユーザが、操作部２５が有する操作キー１４のうち終了を指示するために予め割り当てられたキーを指示すれば、終了指示を受け付ける。また、内蔵バッテリの電圧が低下した場合、内蔵バッテリの電圧を検出する検出センサから終了指示を受け付ける。終了指示を受け付けたならば処理をステップＳ６２に進めるが、そうでなければ処理をステップＳ５８に戻す。ステップＳ６２においては、親機に終了指示を送信する。そして、ラジオ放送の再生を終了し（ステップＳ６３）、処理を終了する。

【0071】

以上説明したように、本実施の形態における再生システム１００は、再生装置として携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄを含む。携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄのうち親端末である携帯電話機１において、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれの位置を示す位置情報が取得され、配置マップが生成される。そして、配置マップに基づいて、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれに５．１チャンネルのうちの１以上のチャンネルが割り当てられ、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれにおいて割り当てられた１以上のチャンネルの音声データが再生される。このため、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄが一度に複数のチャンネルを再生することができない場合であっても、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄで異なるチャンネルを分担して再生するので、５．１チャンネルの音を臨場感ある音で携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄで再生することができる。

【0072】

また、配置マップに基づいて、携帯電話機１，１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれに割り当てられた１以上のチャンネルの音声データそれぞれを再生する音量が決定され、決定された音量でチャンネルの音声データが再生されるので、５．１チャンネルの音をバランス

よく再生することができる。

【0073】

また、子端末である携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれは、親端末である携帯電話機１から参加要求を受信することに応じて、参加応答を送信するか否かをユーザに問合せ、参加応答を送信することを示す操作がユーザにより指示されることを条件に、参加応答を親端末である携帯電話機１に返信する。このため、ユーザによりサウンドグループに参加して音声データを再生するか否かが決定されるので、携帯電話機１Ａ，１Ｂ，１Ｃ，１Ｄそれぞれにおいてユーザの意に反して音声が再生されるのを防止することができる。

【0074】

なお、上述した実施の形態においては、再生システム１００について説明したが、図３に示したチャンネル割当処理または図６に示したチャンネル再生処理を実行するための再生制御方法またはその方法をコンピュータに実行させるための再生制御プログラムとして発明を捉えることができるのは言うまでもない。

【0075】

今回開示された実施の形態はすべての点で例示であって制限的なものではないと考えられるべきである。本発明の範囲は上記した説明ではなくて特許請求の範囲によって示され、特許請求の範囲と均等の意味および範囲内でのすべての変更が含まれることが意図される。

【0076】

＜付記＞

（１）　前記複数の再生装置の位置に基づいて、前記複数の再生装置それぞれに割り当てられた１以上のチャンネルの音声データそれぞれを再生する音量を決定する音量決定手段をさらに備え、

前記再生指示手段は、前記複数の再生装置それぞれに割り当てられた前記１以上のチャンネルを前記決定された音量で再生させる、請求項５に記載の再生制御装置。

（２）　前記再生指示手段は、前記複数の再生装置のうち自装置以外の１以上の他の再生装置それぞれに、該他の再生装置に割り当てられた前記１以上のチャンネルを再生させるための再生指示を送信する再生指示送信手段を含む、請求項５に記載の再生制御装置。

（３）　参加要求を送信する参加要求送信手段と、

前記参加要求の送信に応じて参加することを示す１以上の参加応答を受信することを条件に、前記受信された１以上の参加応答をそれぞれ送信してきた１以上の他の再生装置を含む前記複数の再生装置を決定するシステム構成手段を、さらに備えた請求項５に記載の再生制御装置。

【図面の簡単な説明】

【0077】

【図1】本発明の実施の形態の１つにおける再生システムの全体概要を示す図である。

【図2】携帯電話機の機能の一例を示す機能ブロック図である。

【図3】チャンネル割当処理の流れの一例を示すフローチャートである。

【図4】配置マップの一例を示す図である。

【図5】チャンネル割当パターンの一例を示す図である。

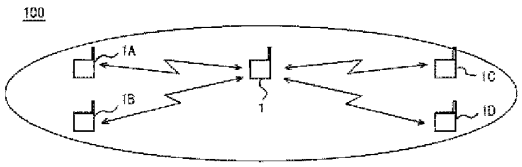
【図6】チャンネル再生処理の流れの一例を示すフローチャートである。

【符号の説明】

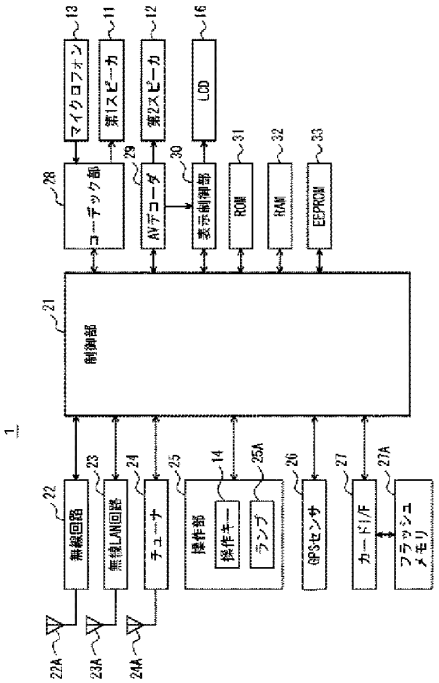
【0078】

１００　再生システム、１，１Ａ，１Ｂ，１Ｃ，１Ｄ　携帯電話機、１１　第１スピーカ、１２　第２スピーカ、１３　マイクロフォン、１４　操作キー、１６　ＬＣＤ１６、２１　制御部、２２　無線回路、２３　無線ＬＡＮ回路、２４　チューナ、２２Ａ，２３Ａ，２４Ａ　アンテナ、２５　操作部、２６　ＧＰＳセンサ、２７　カードＩ／Ｆ、２７Ａ　フラッシュメモリ、２８　コーデック部、２９　ＡＶデコーダ、３０　表示制御部。

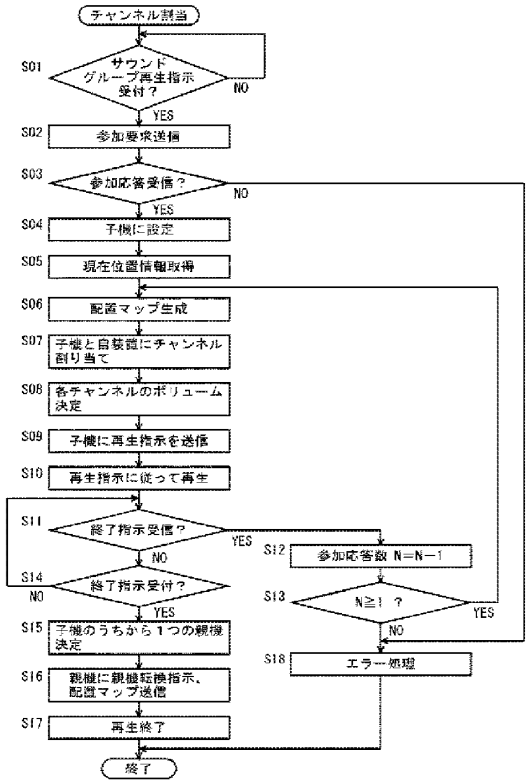
【図1】



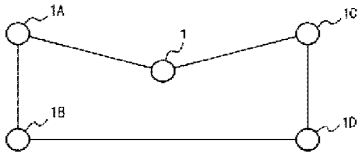
【図2】



【図3】



【図4】

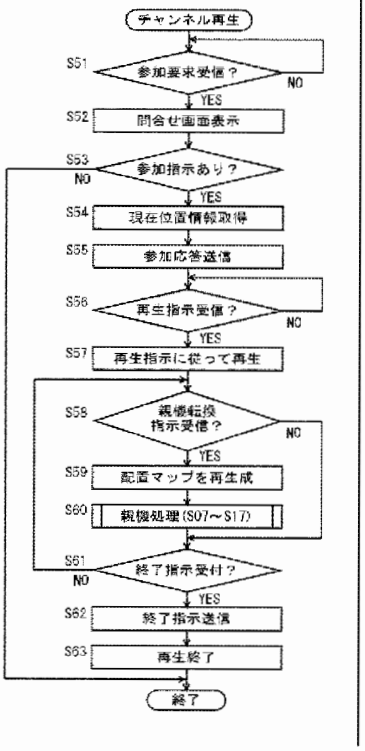


【図5】

割当パターン

台数	再生能力	チャンネル					
		中央	前左	前右	後左	後右	サブウーファー
6台	モノラル	○	○	○	○	○	○
5台	モノラル	○	○	○	○	○	－
4台	モノラル	－	○	○	○	○	－
3台	モノラル	○	○	○	－	－	－
2台	モノラル	－	○	○	－	－	－
2台	ステレオ	－	○	○	○	○	－
3台	ステレオ	○	○	○	○	○	－

【図6】


チャンネル再生
S51
参加要求受信？
NO
YES
S52
問合せ画面表示
S53
参加指示あり？
NO
YES
S54
現在位置情報取得
S55
参加応答送信
S56
再生指示受信？
NO
YES
S57
再生指示に従って再生
S58
親機転換
指示受信？
NO
YES
S59
配置マップを再生成
S60
親機処理(S07～S17)
S61
終了指示受付？
NO
YES
S62
終了指示送信
S63
再生終了
終了

Espacenet

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MOBILE WIRELESS COMMUNICATION TERMINALS, SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR PROVIDING A SONG PLAY LIST

Inventor(s):

Applicant(s):

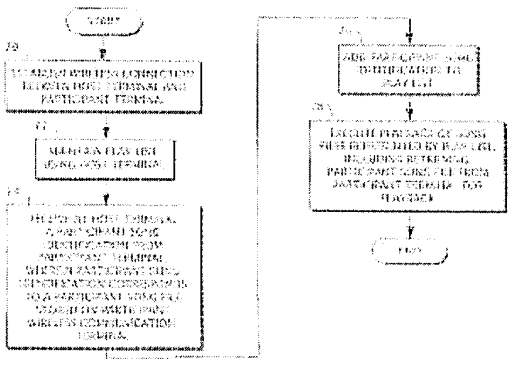
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A mobile wireless communication terminal includes a wireless communication module and a controller. The wireless communication module is configured to communicate with other communication terminals over a wireless interface. The controller is configured to establish a connection with a participant wireless communication terminal via the wireless communication module, to maintain a play list representing song files to be played, to receive a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal, to add the participant song identification to the play list, and to thereafter execute playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

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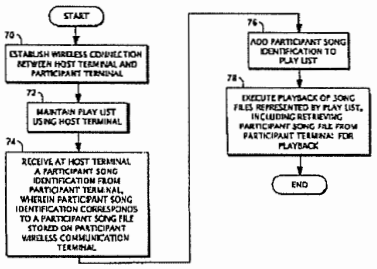
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(71)出願人　502087507
ソニー　エリクソン　モバイル　コミュニケーションズ，　エービー
スウェーデン，　エスー２２１　８８　ルンド，ニヤ　ワッテントルネット
(74)代理人　100076428
弁理士　大塚　康徳
(74)代理人　100112508
弁理士　高柳　司郎
(74)代理人　100115071
弁理士　大塚　康弘
(74)代理人　100116894
弁理士　木村　秀二

最終頁に続く

(54)【発明の名称】楽曲プレイリストを提供する移動無線通信端末、システム、方法およびコンピュータプログラム製品

(57)【要約】
無線通信端末は無線通信モジュール及びコントローラを含む。無線通信モジュールは他の通信端末と無線インタフェースを介して通信するように構成される。コントローラは、無線通信モジュールを介して参加無線通信端末とコネクションを確立し、再生すべき楽曲ファイルを示すプレイリストを保守し、参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを参加無線通信端末から受信し、参加楽曲ＩＤをプレイリストに加え、そしてその後、再生のために参加楽曲ファイルを参加無線通信端末からの読み出すことを含む、プレイリストで示される楽曲ファイルの再生を実行するように構成される。



【特許請求の範囲】
【請求項１】
移動無線通信端末であって、無線インタフェースを通じて他の複数の通信端末と通信するように構成された無線通信モジュールと、
前記無線通信モジュールを介して参加無線通信端末とコネクションを確立し、再生すべき楽曲ファイルを示すプレイリストを保守し、前記参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを前記参加無線通信端末から受信し、前記参加楽曲ＩＤを前記プレイリストに追加し、その後、再生のための前記参加楽曲ファイルの前記参加無線通信端末からの読み出しを含む、前記プレイリストで示される前記楽曲ファイルの再生を実行するように構成されたコントローラとを有することを特徴とする無線通信端末。
【請求項２】
前記コントローラが、前記無線通信モジュールを介して複数の参加無線通信端末とコネクションを確立し、前記複数の参加無線通信端末から、前記複数の参加無線通信端末の各々に保存されている個別の参加楽曲ファイルに対応する参加楽曲ＩＤを複数受信し、前記複数の参加楽曲ＩＤの各々をプレイリストに追加し、前記複数の参加無線通信端末の各々から、再生のために複数の前記参加楽曲ファイルを読み出すように構成されることを特徴とする請求項１記載の無線通信端末。
【請求項３】
前記コントローラが、前記参加無線通信端末からストリーミング音楽ファイルとして前記参加楽曲ファイルを読み出して実行するように構成されることを特徴とする請求項１又は請求項２記載の無線通信端末。
【請求項４】
前記コントローラが、前記参加楽曲ファイルを前記参加無線通信端末から読み出し、前記参加楽曲ファイルを前記無線通信端末に保存し、その後、前記保存した参加楽曲ファイルの再生を実行するように構成されることを特徴とする請求項１又は請求項２記載の無線通信端末。
【請求項５】
前記コントローラが、前記プレイリストで示される前記楽曲ファイルをメディアセンタで再生するために、再生信号を前記メディアセンタに送信するように構成されることを特徴とする請求項１乃至請求項４のいずれか１項に記載の無線通信端末。
【請求項６】
音響変換器をさらに含み、前記コントローラが、前記プレイリストで示される前記楽曲ファイルを前記音響変換器を用いて再生するように構成されることを特徴とする請求項１乃至請求項５のいずれか１項に記載の無線通信端末。
【請求項７】
前記コントローラが、前記プレイリストで示される前記楽曲ファイルを少なくとも１つの参加無線通信端末で再生するため、再生信号を少なくとも１つの参加無線通信端末に送信するように構成されることを特徴とする請求項１乃至請求項６のいずれか１項に記載の無線通信端末。
【請求項８】
前記コントローラが、前記参加無線通信端末に保存されている利用可能な楽曲ファイルを示す楽曲カタログリストを前記参加無線通信端末から受信し、前記利用可能な楽曲ファイルから選択するユーザ入力を受信し、前記選択された入手可能な楽曲ファイルを前記プレイリストに追加するように構成されることを特徴とする請求項１乃至請求項７のいずれか１項に記載の無線通信端末。
【請求項９】
前記コントローラが、前記プレイリストを前記参加無線通信端末で表示するため、前記プレイリストを表すリスト信号を前記参加無線通信端末に送信するように構成されることを特徴とする請求項１乃至請求項８のいずれか１項に記載の無線通信端末。

【請求項１０】
前記コントローラが、ユーザ入力に応じて前記プレイリストを変更するように構成されることを特徴とする請求項１乃至請求項９のいずれか１項に記載の無線通信端末。
【請求項１１】
前記無線通信モジュールが、他の複数の通信端末と直接ポイントツーポイント無線インタフェースを通じて通信するように構成されるとともに、
前記コントローラが、前記無線通信モジュールを介して前記参加無線通信端末との前記コネクションを確立し、前記参加無線通信端末から前記参加楽曲ＩＤを受信し、再生のために、前記参加楽曲ファイルの全てを前記直接ポイントツーポイント無線インタフェースを介して前記参加無線通信端末から読み出すように構成されることを特徴とする請求項１乃至請求項１０のいずれか１項に記載の無線通信端末。
【請求項１２】
前記無線通信モジュールが、短距離送信器を備えるとともに、
前記コントローラが、前記参加無線通信端末と前記コネクションを確立し、前記参加楽曲ＩＤを前記参加無線通信端末から受信し、再生のために、前記参加楽曲ファイルの全てを前記短距離送信器を介して前記参加無線通信端末から読み出すように構成されることを特徴とする請求項１乃至請求項１１のいずれか１項に記載の無線通信端末。
【請求項１３】
前記短距離送信器がブルートゥース送信器であることを特徴とする請求項１２記載の無線通信端末。
【請求項１４】
前記無線通信端末が、携帯電話機を含むことを特徴とする請求項１乃至請求項１３のいずれか１項に記載の無線通信端末。
【請求項１５】
楽曲プレイリストを提供するシステムであって、
ホスト移動無線通信端末と、
参加無線通信端末とを備え、
前記ホスト無線通信端末が、
無線インタフェースを通じて他の複数の通信端末と通信するように構成された無線通信モジュールと、
前記無線通信モジュールを介して前記参加無線通信端末とのコネクションを確立し、再生すべき楽曲ファイルを示すプレイリストを保守し、前記参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを前記参加無線通信端末から受信し、前記参加楽曲ＩＤを前記プレイリストに追加し、その後、再生のための前記参加楽曲ファイルの前記参加無線通信端末からの読み出しを含む、前記プレイリストで示される前記楽曲ファイルの再生を実行するように構成されたコントローラとを含むことを特徴とするシステム。
【請求項１６】
複数の参加無線通信端末を含み、前記コントローラが、前記無線通信モジュールを介して前記複数の参加無線通信端末の各々とコネクションを確立し、前記複数の参加無線通信端末から、前記複数の参加無線通信端末の各々に保存されている個別の参加楽曲ファイルに対応する参加楽曲ＩＤを複数受信し、前記複数の参加楽曲ＩＤの各々を前記プレイリストに追加し、前記複数の参加無線通信端末の各々から、再生のために複数の前記参加楽曲ファイルを読み出すように構成されることを特徴とする請求項１５記載のシステム。
【請求項１７】
ホスト無線通信端末を用いて楽曲プレイリストを提供するための方法であって、
前記ホスト無線通信端末と参加無線通信端末との間で無線コネクションを確立し、
再生すべき楽曲ファイルを示すプレイリストを前記ホスト無線通信端末を用いて保守し、
前記ホスト無線通信端末において、前記参加無線通信端末に保存されている参加楽曲フ

ァイルと対応する参加楽曲ＩＤを前記参加無線通信端末から受信し、
前記参加楽曲ＩＤを前記プレイリストに追加し、その後、
再生のために前記参加楽曲ファイルを前記参加無線通信端末から読み出すことを含む、前記プレイリストによって示される前記楽曲ファイルの再生を実行することを特徴とする方法。
【請求項１８】
ホスト無線通信端末を用いて楽曲プレイリストを提供するためのコンピュータプログラム製品であって、
コンピュータが利用可能なプログラムコードが埋め込まれたコンピュータが利用可能な媒体を含み、前記コンピュータが利用可能なプログラムコードが、
前記ホスト無線通信端末と参加無線通信端末との間で無線コネクションを確立するように構成されたコンピュータ利用可能なプログラムコードと、
再生すべき楽曲ファイルを示すプレイリストを前記ホスト無線通信端末を用いて保守するように構成されたコンピュータ利用可能なプログラムコードと、
前記ホスト無線通信端末において、前記参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを参加無線通信端末から受信するように構成されたコンピュータ利用可能なプログラムコードと、
前記参加楽曲ＩＤを前記プレイリストに追加するように構成されたコンピュータ利用可能なプログラムコードと、
その後、再生のために前記参加楽曲ファイルを前記参加無線通信端末から読み出すことを含み、前記プレイリストによって示される前記楽曲ファイルの再生を実行するように構成されたコンピュータ利用可能なプログラムコードとを含むことを特徴とするコンピュータプログラム製品。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は電子機器に関し、特には楽曲ファイル(song file)を再生するための電子機器、方法およびコンピュータプログラム製品に関する。
【背景技術】
【０００２】
無線通信端末（例えば携帯電話）のような移動電子機器は、楽曲ファイルの保存・再生に広く用いられている。ユーザは、ある楽曲を、メディアセンター（例えばＰＣやラップトップコンピュータ、テレビ、オーディオレシーバなど）のような他の装置や、他の無線通信端末で再生したいと思うかも知れない。これは、他の装置が適切な通信モジュール（内蔵モジュール又は補助（例えばプラグイン）モジュールであってよい）を備えていれば、ケーブル又は無線リンク（例えばブルートゥース接続）を介して、この他の装置に電子機器を接続することによって実現できるであろう。楽曲ファイルは、１つ又はそれより多い移動電子機器から１つ以上の再生装置へ、１つずつ送信されるであろう。
【発明の開示】
【０００３】
本発明の実施形態によれば、移動無線通信端末は無線通信モジュール及びコントローラを含む。無線通信モジュールは他の通信端末と無線インタフェースを介して通信するように構成される。コントローラは、無線通信モジュールを介して参加無線通信端末とコネクションを確立し、再生すべき楽曲ファイルを示すプレイリストを保守し、参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを参加無線通信端末から受信し、参加楽曲ＩＤをプレイリストに追加し、そしてその後、再生のために参加楽曲ファイルを参加無線通信端末から読み出すことを含む、プレイリストで示される楽曲ファイルの再生を実行するように構成される。
【０００４】
コントローラは複数の参加無線通信端末とコネクションを確立し、それぞれが個々の参

加無線通信端末に保存されている個々の参加楽曲ファイルと対応する複数の参加楽曲ＩＤを複数の参加無線通信端末から受信し、各参加楽曲ＩＤをプレイリストに追加し、各参加無線通信端末から、再生のために参加楽曲ファイルを読み出すように構成されても良い。

【０００５】

一実施形態によれば、コントローラは参加無線通信端末からストリーミング音楽ファイルとして参加楽曲ファイルを読み出し並びに実行するように構成される。

【０００６】

一実施形態によれば、コントローラは参加楽曲ファイルを参加無線通信端末から読み出し、参加楽曲ファイルを無線通信端末に保存し、その後、保存した参加楽曲ファイルの再生を実行するように構成される。

【０００７】

コントローラは、プレイリストで示される楽曲ファイルをメディアセンタで再生するため、再生信号をメディアセンタに送信するように構成されても良い。

【０００８】

一実施形態によれば、無線通信端末は音響変換器を含む。コントローラはプレイリストで示される楽曲ファイルを音響変換器を用いて再生するように構成される。

【０００９】

コントローラはプレイリストで示される楽曲ファイルを少なくとも１つの参加無線通信端末で再生するため、再生信号を少なくとも１つの参加無線通信端末に送信するように構成されても良い。

【００１０】

コントローラは、参加無線通信端末に保存されている利用可能な楽曲ファイルを示す楽曲カタログを参加無線通信端末から受信し、利用可能な楽曲ファイルから選択するユーザ入力を受信し、選択された入手可能な楽曲をプレイリストに加えるように構成されても良い。

【００１１】

一実施形態によれば、コントローラは参加無線通信端末に、参加無線通信端末上にプレイリストを表示するための、プレイリストを表すリスト信号を送信するように構成される。

【００１２】

コントローラはプレイリストをユーザ入力に応答して変更するように構成されても良い。

【００１３】

一実施形態によれば、無線通信モジュールは他の通信端末と直接ポイントツーポイント無線インタフェースを介して通信するように構成される。コントローラは参加無線通信端末とコネクションを確立し、参加楽曲ＩＤを参加無線通信端末から受信し、再生のために、参加楽曲ファイルの全てを直接ポイントツーポイント無線インタフェースを介して参加無線通信端末から読み出すように構成される。

【００１４】

一実施形態によれば、無線通信モジュールは短距離送信器を備える。コントローラは参加無線通信端末とコネクションを確立し、参加楽曲ＩＤを参加無線通信端末から受信し、再生のために、参加楽曲ファイルの全てを短距離送信器を介して参加無線通信端末から読み出すように構成される。短距離送信器はブルートゥース（商標）送信器であってよい。

【００１５】

無線通信端末は、携帯電話機を含みうる。

【００１６】

本発明の他の実施形態によれば、楽曲プレイリストを提供するシステムが、ホスト移動無線通信端末と、参加無線通信端末とを含む。ホスト無線通信端末は無線通信モジュール及びコントローラを含む。無線通信モジュールは他の通信端末と無線インタフェースを介して通信するように構成される。コントローラは、無線通信モジュールを介して参加無線

通信端末とコネクションを確立し、再生すべき楽曲ファイルを示すプレイリストを保守し、参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを参加無線通信端末から受信し、参加楽曲ＩＤをプレイリストに追加し、そしてその後、再生のための参加楽曲ファイルの参加無線通信端末からの読み出しを含む、プレイリストで示される楽曲ファイルの再生を実行するように構成される。

【００１７】

一実施形態によれば、システムは複数の参加無線通信端末を含む。コントローラは複数の参加無線通信端末の各々とコネクションを確立し、それぞれが個々の参加無線通信端末に保存されている個々の参加楽曲ファイルと対応する複数の参加楽曲ＩＤを複数の参加無線通信端末から受信し、各参加楽曲ＩＤをプレイリストに追加し、各参加無線通信端末から、再生のために参加楽曲ファイルを読み出すように構成される。

【００１８】

本発明の他の実施形態によれば、ホスト無線通信端末を用いて楽曲プレイリストを提供する方法が、以下のステップを含む。ホスト無線通信端末と参加無線通信端末との間で無線コネクションを確立し、再生すべき楽曲ファイルを示すプレイリストをホスト無線通信端末を用いて保守し、ホスト無線通信端末において、参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを参加無線通信端末から受信し、参加楽曲ＩＤをプレイリストに追加し、その後、再生のために参加楽曲ファイルを参加無線通信端末から読み出すことを含む、プレイリストによって示される楽曲ファイルの再生を実行する。

【００１９】

本発明の別の実施形態によれば、ホスト無線通信端末を用いて楽曲プレイリストを提供するコンピュータプログラム製品が、コンピュータが使用可能なプログラムコードが実装されたコンピュータ利用可能な媒体を含み、コンピュータが利用可能なプログラムコードが、ホスト無線通信端末と参加無線通信端末との間で無線コネクションを確立するように構成されたコンピュータ利用可能なプログラムコードと、再生すべき楽曲ファイルを示すプレイリストをホスト無線通信端末を用いて保守するように構成されたコンピュータ利用可能なプログラムコードと、ホスト無線通信端末において、参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを、参加無線通信端末から受信するように構成されたコンピュータ利用可能なプログラムコードと、参加楽曲ＩＤをプレイリストに追加するように構成されたコンピュータ利用可能なプログラムコードと、その後、再生のために参加楽曲ファイルを参加無線通信端末から読み出すことを含む、プレイリストによって示される楽曲ファイルの再生を実行するように構成されたコンピュータ利用可能なプログラムコード。

【００２０】

本技術分野に属する当業者は、本発明の別の特徴、利点及び詳細を、図面及び以下の好ましい実施形態の詳細な説明を読むことにより理解するであろう。しかしながら、以下の説明は本発明の単なる例証に過ぎない。

【発明を実施するための最良の形態】

【００２１】

以下、本発明の実施形態を示す添付図面を参照して、本発明をより詳細に説明する。しかしながら、本発明はここで説明する実施形態に限定解釈されるべきではない。むしろ、これら実施形態は本明細書の開示が十分且つ完全となるように、そして本発明の範囲を本技術分野の当業者に十分伝えるように提供されるものである。図面を通じて同様の数字は同様の要素を示す。

【００２２】

本明細書において、「備える」とは、非限定的な表現であり、記載された特徴、整数、要素、ステップ、部品又は機能の１つ又は複数を含むが、他の特徴、整数、要素、ステップ、部品、機能の１つ以上又はそれらのグループの存在や追加を排除しないものとして使用される。

【００２３】

本明細書において、「及び／又は」という語は、１つ又は複数の関連する記載項目の任意かつ全ての組み合わせを含むものとして使用される。

【００２４】

本明細書において、ラテン語の「例を挙げると」という句から派生した「例えば」という略語は、前に記載した項目の一般的な１つ以上の例を紹介又は特定するために用いられ、それら項目の限定を意図したものではない。また、本明細書でラテン語の「言い換えれば」という句から派生した「即ち」という一般的な略語が用いられた場合、より一般的な記載から、具体的な項目を特定するために用いられる。

【００２５】

本明細書における専門用語は、特定の実施形態の説明のみを目的としたものであり、本発明を限定する意図はない。本明細書において、そうでないことが明記されない限り、単数形の表記は複数形を含むことが意図されている。

【００２６】

逆の規定がない限り、本明細書で用いられる全ての語（技術用語、科学用語を含む）は、本発明が属する技術分野における当業者による通常の理解と同義である。一般的に用いられている辞書で規定されているような用語は、関連技術分野における意味と整合する意味を有するものとして解されるべきであり、明示的に規定される場合を除き、理想化された、又は過度に形式的な意味に解されない。

【００２７】

本明細書において、ある要素が他の要素と「結合」又は「接続」されていると表現される場合、その要素は他の要素と直接結合又は接続されていても良いし、介在要素が存在していても良い。一方、ある要素が他の要素と「直接結合」又は「直接接続」されていると表現される場合には、介在要素は存在しない。さらに、「結合」又は「接続」されているとの表現は、無線的に結合又は接続されている状態を含みうる。

【００２８】

周知の機能及び構成については、簡潔さ及び／又は明瞭さのためにその詳細について説明を省略する。

【００２９】

本発明は方法、電子機器、及び／又はコンピュータプログラム製品として実施されうる。従って、本発明は、ハードウェア及び／又はソフトウェア（ファームウェア、常駐ソフトウェア、マイクロコード等を含む）の形式で実施可能であり、これらは本明細書において「回路」又は「モジュール」と総称する。さらに、本発明は、命令実行システムによって、あるいは命令実行システムとともに用いるための、コンピュータ利用可能又はコンピュータ読み取り可能な記録媒体上のコンピュータプログラム製品であって、記録媒体に実装されたコンピュータ利用可能又はコンピュータ読み取り可能なプログラムコードを有するコンピュータプログラム製品の形態を取りうる。この文脈において、コンピュータ利用可能又はコンピュータ読み取り可能な媒体とは、命令実行システム、装置又はデバイスによって、あるいはそれらと共に用いるためのプログラムを格納、保存、通信、伝播、又は伝送可能な任意の媒体であって良い。

【００３０】

以下、本発明のいくつかの実施形態について、方法及び無線端末のブロック図及び／又は動作説明図を参照して説明する。この点に関し、各ブロックは、記載された１つ以上の論理的な動作を実現するための１つ以上の実行可能な命令を備えるモジュール、セグメント又はコード部分を表しうる。なお、ブロック図及び／又は動作説明図の各ブロック及び、ブロック図及び／又は動作説明図におけるブロックの組み合わせは、無線周波数、アナログ及び／又はデジタルハードウェア，及び／又はプログラム命令によって実施可能であることを理解されたい。これらプログラム命令は汎用コンピュータ、特定用途向けコンピュータ、ＡＳＩＣ、及び／又はプログラム可能な他のデータ処理装置の１つ以上を含みうるコントローラに与えられることができ、これらの命令は、コントローラ及び／又は他のプログラム可能なデータ処理装置を介して、ブロック図及び／又は１つ以上の動作ブロッ

クに記載される機能／動作を実行するための手段を生成する。ある代替実施形態において、複数のブロックに記載されている機能／動作は、動作説明図とは異なる順序に発生しうる。例えば、連続して記載された２つのブロックは、関連する機能／動作に応じ、実質的に同時に実行されたり、逆の順序で実行されたりすることがありうる。

【００３１】

コンピュータプログラム命令は、コンピュータ利用可能又はコンピュータ読み取り可能なメモリ内に格納され、コンピュータ利用可能又はコンピュータ読み取り可能なメモリに格納された命令が、フローチャート及び／又はブロック図の１つ以上のブロックに記載される機能を実行する命令を含む製品(article of manufacture)を生成するようにして、コンピュータ又は他のプログラム可能なデータ処理装置を、特定の方法で機能するように命令することができる。

【００３２】

コンピュータ利用可能又はコンピュータ読み取り可能な媒体を非限定的に例示すれば、電気、磁気、光学、電磁気、赤外線、又は半導体のシステム、装置、デバイス、又は伝播媒体であってよい。コンピュータ読み取り可能な媒体のより具体的な例（限定的なリスト）は、以下の物を含む。ハードディスク、光学式記憶装置、インターネット又はイントラネットをサポートするような伝送媒体、磁気記憶装置、１つ以上の配線を有する電気的な接続、ポータブルコンピュータディスケット、ランダムアクセスメモリ（ＲＡＭ）、読み出し専用メモリ（ＲＯＭ）、消去可能なプログラマブル読み出し専用メモリ（ＥＰＲＯＭ又はフラッシュメモリ）、光ファイバ、コンパクトディスク読み出し専用メモリ（ＣＤ－ＲＯＭ）。

【００３３】

本発明の動作を実行するためのコンピュータプログラムコードは、Java（登録商標）、Smalltalk又はC++のようなオブジェクト指向プログラミング言語で記述することができる。しかし、本発明の動作を実行するためのコンピュータプログラムコードは、プログラミング言語Ｃ及び／又はより低レベルなアセンブラ言語のような、従前からある手続き型プログラミング言語によっても記述可能である。任意又は全てのプログラムモジュールの機能が、個別のハードウェア要素、１つ以上の特定用途向け集積回路(ASIC)、又はプログラミングされたデジタルシグナルプロセッサ又はマイクロコントローラを用いても実施可能であることもまた理解されよう。

【００３４】

本明細書において「電子部品」とは、電気コネクタなどの受動素子とは対照的に、能動素子を意味するものとして用いられる。電子部品はプロセッサを含みうる。

【００３５】

本明細書において「ストリーミングされた」又は「ストリーミング」は、音声又は楽曲ファイルのようなファイルが、デジタル信号によって受信装置に連続的に送信され、受信装置において、適切な受信アプリケーションを通じ、音声又は楽曲ファイルが同時再生されることを意味するものとして用いられる。デジタル信号は通常バッファされる。

【００３６】

本明細書における「通信端末」は、公衆交換電話網(PSTN)、デジタル加入者線(DSL)、デジタルケーブル又は他のデータ接続／ネットワークのような有線接続、及び／又は無線インタフェースを介して、例えばセルラネットワーク、衛星ネットワーク、無線ローカルエリアネットワーク(WLAN)及び／又は他の通信端末と通信信号を送受信するように構成された端末を含むが、それに限定されない。

【００３７】

通信端末が無線インタフェースを通じて通信するように構成される場合、本明細書では、「無線通信端末」又は「無線端末」と呼ぶ。無線端末の非限定的な例としては、携帯電話機、携帯情報端末(PDA)、ポケットベル、及び／又は、無線通信インタフェースを通じてデータ通信するように構成されたコンピュータを含む。無線通信インタフェースは、セルラ電話機インタフェース、ブルートゥースインタフェース、無線ローカルエリアネット

ワークインタフェース（例えば802.11）、他のＲＦ通信インタフェース及び／又は光学／赤外線通信インタフェースを含みうる。

【００３８】

本明細書において「移動端末」は、携帯型、可搬型、（航空、海上、陸上）車両設置型であっても、地球上及び／又は宇宙の任意の１つ以上の場所で局所的及び／又は分散的に動作するように設置及び／又は構成されてもよい。

【００３９】

本発明の実施形態を、図１～図６に関して以下説明する。本発明の実施形態は、他の無線通信端末からの１つ又はそれより多い楽曲識別情報(ID)を含む楽曲プレイリストを提供可能な移動無線通信端末を提供する。

【００４０】

図１は、本発明の一実施形態に係る例示的な無線通信端末１０Ａを示す図である。無線端末１０Ａは、１つ又はそれより多い他の無線端末と、相互間の直接無線通信インタフェース、１つ又はそれより多いセルラ基地局を通じた別の無線通信インタフェース及び／又は無線ローカルエリアネットワーク(WLAN)ルータを通じた別の無線通信インタフェースを通じてデータを通信するように構成される。無線端末１０Ａは、図１に示すように、無線電話通信システム２の一部を形成する移動無線電話機であってよい。システム２は移動無線通信端末１０Ａ及び、無線通信ネットワーク５の一部である基地局送受信器を含む。本発明の一実施形態において、ネットワーク５は、セルラネットワークにおける個々のセルを規定するとともに、無線リンクプロトコルを用いて（インタフェース７を介して）移動端末１０Ａ及び、セル内の他の移動端末と通信する１つ以上の無線送受信器を含む基地局送受信器を含む。本発明の一実施形態において、無線通信ネットワーク５を規定するため、多数の基地局送受信器が例えば移動交換局や他の装置を介して接続されていても良いことが理解されよう。

【００４１】

図示した実施形態において、移動端末１０Ａは、携帯型筐体アセンブリ１２、ディスプレイ２０、スピーカ２４（すなわち音響変換器）を含むユーザインタフェース２２（すなわち、マンマシーンインタフェース(MMI)）、コントローラ３０、通信モジュール３２、及びメモリ３４を含んでいる。移動端末１０Ａの上述した構成要素は、おそらく多くの一般的な移動端末に含まれており、その機能については本技術分野に属する当業者に広く知られている。移動端末１０Ａはさらに、メモリ３４に格納されてもよい楽曲管理モジュール４０を含む。

【００４２】

ディスプレイ２０は任意の適切な表示画面アセンブリであってよい。例えば、表示画面２８は外部光源（例えば発光パネル）を有する、又は有さない液晶ディスプレイ(LCD)であってよい。

【００４３】

ユーザインタフェース２２は例えば、接触活性型又は接触関知型デバイス（例えばタッチスクリーン）、ジョイスティック、キーボード／キーパッド、ダイアル、（１つ以上の）方向キー、及び／又はポインティングデバイス（マウス、トラックボール、タッチパッドなど）を含む、任意の適切な（１つ以上の）入力デバイスを含みうる。スピーカ２４は入力音声信号に応じた音声を生成する。ユーザインタフェース２２はさらに、マイクへの入力音声に応じて音声データストリームを生成するように構成された音声プロセッサと接続されるマイクを含んでも良い。

【００４４】

コントローラ３０は移動端末１０Ａの様々な機能をサポートしうる。コントローラ３０は、例えば、任意の市販又はカスタムマイクロプロセッサであってよい。使用時、移動端末１０Ａのコントローラ３０は、ディスプレイ２０上に表示画像を生成する。

【００４５】

メモリ３４はデジタル音声信号及び／又はデジタル音声ファイルのような、デジタル情

報信号及びデータを格納するように構成される。

【００４６】

通信モジュール３２は、ここで説明するように、１つ又はそれより多い無線インタフェース（例えば、本明細書における無線インタフェース７，１１２，１１４，１１６，１２２，及び１３４（図１及び図３参照））を通じて、他のリモート無線端末とデータを通信するように構成される。通信モジュール３２は、セルラ通信モジュール、直接ポイントツーポイント接続モジュール、及び／又はＷＬＡＮモジュールを含むことができる。

【００４７】

セルラ通信モジュールにより、無線端末１０Ａはネットワーク５の（１つ以上の）基地局を介して、（例えば、AMPS(Advanced Mobile Phone Service)、ANSI-136, GSM (Global Standard for Mobile communication), GPRS (General Packet Radio Service), EDGE (enhanced data rates for GSM evolution), 符号分割多元アクセス(CDMA), 広帯域CDMA, CDMA2000, UMTS (Universal Mobile Telecommunications System)のような）１つ又はそれより多いセルラ通信プロトコルを用いて通信することができる。セルラ基地局は移動電話交換局(MTSO)無線ネットワークに接続されうる。そして、さらにその先で、PSTN及び／又は他のネットワークにも接続されうる。

【００４８】

直接ポイントツーポイント接続モジュールは、直接ＲＦ通信モジュール又は直接ＩＲ通信モジュールを含みうる。直接ＲＦ通信モジュールは、ブルートゥースモジュールを含みうる。ブルートゥースモジュールを用いることで、無線端末１０Ａは直接ポイントツーポイントインタフェースを通じ、アドホックネットワークを介した通信が可能である。

【００４９】

ＷＬＡＮモジュールにより、無線端末１０Ａは、（802.11a, 802.11b, 802.11e, 802.11g及び／又は802.11iを非限定的な例示として含みうる）通信プロトコルを用い、ＷＬＡＮ（例えばルータ（図３））を通じて通信可能である。

【００５０】

一般に、通信モジュール３２は、送信器回路及び受信器回路を有する送受信器を含むことができる。送信器回路及び受信器回路はそれぞれ、アンテナを介し、音声及びデータ信号の様な（例えばネットワーク５、ルータ又は直接他の端末へ向かう）出方向無線周波数信号を送信し、（例えばネットワーク５、ルータ又は直接他の端末から到来する）入来無線周波数信号を受信する。通信モジュール３２はブルートゥース送信器及び受信器のような、短距離送信器及び受信器を含んでも良い。アンテナは本発明の範囲内において、埋め込みアンテナ、リトラクタブルアンテナ又は本技術分野に属する当業者に知られる任意のアンテナであってよい。移動端末１０Ａとネットワーク５、ルータ又は他の端末との間で伝送される無線周波数信号は、トラフィック信号及び制御信号（例えば、入来呼用の呼び出し信号／メッセージ）の両方を含みうる。これらの信号は通話先や送信先との通信を確立したり維持したりするのに用いられる。無線周波数信号はさらに、例えばセルラデジタルパケットデータ(CDPD)情報のような、パケットデータ情報を含みうる。加えて、送受信器は、IRポートを介して赤外線信号を他の電子機器との間で送受信するように構成される赤外線(IR)送受信器を含みうる。

【００５１】

移動端末１０Ａはまた、他の端末との間でデジタル通信信号を伝送するための有線又はケーブルを介して他の端末と電気的に接続されても良い。移動端末１０Ａは、入射光に基づいて静止画及び／又は動画データストリームを生成する様に構成されたカメラデバイスのような他の構成要素を含みうる。

【００５２】

一実施形態によれば、移動端末１０Ａはハンドヘルド移動端末である。「ハンドヘルド移動端末」とは、一般の操作者が片手で使うのに適した大きさを有する移動端末を意味する。一実施形態によれば、ハンドヘルド移動端末１０Ａの総容積は約２００ｃｃ未満である。一実施形態によれば、ハンドヘルド移動端末１０Ａの総容積は約１００ｃｃ未満であ

る。一実施形態によれば、ハンドヘルド移動端末１０Ａの総容積は約５０ｃｃから１００ｃｃである。一実施形態によれば、ハンドヘルド移動端末１０Ａのいかなる外形寸法も２００ｍｍを超えない。

【００５３】

本発明の一実施形態に係る無線通信端末（例えば移動端末１０Ａ）を用いて楽曲プレイリストを提供する方法について、図２のフローチャートを参照して説明する。図２の実施形態を参照すると、方法は、ホスト無線通信端末と参加無線通信端末との間で無線コネクションを確立する工程を含む（ブロック７０）。プレイリストはホスト無線通信端末を用いて保守される（ブロック７２）。プレイリストは再生すべき楽曲ファイルを示している。参加無線通信端末からの参加楽曲ＩＤが、ホスト無線通信端末で受信される（ブロック７４）。参加楽曲ＩＤは、参加無線通信端末に保存されている参加楽曲ファイルと対応するか、参加楽曲ファイルを指定する。参加楽曲ＩＤはプレイリストに加えられる（ブロック７６）。その後、プレイリストで示される楽曲ファイルの再生が実行される（ブロック７８）。楽曲ファイルの再生の実行は、参加無線通信端末からの参加楽曲ファイルの読み出しを含む。

【００５４】

一実施形態によれば、ホスト無線通信端末と複数の参加無線通信端末と複数のコネクションが確立され、ホスト無線通信端末は複数の参加無線通信端末から複数の参加楽曲ＩＤを受信し、複数の参加楽曲ＩＤの各々をプレイリストに追加し、再生のために参加楽曲ファイルを複数の参加無線通信端末の各々から読み出す。一実施形態によれば、ホスト無線通信端末と参加無線通信端末との間のコネクションは、ブルートゥース無線ＲＦコネクションのような直接ポイントツーポイントインタフェースによって達成される。一実施形態によれば、ホスト無線通信端末と参加無線通信端末との間の通信は、ＷＬＡＮ又はセルラ方式のシステムのような間接インタフェースを介して達成される。本発明の他の見地及び実施形態は、以下に記載する他の実施形態の説明から明らかになるであろう。

【００５５】

図３に、本発明の実施形態に係る楽曲ファイル再生システム１００Ａを示す。システム１００Ａは、移動無線通信端末１０Ａ（「ホスト無線通信端末」又は「ホスト端末」とも呼ぶ）と、付加的な複数の参加無線通信端末１０Ｂ，１０Ｃ，１０Ｄ及び１０Ｅ（「参加無線通信端末」又は「参加端末」とも呼ぶ）と、メディアセンター１３０とを含む。

【００５６】

端末１０Ｂ－Ｅは、端末１０Ａに関して上述したような構成を有していても良い。端末１０Ｂ－Ｅの各々は、無線通信モジュール３２及び楽曲管理モジュール４０を含んでいる。しかし、個々の楽曲管理モジュールは、対象とする装置の機能に応じ、個々の端末１０Ａ－Ｅについて構成が異なっていても良い。一実施形態によれば、端末１０Ｂ－Ｅの全て又は一部は移動無線通信端末である。一実施形態によれば、端末１０Ａ－Ｅの全て又は一部はハンドヘルド移動無線通信端末である。

【００５７】

メディアセンター１３０は、音声信号（例えばデジタル音声信号）を対応する音声に変換するように構成された装置を含む。メディアセンター１３０は、例えば、ＰＣ又はラップトップ、テレビジョン受像機、オーディオレシーバ、ステレオ装置などを含みうる。図示のメディアセンター１３０は無線通信モジュール１３２及び複数の音声変換器（スピーカ）１３６を含んでいる。無線通信モジュール１３２はメディアセンター１３０と一体化されていても、スウェーデンのソニーエリクソン社から入手可能なBluetooth Media Viewer MMV-100モジュール又はBluetooth Media Viewer MMV-200のような、補助又はプラグイン無線通信モジュールであってもよい。

【００５８】

以下、システム１００Ａの使用例に関して説明する。集まった一群のユーザは、各々が端末１０Ａ－Ｅの１つを有している。様々な楽曲が、端末１０Ａ－Ｅの１つ又はそれより多く（通常２つ以上）に保存されている。ユーザは、自分たちの移動端末に保存された楽

曲をメディアセンター１３０で再生し、集まったユーザ同士で共有したいと思うだろう。これは各ユーザに（ブルートゥース等を介して）自分の所有する楽曲（すなわち、音楽オーディオファイル）を、メディアセンター１３０へ、１つずつ、一曲毎に送信させることで、既知かつ利用可能な技術により実現可能である。しかし、この方法は楽曲を送信するユーザ各々に、かなりの、かつ積極的なインタラクションを要求とする。そのような関与は、状況（例えばパーティ）によっては不便であったり及び／又は実現できないかもしれない。

【００５９】

本発明の実施形態によれば、ホスト端末１０Ａを用いて、楽曲のプレイリストを生成及び保守し、楽曲（すなわち音楽オーディオファイル）の再生を実行することによりこのような問題を解決することができる。通常、各端末１０Ａ－Ｅには、適切な楽曲管理モジュール４０（例えば、ソフトウェア又はファームウェアアプリケーション）がインストールされている。

【００６０】

ホスト端末１０Ａは、マスター又はホスト端末として選択され、参加端末１０Ｂ－Ｅはそれぞれスレーブ又は参加端末として指定される。ホスト端末１０Ａのコントローラ３０は、参加端末１０Ｂ－Ｅの各々と無線コネクションを確立する（すなわち、通信可能に接続する）。一実施形態によれば、無線コネクションは直接無線通信インタフェースコネクションであり、一実施形態によれば、直接ＲＦコネクションであって、また一実施形態によればブルートゥースコネクションである。コネクションは既知の方法によって確立されて良い。例えば、ブルートゥースコネクションの場合、参加（スレーブ）端末１０Ｂ－Ｅが探索可能／発見可能状態に設定され、ホスト（マスター）端末１０Ａが、ピコネット又はパーソナルエリアネットワークを形成するため、利用可能な参加（スレーブ）端末１０Ｂ－Ｅを特定するための問い合わせを発するであろう。

【００６１】

図示の通り、ホスト端末１０Ａは、参加端末１０Ｂ，１０Ｃ及び１０Ｄと、直接ポイントツーポイント無線インタフェース又はリンク１１２，１１４及び１１６を介してそれぞれ通信し、参加端末１０ＥとはＷＬＡＮルータ１２０を通じて無線インタフェース又はリンク１１８，１２２を介して通信する。一実施形態によれば、インタフェースは直接（例えばブルートゥース）又は間接（例えばＷＬＡＮルータ又はセルラネットワーク５を介する）無線インタフェースの様々な組み合わせであって良いことは明らかであろう。予定される一実施形態によれば、楽曲共有手順の実行のためにホスト端末１０Ａ及び参加端末１０Ｂ－Ｅとの間に与えられる全ての信号は、直接ポイントツーポイント無線インタフェースを介して与えられる。予定される一実施形態によれば、楽曲共有手順の実行のためにホスト端末１０Ａ及び参加端末との間に与えられる全ての信号は、ブルートゥースインタフェースのような直接無線周波数（ＲＦ）インタフェースを介して与えられる。

【００６２】

コネクションの確立前又は確立後、ホスト端末１０Ａは有効な参加端末を任意の好適な方法により特定し、指定する。一実施形態によれば、ホスト端末１０Ａは可能性のある参加端末（例えば、ホスト端末のブルートゥース信号の到達範囲内に存在する参加端末）の全てもしくは選択されたグループに対し、ポーリングするか、インビテーションを送信する。そして、可能性のある参加端末は、インビテーションの承認によって応答することで、選択(opt in)しても良いあるいは、又はそれに加えて、ホスト端末１０Ａは、参加端末からの自発的な参加要求を受け付けても良い。ホスト端末１０Ａは参加が許可されるであろう可能性のある参加端末（すなわち、プレイリストへ寄与する楽曲）のリストのような、特定のグループを規定するために用いられても良い。

【００６３】

ホスト端末１０Ａはさらに、無線インタフェース又はリンク１３４を介して通信モジュール１３２に無線楽曲データ信号を供給するため、メディアセンター１３０とも通信可能に接続されている。あるいは、ホスト端末１０Ａは、有線又は信号ケーブルを用いてメデ

ィアセンター１３０と接続されても良い。

【００６４】

ホスト端末１０Ａと参加端末１０Ｂ－Ｅとの間でコネクションが確立されると、各参加端末は、参加者の端末１０Ｂ－Ｅに保存されている楽曲を指定する参加楽曲ＩＤを送信可能となる。送信元参加端末１０Ｂ－Ｅの楽曲管理モジュール４０は楽曲ＩＤの選択及び送信を容易にするためのユーザインタフェースを提供することができる。例えば、モジュール４０は利用可能な保存楽曲とホスト端末１０Ａに送信する（１曲以上の）楽曲を選択するためのチェックボックスのリストを生成してもよい。

【００６５】

ホスト端末１０Ａは、参加端末１０Ｂ－Ｅから参加楽曲ＩＤを受信する。ホスト端末１０Ａの楽曲管理モジュール４０は、これら楽曲ＩＤのホストプレイリストを生成並びに保守する。ホストプレイリストは再生すべき楽曲ファイルを示す。

【００６６】

各楽曲管理モジュール４０は、関連する端末１０Ａ－Ｅ上に図４に示すような表示１５０を行う。ホスト端末１０Ａでの表示は、参加端末１０Ｂ－Ｅの表示とは異なっていて良い。例えば、表示１５０のうち、管理機能に関する部分は、参加端末の表示から省かれていて良い。あるいは、楽曲管理モジュール４０は参加端末１０Ｂ－Ｅには表示を行わなくても良い。

【００６７】

図示の実施形態において、表示１５０はプレイリストフィールド１５２及びコントロールボタン１５４（例えばソフトキー）を含んでいる。制御ボタン１５４は通常、ホスト端末表示にのみ表示されるであろう。プレイリスト１５６はプレイリストフィールド１５２に表示される。プレイリスト１５６は一列ずつ並んだ複数の楽曲ＩＤ１５６Ａを含み、楽曲ＩＤ１５６Ａの各々は個々の楽曲ファイルに対応する。図示の通り、各楽曲ＩＤは、関連づけられた楽曲ファイルに対応した曲アーティスト、曲名及び曲再生時間と、その楽曲ＩＤを送信した参加者のＩＤを含んでいる。なお、図示したより多くの、少ない及び／又は別の情報を同様に提供しうることが理解されよう。

【００６８】

ホストは楽曲リスト１５６で示される楽曲の再生を、例えばコントロールボタン１５４を用いて選択的に管理してもよい。例えば、「再生」及び「停止」ボタンはメディアセンター１３０への楽曲ファイルの送信を開始及び停止するために用いることができる。「移動」ボタンは、プレイリスト１５６中の楽曲ＩＤ１５６Ａに優先度を与えたり、順序を変更したりする（すなわち、関連付けられた楽曲ファイルの再生順序を変更する）ために用いることができる。「削除」ボタンはプレイリスト１５６からある楽曲ＩＤ１５６Ａを削除するために用いることができる。「詳細」ボタンは、関連付けされた楽曲ファイルが再生されないように、プレイリスト１５６から楽曲ＩＤ１５６Ａを削除するために用いることができる。「ランダムミックス」ボタンは、ホスト端末１０Ａに、楽曲ファイルの再生をランダム又は他の不連続な順序で実行させる（メディアセンター１３０へ楽曲ファイルを送信させる）ために用いることができる。通常、ホスト端末１０Ａはランダム又は他の不連続な順序モードが有効でない限り、リストされた順序で楽曲ファイルの再生を実行する。

【００６９】

さらに他の機能が提供されても良い。例えば、ホスト端末１０Ａは、選択された１つ又はそれより多い属性（例えば、提供者、曲の長さ、など）に従って、楽曲ＩＤの順序を変更することをユーザに許可しても良い。ホスト端末１０Ａは、参加端末１０Ｂ－Ｅのうち、楽曲ＩＤをプレイリスト１５６に追加することを許可される端末を指定するように構成されても良い。参加端末１０Ｂ－Ｅは、楽曲ＩＤの追加に加え、楽曲リスト１５６の編集又は変更を許可されても良い。この場合、ホスト端末１０Ａは、参加端末１０Ｂ－Ｅのうち、楽曲プレイリスト１５６の変更を許可されるものと、許可されないものとを（すなわち、参加端末のプレイリスト編集機能を有効にするか、無効にするかを）ホストが選択可

能なように構成されても良い。

【００７０】

ホスト端末１０Ａが再生モードの時、ホスト端末１０Ａのコントローラ３０は、後で再生すべき楽曲ＩＤ１５６Ａを特定する。特定された楽曲ＩＤは、次に再生すべき楽曲ＩＤかもしれない。すると、ホスト端末１０Ａは、楽曲ＩＤに対応する楽曲ファイルを読み出すため、楽曲ファイル要求を対応する参加端末１０Ｂ－Ｅに送信する。

【００７１】

対応する参加端末は、特定された楽曲ファイル（その参加端末に保存されている）のコピーをホスト端末１０Ａへ送信する。一実施形態によれば、参加端末が楽曲ファイルをホスト端末１０Ａに楽曲ファイルのコピーとして送信すると、ホスト端末１０Ａは楽曲ファイルのコピーを一時的に（例えばメモリ３４に）保存する。他の実施形態によれば、参加端末は楽曲ファイルをストリーミング楽曲ファイルとしてホスト端末１０Ａに送信する。一実施形態によれば、ホスト端末と参加端末との間の要求及び楽曲ファイル信号は無線で送信され、一実施形態によれば、ブルートゥースのような直接無線ＲＦコネクションを介して送信される。

【００７２】

ホスト端末１０Ａのコントローラ３０は、読み出した楽曲ファイルをメディアセンター１３０へ送信することによって、再生を実行する。楽曲ファイルは再生のためにメディアセンター１３０に保存されてもよい。あるいは、例えば楽曲ファイルの保存元の参加端末からホスト端末１０Ａに楽曲ファイルがストリーミングされたように、楽曲ファイルはメディアセンター１３０にストリーミングされてもよい。ホスト端末１０Ａに割り当てられたメモリ容量が不十分な場合及び／又は楽曲ファイルをホスト端末１０Ａに保存することが禁止されているか違法である場合には、楽曲ファイルを参加端末からホスト端末へ、及び／又はホスト端末からメディアセンター１３０へストリーミングすることが好ましいか、必要となるであろう。一実施形態によれば、楽曲ファイルは、ストリーミングされる場合も、全体が保存される場合も、再生中もしくは再生後にホスト端末１０Ａから自動的に（すなわち、ユーザの介入無しに）消去される。

【００７３】

ホスト端末１０Ａのコントローラ３０は、上述のステップを、楽曲ＩＤ１５６Ａの各々について、順番に、かつ自動的に（すなわち、ユーザの介入無しに）実行することができる。ホスト端末１０Ａがこのようにして楽曲リスト１５６を全体について処理したら、ホストはプレイリスト１５６を好きなように変更することができる。また、一実施形態によれば、参加端末１０Ｂ－Ｅは、ホスト端末１０Ａのコントローラ３０がプレイリスト１５６の処理を終えたら、新たな楽曲ＩＤを楽曲リスト１５６に追加することができる。一実施形態によれば、ホスト端末１０Ａがプレイリスト１５６の処理を終えたら、新たな参加端末がグループに加入し、楽曲ＩＤを送信することが可能になる。

【００７４】

システム１００Ａは、人々のグループによって選択された楽曲を再生するための便利で楽しい仕組みを提供することができる。システム１００Ａは再生実行機能を提供するとともに、ホスト端末（場合によっては参加端末）が、楽曲プレイリストの生成、調整、制御及び／又は管理を行うことを可能にする。実際には、例えば、パーティの参加者は、自分の参加端末からホスト端末（例えばパーティホストの移動端末）で保守されている楽曲プレイリストに楽曲を追加することができる。自分の所有する楽曲が再生される順番になると、楽曲ファイルのコピーが自動的にホスト端末に送信され、再生される。そのため、パーティの参加者は、曲を追加した後は何もする必要がない。一実施形態によれば、直接無線コネクション（例えばブルートゥースコネクションのようなＲＦインタフェース）を介してホスト端末と参加端末との間で要求及び楽曲転送信号が通信される場合、パーティの参加者は自分の参加端末を、ポケットやハンドバッグに入れておくだけでよい。参加者は、手順が実行されている間に追加もしくは除去されてもよい。例えば、参加者がブルートゥースの接続範囲から出た場合、その参加者の楽曲はプレイリストから削除されるか、プ

レイリスト中で下に移動される。

【００７５】

図５は、本発明の別の実施形態に係るシステム１００Ｂを示す図である。システム１００Ｂは、ホスト端末１０Ａと、複数の参加端末１０Ｂ－Ｅを含んでいる。システム１００Ｂは、メディアセンター１３０が無く、楽曲プレイリスト１５６からの楽曲ファイルの再生がホスト端末１０Ａのスピーカ２４を介して実行される点において、システム１００Ａ（図２）と異なる。

【００７６】

図６は、本発明の別の実施形態に係るシステム１００Ｃを示す図である。システム１００Ｃは、ホスト端末１０Ａと、複数の参加端末１０Ｂ－Ｅを含んでいる。システム１００Ｃは、楽曲プレイリスト１５６からの楽曲ファイルの再生がホスト端末１０Ａのスピーカ２４を介して実行されることに加え、複数の参加端末１０Ｂ－Ｅの各々のスピーカ及び／又は複数の参加端末１０Ｂ－Ｅに動作可能に接続された１つ又はそれより多いヘッドセット（例えばインナーイヤー型ステレオヘッドセット）を通じて実行される点において、システム１００Ｂ（図５）と異なる。より具体的には、ホスト端末１０Ａのコントローラ３０は上述した方法で各楽曲ファイルを再生し、さらにその楽曲ファイルを同時再生のために参加端末１０Ｂ－Ｅに送信する。従って、ホスト端末１０Ａは、参加端末１０Ｂ－Ｅからの楽曲ＩＤを含みうる楽曲プレイリストを生成及び保守し、楽曲ファイルのコピーを必要に応じて適切な参加端末１０Ｂ－Ｅから読み出し、その楽曲ファイルのコピーを再生のために参加端末１０Ｂ－Ｅに配信する。一実施形態によれば、ホスト端末１０Ａから参加端末１０Ｂ－Ｅへ送信される楽曲転送信号は無線で送信され、一実施形態によれば、ブルートゥースのような直接無線ＲＦコネクションを介して送信される。一実施形態によれば、楽曲ファイルは、参加端末１０Ｂ－Ｅへストリーミングされる。ホスト端末１０Ａは、参加端末１０Ｂ－Ｅのうち、再生信号を受信するもの及び、プレイリスト１５６に楽曲ＩＤを追加することを許可するものをホストが指定可能なように構成されても良い。なお、再生信号を受信する参加端末のグループと、プレイリスト１５６に楽曲ＩＤを追加することを許可する参加端末のグループとは異なっていても良い。

【００７７】

ホスト端末１０Ａは、上述した様々なオプションから、再生のための装置または装置の組み合わせを選択的に選べるように構成されても良い。例えば、ホスト端末１０Ａは、再生を、自身のスピーカ２４を通じてのみ、自身のスピーカ及び参加端末１０Ｂ－Ｅのスピーカを通じて、参加端末１０Ｂ－Ｅのスピーカ及びメディアセンター１３０を通じて、等で行うように構成されても良い。楽曲ファイルが参加端末１０Ｂ－Ｅのスピーカを通じて再生される場合、これら参加端末の所与の１つのユーザは、自身の端末のスピーカを無効にしたり及び／又は他の装置（例えば、関連付けられた他のメディアセンターなど）で再生するために楽曲ファイルを中継したりしてもよい。

【００７８】

別の実施形態によれば、ホスト端末１０Ａのコントローラ３０は、ある参加端末に対して楽曲カタログリストを要求したり及び／又は自発的な楽曲カタログリストを受け付けたりしても良い。楽曲カタログリストは、その参加端末上の各楽曲ファイルを示す楽曲ＩＤ又は、その参加端末が利用可能することを希望する全ての楽曲についての楽曲ＩＤを含む。ホスト端末１０Ａはその後、プレイリストに追加したいと思う楽曲カタログリストの楽曲ＩＤをホストに選択することを可能にしても良い。

【００７９】

楽曲管理モジュール４０を含む、ここで説明したアプリケーションプログラムは、本発明の実施形態に係る様々な機能を実施するプログラムの例示である。本発明の実施形態に従って、他の及び／又は更なるアプリケーションプログラムが用いられうることが理解されよう。

【００８０】

図１には、楽曲ファイルを管理及び再生するための移動端末及び／又は他の電子機器に

おいて使用可能であろう例示的なハードウェア／ソフトウェア構造を示したが、本発明はそのような構成に限定されず、ここで説明した動作を実行可能な任意の構成の包含が意図されていることが理解されよう。例えば、メモリ３４はコントローラ３０と別個に図示されているが、メモリ３４又はその一部がコントローラ３０の一部であると見なしても良い。より一般的には、特定の複数のブロックにおいて特定の複数の機能が例示されていても、それらの異なる複数のブロック及び／又は複数の部分は、結合、分割、及び／又は削除されうる。さらに、図１のハードウェア／ソフトウェア構造の機能は、本発明の様々な実施形態に従ってシングルプロセッサシステム又はマルチプロセッサシステムとして実施可能である。

【００８１】

本明細書の開示から利益を享受する本技術分野に属する当業者は、本発明の精神及び範囲内において様々な変更及び改変を行うことができる。従って、ここで説明してきた例示的な実施形態は単に例示を目的としたものと解釈されなければならず、以下の請求項によって規定される本発明を限定するものと解釈されるべきではない。従って、以下の請求項は、文言で説明された要素の組み合わせに限らず、実質的に同一の結果を得るために実質的に同じ方法で実質的に同じ機能を実行するための全ての等価物を含むように解釈されるべきである。従って、請求項は具体的に図示され、説明されたもの、概念的に等価な物及び、本発明の基本的な思想を組み込んだものを含むものと解されるべきである。

【図面の簡単な説明】

【００８２】

【図１】本発明の一実施形態に係る移動無線通信端末及び、例示的な基地局送受信器を模式的に示す図である。

【図２】本発明の一実施形態に係る方法を示すフローチャートである。

【図３】図１の無線通信端末を含む、本発明の一実施形態に係る楽曲ファイル再生システムを模式的に示す図である。

【図４】本発明の一実施形態に係る、図１の無線通信端末の表示を模式的に示す図である。

【図５】図１の無線通信端末を含む、本発明の別の実施形態に係る楽曲ファイル再生システムを模式的に示す図である。

【図６】図１の無線通信端末を含む、本発明の別の実施形態に係る楽曲ファイル再生システムを模式的に示す図である。

【図１】

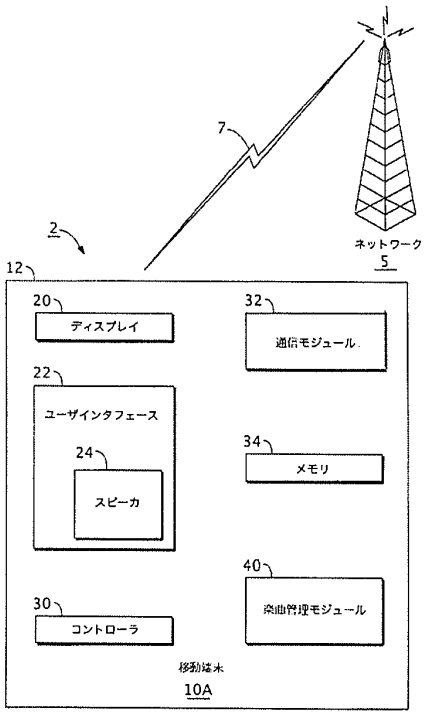


FIG. 1

【図２】

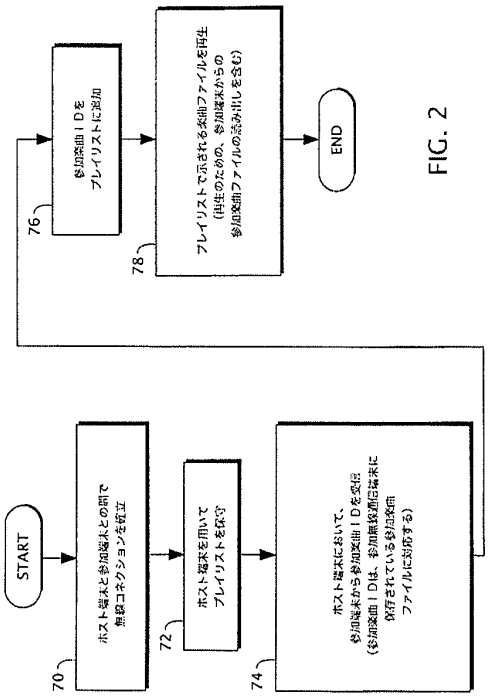


FIG. 2

【図３】

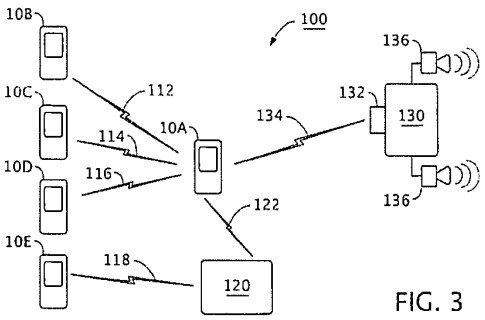


FIG. 3

【図４】

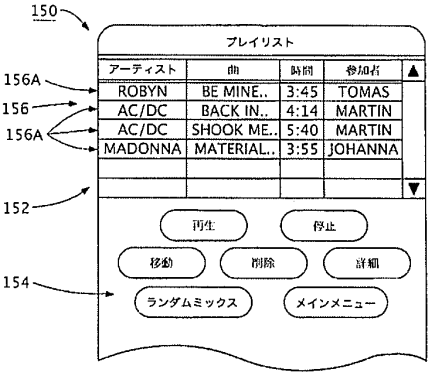


FIG. 4

【図５】

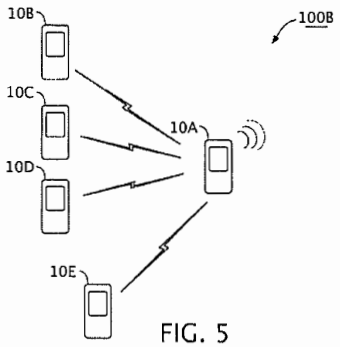


FIG. 5

【図６】

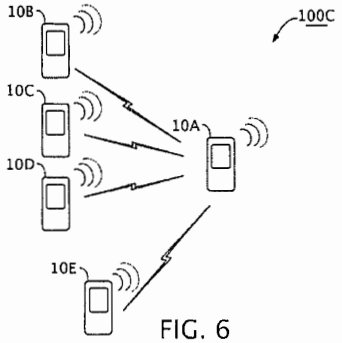


FIG. 6

【手続補正書】
【提出日】平成19年6月28日(2007.6.28)
【手続補正１】
【補正対象書類名】特許請求の範囲
【補正対象項目名】全文
【補正方法】変更
【補正の内容】
【特許請求の範囲】
【請求項１】
移動無線通信端末であって、無線インタフェースを通じて他の複数の通信端末と通信するように構成された無線通信モジュールと、
前記無線通信モジュールを介して参加無線通信端末とコネクションを確立し、再生すべき楽曲ファイルを示すプレイリストを保守し、前記参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを前記参加無線通信端末から受信し、前記参加楽曲ＩＤを前記プレイリストに追加し、その後、再生のための前記参加楽曲ファイルの前記参加無線通信端末からの読み出しを含む、前記プレイリストで示される前記楽曲ファイルの再生を実行するように構成されたコントローラとを有することを特徴とする移動無線通信端末。
【請求項２】
前記コントローラが、前記無線通信モジュールを介して複数の参加無線通信端末とコネクションを確立し、前記複数の参加無線通信端末から、前記複数の参加無線通信端末の各々に保存されている個別の参加楽曲ファイルに対応する参加楽曲ＩＤを複数受信し、前記複数の参加楽曲ＩＤの各々をプレイリストに追加し、前記複数の参加無線通信端末の各々から、再生のために複数の前記参加楽曲ファイルを読み出すように構成されることを特徴とする請求項１記載の移動無線通信端末。

【請求項３】
前記コントローラが、前記参加無線通信端末からストリーミング音楽ファイルとして前記参加楽曲ファイルを読み出し、前記参加楽曲ファイルが前記移動無線通信端末にストリーミングされている際に前記参加楽曲ファイルの再生を実行するように構成されることを特徴とする請求項１又は請求項２記載の移動無線通信端末。
【請求項４】
前記コントローラが、前記参加楽曲ファイルを前記参加無線通信端末から読み出し、前記参加楽曲ファイルを前記無線通信端末に保存し、その後、前記保存した参加楽曲ファイルの再生を実行するように構成されることを特徴とする請求項１又は請求項２記載の移動無線通信端末。
【請求項５】
前記コントローラが、前記プレイリストで示される前記楽曲ファイルをメディアセンタで再生するために、再生信号を前記メディアセンタに送信するように構成されることを特徴とする請求項１乃至請求項４のいずれか１項に記載の移動無線通信端末。
【請求項６】
音響変換器をさらに含み、前記コントローラが、前記プレイリストで示される前記楽曲ファイルを前記音響変換器を用いて再生するように構成されることを特徴とする請求項１乃至請求項５のいずれか１項に記載の移動無線通信端末。
【請求項７】
前記コントローラが、前記プレイリストで示される前記楽曲ファイルを少なくとも１つの参加無線通信端末で再生するため、再生信号を少なくとも１つの参加無線通信端末に送信するように構成されることを特徴とする請求項１乃至請求項６のいずれか１項に記載の移動無線通信端末。
【請求項８】
前記コントローラが、前記無線通信モジュールを介して複数の参加無線通信端末とコネクションを確立し、前記プレイリストによって示される前記楽曲ファイルを前記複数の参加無線通信端末で同時再生するために、再生信号を前記複数の参加無線通信端末の各々に送信するように構成されることを特徴とする請求項７記載の移動無線通信端末。
【請求項９】
音響変換器をさらに含み、
前記コントローラが、前記プレイリストによって示される前記楽曲ファイルを、前記音響変換器を用いて再生し、前記プレイリストによって示される前記楽曲ファイルを、少なくとも１つの参加無線通信端末で前記移動無線通信端末の前記音響変換器を用いた再生と同時再生するために、再生信号を前記少なくとも１つの参加無線通信端末へ送信するように構成されることを特徴とする請求項７記載の移動無線通信端末。
【請求項１０】
前記コントローラが、前記参加無線通信端末に保存されている利用可能な楽曲ファイルを示す楽曲カタログリストを前記参加無線通信端末から受信し、前記利用可能な楽曲ファイルから選択するユーザ入力を受信し、前記選択された入手可能な楽曲ファイルを前記プレイリストに追加するように構成されることを特徴とする請求項１乃至請求項９のいずれか１項に記載の移動無線通信端末。
【請求項１１】
前記コントローラが、前記プレイリストを前記参加無線通信端末で表示するため、前記プレイリストを表すリスト信号を前記参加無線通信端末に送信するように構成されることを特徴とする請求項１乃至請求項１０のいずれか１項に記載の移動無線通信端末。
【請求項１２】
前記コントローラが、ユーザ入力に応じて前記プレイリストを変更するように構成されることを特徴とする請求項１乃至請求項１１のいずれか１項に記載の移動無線通信端末。
【請求項１３】
前記無線通信モジュールが、他の複数の通信端末と直接ポイントツーポイント無線イン

タフェースを通じて通信するように構成されるとともに、
前記コントローラが、前記無線通信モジュールを介して前記参加無線通信端末との前記コネクションを確立し、前記参加無線通信端末から前記参加楽曲ＩＤを受信し、再生のために、前記参加楽曲ファイルの全てを前記直接ポイントツーポイント無線インタフェースを介して前記参加無線通信端末から読み出すように構成されることを特徴とする請求項１乃至請求項１２のいずれか１項に記載の移動無線通信端末。
【請求項１４】
前記無線通信モジュールが、短距離送信器を備えるとともに、
前記コントローラが、前記参加無線通信端末と前記コネクションを確立し、前記参加楽曲ＩＤを前記参加無線通信端末から受信し、再生のために、前記参加楽曲ファイルの全てを前記短距離送信器を介して前記参加無線通信端末から読み出すように構成されることを特徴とする請求項１乃至請求項１３のいずれか１項に記載の移動無線通信端末。
【請求項１５】
前記短距離送信器がブルートゥース送信器であることを特徴とする請求項１４記載の移動無線通信端末。
【請求項１６】
前記コントローラが、前記移動無線通信端末をマスター端末として指定し、前記参加無線通信端末をスレーブ端末としてい指定し、前記移動無線通信端末及び前記参加無線通信端末を含む無線パーソナルエリアネットワークを確立するように動作することを特徴とする請求項１４又は請求項１５記載の移動無線通信端末。
【請求項１７】
前記コントローラが、利用可能な参加無線通信端末を特定するための問い合わせを発するように動作することを特徴とする請求項１６記載の移動無線通信端末。
【請求項１８】
前記コントローラが、前記プレイリストから選択された楽曲ＩＤを再生すべきものとして特定するように構成されるとともに、前記参加楽曲ＩＤが前記選択された楽曲ＩＤである場合、前記参加無線通信端末から前記参加楽曲ファイルを読み出すため、前記参加無線通信端末に楽曲ファイル要求を自動的に送信するように構成されることを特徴とする請求項１乃至請求項１７のいずれか１項に記載の移動無線通信端末。
【請求項１９】
前記無線通信端末が、携帯電話機を含むことを特徴とする請求項１乃至請求項１８のいずれか１項に記載の移動無線通信端末。
【請求項２０】
前記移動無線通信端末がハンドヘルド移動無線通信端末であることを特徴とする請求項１乃至請求項１９のいずれか１項に記載の移動無線通信端末。
【請求項２１】
楽曲プレイリストを提供するシステムであって、
ホスト移動無線通信端末と、
参加無線通信端末とを備え、
前記ホスト無線通信端末が、
無線インタフェースを通じて他の複数の通信端末と通信するように構成された無線通信モジュールと、
前記無線通信モジュールを介して前記参加無線通信端末とのコネクションを確立し、再生すべき楽曲ファイルを示すプレイリストを保守し、前記参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを前記参加無線通信端末から受信し、前記参加楽曲ＩＤを前記プレイリストに追加し、その後、再生のための前記参加楽曲ファイルの前記参加無線通信端末からの読み出しを含む、前記プレイリストで示される前記楽曲ファイルの再生を実行するように構成されたコントローラとを含むことを特徴とするシステム。
【請求項２２】

複数の参加無線通信端末を含み、前記コントローラが、前記無線通信モジュールを介して前記複数の参加無線通信端末の各々とコネクションを確立し、前記複数の参加無線通信端末から、前記複数の参加無線通信端末の各々に保存されている個別の参加楽曲ファイルに対応する参加楽曲ＩＤを複数受信し、前記複数の参加楽曲ＩＤの各々を前記プレイリストに追加し、前記複数の参加無線通信端末の各々から、再生のために複数の前記参加楽曲ファイルを読み出すように構成されることを特徴とする請求項２１記載のシステム。

【請求項２３】

ホスト無線通信端末を用いて楽曲プレイリストを提供するための方法であって、

前記ホスト無線通信端末と参加無線通信端末との間で無線コネクションを確立し、

再生すべき楽曲ファイルを示すプレイリストを前記ホスト無線通信端末を用いて保守し、

前記ホスト無線通信端末において、前記参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを前記参加無線通信端末から受信し、

前記参加楽曲ＩＤを前記プレイリストに追加し、その後、

再生のために前記参加楽曲ファイルを前記参加無線通信端末から読み出すことを含む、前記プレイリストによって示される前記楽曲ファイルの再生を実行することを特徴とする方法。

【請求項２４】

ホスト無線通信端末を用いて楽曲プレイリストを提供するためのコンピュータプログラム製品であって、

コンピュータが利用可能なプログラムコードが埋め込まれたコンピュータが利用可能な媒体を含み、前記コンピュータが利用可能なプログラムコードが、

前記ホスト無線通信端末と参加無線通信端末との間で無線コネクションを確立するように構成されたコンピュータ利用可能なプログラムコードと、

再生すべき楽曲ファイルを示すプレイリストを前記ホスト無線通信端末を用いて保守するように構成されたコンピュータ利用可能なプログラムコードと、

前記ホスト無線通信端末において、前記参加無線通信端末に保存されている参加楽曲ファイルと対応する参加楽曲ＩＤを参加無線通信端末から受信するように構成されたコンピュータ利用可能なプログラムコードと、

前記参加楽曲ＩＤを前記プレイリストに追加するように構成されたコンピュータ利用可能なプログラムコードと、

その後、再生のために前記参加楽曲ファイルを前記参加無線通信端末から読み出すことを含み、前記プレイリストによって示される前記楽曲ファイルの再生を実行するように構成されたコンピュータ利用可能なプログラムコードとを含むことを特徴とするコンピュータプログラム製品。

【手続補正２】

【補正対象書類名】図面

【補正対象項目名】図３

【補正方法】変更

【補正の内容】

【図３】

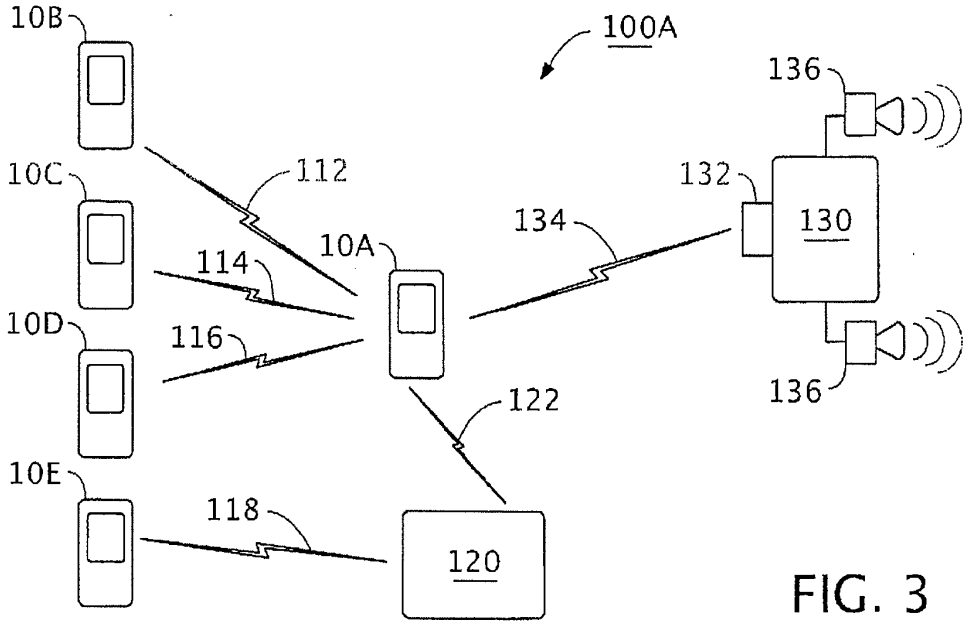

10B
100A
136
10C
112
132
134
130
10A
114
10D
116
122
136
10E
118
120

FIG. 3

【国際調査報告】

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/065350

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/037157 A1 (PESTONI FLORIAN [US] ET AL) 20 February 2003 (2003-02-20) paragraph [0020] - paragraph [0021] paragraph [0034] - paragraph [0040] paragraph [0046] paragraph [0051] paragraph [0058] - paragraph [0065] paragraph [0074] figures 4,5	1-18
X	WO 2005/073856 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]; PHILIPS CORP [US]; GUILLORIT FABI) 11 August 2005 (2005-08-11) page 1, line 20 - page 2, line 6 page 2, line 15 - line 31 page 3, line 9 - page 6, line 21	1-18

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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1．Ｂｌｕｅｔｏｏｔｈ

(72)発明者 ワシングボ, トマス
スウェーデン国 ルンド エスー２２３５２, セドラ エスプラナデン ２１
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MOBILE WIRELESS COMMUNICATION TERMINALS, SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR MANAGING PLAYBACK OF SONG FILES

Inventor(s):

Applicant(s):

Classification: **- international:** ***H04W4/06; H04W84/10; H04W84/12; H04W88/06***
- cooperative: **G10H1/0083**; **H04L67/04**; **H04L67/10**; G10H2210/301; G10H2220/081; G10H2240/131; G10H2240/231; G10H2240/251; H04W4/206; H04W76/023

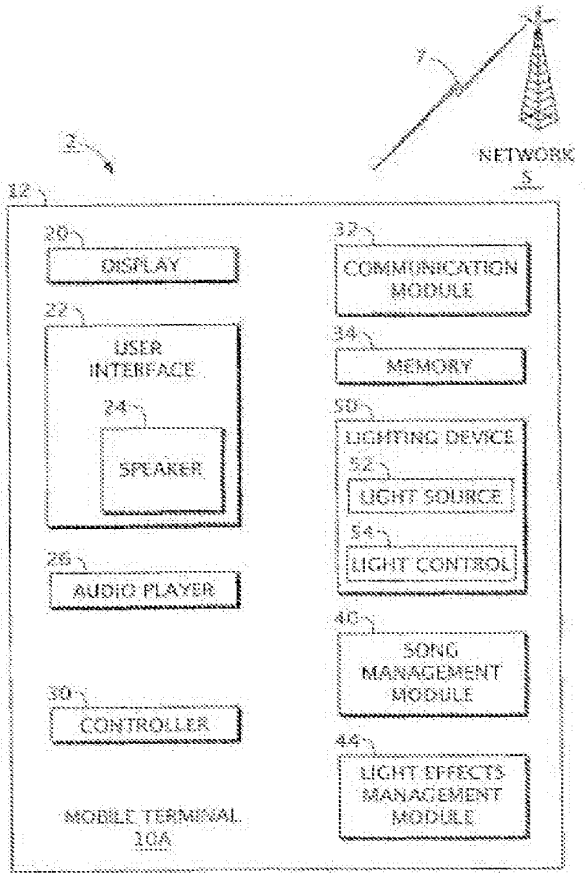
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A mobile wireless communication terminal includes a wireless communication module that is configured to communicate with other communication terminals over a wireless interface, and a controller. The controller is configured to establish a connection with at least one participant wireless communication terminal via the wireless communication module, to receive from the at least one participant wireless communication terminal an identification of a compliant song file stored on the at least one participant wireless communication terminal and having a metadata tag associated therewith indicating that the compliant song file is classified in a prescribed song file category, and to execute playback of the compliant song file.


NETWORK
5
2
12
28
DISPLAY
22
USER INTERFACE
24
SPEAKER
26
AUDIO PLAYER
30
CONTROLLER
MOBILE TERMINAL 10A
32
COMMUNICATION MODULE
34
MEMORY
50
LIGHTING DEVICE
52
LIGHT SOURCE
54
LIGHT CONTROL
40
SONG MANAGEMENT MODULE
44
LIGHT EFFECTS MANAGEMENT MODULE

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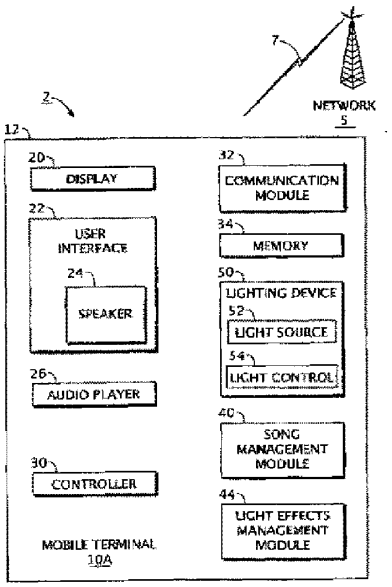
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(71)出願人　502087507
ソニー　エリクソン　モバイル　コミュニケーションズ，　エービー
スウェーデン，　エスー２２１　８８　ルンド，ニヤ　ワッテントルネット
(74)代理人　100076428
弁理士　大塚　康徳
(74)代理人　100112508
弁理士　高柳　司郎
(74)代理人　100115071
弁理士　大塚　康弘
(74)代理人　100116894
弁理士　木村　秀二

最終頁に続く

(54)【発明の名称】ソングファイルの再生を管理するための移動無線通信端末、システム、方法、及びコンピュータプログラム製品

(57)【要約】
移動無線通信端末が、無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、コントローラとを含む。コントローラは、無線通信モジュールを通じて１以上の参加無線通信端末との接続を確立し、１以上の参加無線通信端末に格納された適合ソングファイルであって、適合ソングファイルが予め規定されたソングファイル・カテゴリに分類されることを示す、該適合ソングファイルと関連づけられたメタデータ・タグを有する適合ソングファイルの識別子を１以上の参加無線通信端末から受信し、適合ソングファイルの再生を実行するように構成される。



【特許請求の範囲】
【請求項1】
移動無線通信端末であって、
無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、
コントローラであって、
前記無線通信モジュールを通じて１以上の参加無線通信端末との接続を確立し、
前記１以上の参加無線通信端末に格納された適合ソングファイルであって、該適合ソングファイルが予め定められたソングファイル・カテゴリに分類されていることを示す、前記適合ソングファイルと関連づけられたメタデータ・タグを有する前記適合ソングファイルの識別子を前記１以上の参加無線通信端末から受信し、
前記適合ソングファイルの再生を実行する
ように構成されたコントローラと、
を備えることを特徴とする移動無線通信端末。
【請求項2】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
該複数の参加無線通信端末のうちの２以上の参加無線通信端末から適合ソングの識別子を受信する
ように構成されることを特徴とする請求項１に記載の無線通信端末。
【請求項3】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末において前記適合ソングファイルの再生を同時に実行するように構成されることを特徴とする請求項１又は２に記載の無線通信端末。
【請求項4】
前記コントローラは、前記適合ソングファイルを前記１以上の参加無線通信端末から再生用として検索するように構成されることを特徴とする請求項１乃至３のいずれか１項に記載の無線通信端末。
【請求項5】
前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、
前記コントローラは、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の参加無線通信端末から前記適合ソングファイルの識別子を受信する
ように構成される
ことを特徴とする請求項１乃至４のいずれか１項に記載の無線通信端末。
【請求項6】
前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項１乃至５のいずれか１項に記載の無線通信端末。
【請求項7】
前記無線通信端末はセルラ電話機を含むことを特徴とする請求項１乃至６のいずれか１項に記載の無線通信端末。
【請求項8】
移動無線通信端末であって、
無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、

コントローラであって、
前記無線通信モジュールを通じて１以上の参加無線通信端末との接続を確立し、
ノミネートソングファイルのリストを保持し、
前記１以上の参加無線通信端末から１以上の得票メッセージを受信し、
選出されたソングファイルを前記１以上の得票メッセージに基づいて前記ノミネートソングファイルのリストから決定し、
前記選出されたソングファイルの再生を実行する
ように構成されたコントローラと、
を備えることを特徴とする移動無線通信端末。
【請求項9】
前記コントローラは、
ノミネートソングファイルの識別子を前記１以上の参加無線通信端末から受信し、
前記ノミネートソングファイルの前記識別子をノミネートソングファイルの前記リストに追加する
ように構成されることを特徴とする請求項８に記載の無線通信端末。
【請求項10】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末のうちの２以上の参加無線通信端末から得票メッセージを受信する
ように構成されることを特徴とする請求項８又は９に記載の無線通信端末。
【請求項11】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記選出されたソングファイルの再生を前記複数の参加無線通信端末において同時に実行する
ように構成されることを特徴とする請求項８乃至１０のいずれか１項に記載の無線通信端末。
【請求項12】
前記コントローラは、前記選出されたソングファイルを前記１以上の参加無線通信端末から再生用として検索するように構成されることを特徴とする請求項８乃至１１のいずれか１項に記載の無線通信端末。
【請求項13】
前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、
前記コントローラは、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の参加無線通信端末から前記１以上の得票メッセージを受信する
ように構成される
ことを特徴とする請求項８乃至１２のいずれか１項に記載の無線通信端末。
【請求項14】
前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項８乃至１３のいずれか１項に記載の無線通信端末。
【請求項15】
前記無線通信端末はセルラ電話機を含むことを特徴とする請求項８乃至１４のいずれか１項に記載の無線通信端末。
【請求項16】
移動無線通信端末であって、

無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、
コントローラであって、
前記無線通信モジュールを通じて１以上の参加無線通信端末との接続を確立し、
前記１以上の参加無線通信端末の１以上の照明装置をソングファイルの再生に対応して制御するように前記１以上の参加無線通信端末に命令する１以上の照明効果信号を、前記１以上の参加無線通信端末へ送信する
ように構成されるコントローラと、
を備えることを特徴とする移動無線通信端末。
【請求項17】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末の各々に対して前記ソングファイルの再生に対応して該参加無線通信端末の照明装置を制御するように命令する照明効果信号を、前記複数の参加無線通信端末の各参加無線通信端末へ送信する
ように構成されることを特徴とする請求項１６に記載の無線通信端末。
【請求項18】
前記コントローラは、
前記複数の参加無線通信端末に対して該参加無線通信端末の前記照明装置を互いから別様に制御するように命令する照明効果信号を、前記複数の参加無線通信端末の各参加無線通信端末へ送信するように構成される
ことを特徴とする請求項１７に記載の無線通信端末。
【請求項19】
前記コントローラは、
前記複数の参加無線通信端末の各参加無線通信端末へ照明効果信号を送信して、前記複数の参加無線通信端末のうちの第１の参加無線通信端末のディスプレイから、前記複数の参加無線通信端末のうちの第２の参加無線通信端末のディスプレイへ時間の経過と共に動く画像を前記複数の参加無線通信端末に、該参加無線通信端末のそれぞれのディスプレイに表示させる
ように構成されることを特徴とする請求項１８に記載の無線通信端末。
【請求項20】
前記コントローラは、
前記複数の参加無線通信端末の各参加無線通信端末へ照明効果信号を送信して、前記複数の参加無線通信端末のうちの第１の参加無線通信端末の照明装置に第１のオーディオ周波数範囲内のオーディオ信号に応答させるとともに、前記複数の参加無線通信端末のうちの第２の参加無線通信端末の照明装置に、前記第１のオーディオ周波数範囲とは異なる第２のオーディオ周波数範囲内のオーディオ信号に応答させる
ように構成されることを特徴とする請求項１８又は１９に記載の無線通信端末。
【請求項21】
前記コントローラは、前記複数の参加無線通信端末において前記ソングファイルの再生を同時に実行するように構成されることを特徴とする請求項１７乃至２０のいずれか１項に記載の無線通信端末。
【請求項22】
前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、
前記コントローラは、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の照明効果信号を前記１以上の参加無線通信端末へ送信する

ように構成される
ことを特徴とする請求項１６乃至２１のいずれか１項に記載の無線通信端末。
【請求項23】
前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項１６乃至２２のいずれか１項に記載の無線通信端末。
【請求項24】
前記無線通信端末はセルラ電話機を含むことを特徴とする請求項１６乃至２３のいずれ
【発明の詳細な説明】信端末。
【技術分野】
【0001】
本発明は、電子装置に関し、特に、ソングファイルを再生するための電子装置、方法、及びコンピュータプログラム製品に関する。
【背景技術】
【0002】
ソング（曲）ファイルを格納するための（セルラ電話機などの）無線通信端末のような移動電子装置が広範に使用されている。ユーザは、自分の移動電子装置に格納されているメディアセンタが利用可能な場合には、（ＰＣやラップトップ、テレビ、オーディオ受信機などの）メディアセンタのような別の装置又は別の無線通信端末でソングファイルの再生を望む場合がある。このソングファイルの再生は、相手方の装置が好適な通信モジュールを装備していれば、ケーブル又は（ブルートゥース接続など）無線リンクを介して相手方の装置と接続された電子装置により達成することができる。上記通信モジュールは、組込み型モジュールや補助（例えばプラグイン）モジュールであってもよい。１以上の移動電子装置から（単複の）再生装置へソングファイルを１つずつ送信することが可能である。
【図面の簡単な説明】
【0022】
【図1】本発明のいくつかの実施形態に係る移動無線通信端末及び例示の基地局トランシーバのブロック図である。
【図2】本発明のいくつかの実施形態に係る方法を例示するフローチャートである。
【図3】図１の移動無線通信端末を含む本発明のいくつかの実施形態に係るソングファイル再生システムを示すブロックである。
【図4】図１の移動無線通信端末を含む本発明の別の実施形態に係るソングファイル再生システムを示すブロック図である。
【図5】図１の移動無線通信端末を含む本発明の別の実施形態によるソングファイル再生システムを示すブロック図である。
【図6】本発明のいくつかの実施形態に係る図１の移動無線通信端末のディスプレイを示すブロック図である。
【図7】本発明の別の実施形態に従う方法を示すフローチャートである。
【図8】本発明の別の実施形態に従う方法を示すフローチャートである。
【図9】本発明の別の実施形態に従うソングファイル再生システムを示すブロック図である。
【図10A】システムの３つの移動無線通信端末に表示されたアニメーション・シーケンスを示す本発明の複数の実施形態によるシステムのブロック図である。
【図10B】システムの３つの移動無線通信端末に表示されたアニメーション・シーケンスを示す本発明の複数の実施形態によるシステムのブロック図である。
【図10C】システムの３つの移動無線通信端末に表示されたアニメーション・シーケンスを示す本発明の複数の実施形態によるシステムのブロック図である。

【図1】

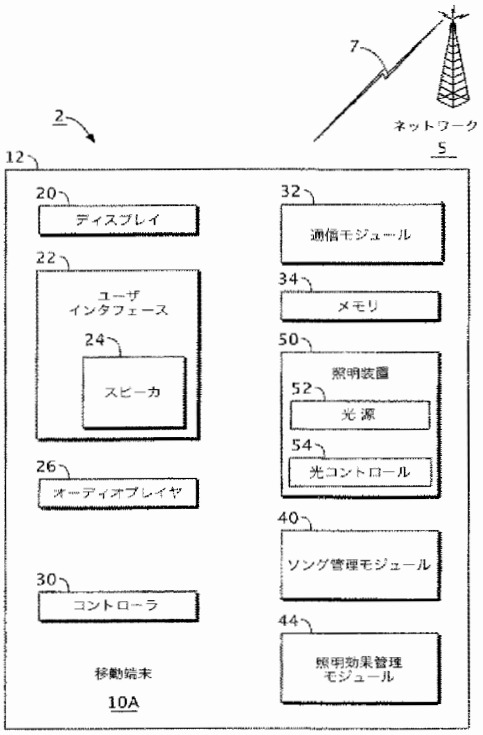

7
ネットワーク
5
2
12
20
ディスプレイ
22
ユーザ
インタフェース
24
スピーカ
26
オーディオプレイヤ
30
コントローラ
移動端末
10A
32
通信モジュール
34
メモリ
50
照明装置
52
光源
54
光コントロール
40
ソング管理モジュール
44
照明効果管理
モジュール

FIG. 1

【図2】

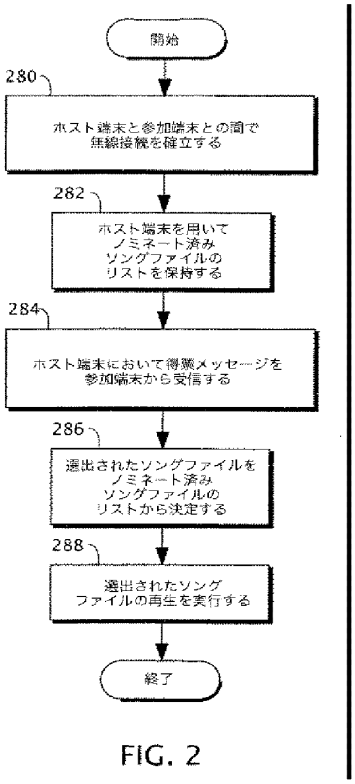

開始
280
ホスト端末と参加端末との間で
無線接続を確立する
282
ホスト端末を用いて
ノミネート済み
ソングファイルの
リストを保持する
284
ホスト端末において得票メッセージを
参加端末から受信する
286
選出されたソングファイルを
ノミネート済み
ソングファイルの
リストから決定する
288
選出されたソング
ファイルの再生を実行する
終了

FIG. 2

【図３】

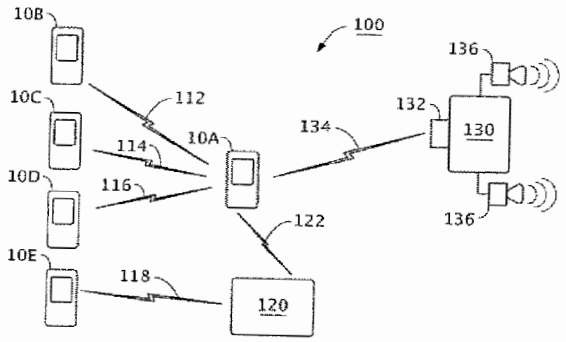

10B
100
136
10C
112
132
134
130
10A
114
10D
116
122
136
10E
118
120

FIG. 3

【図4】

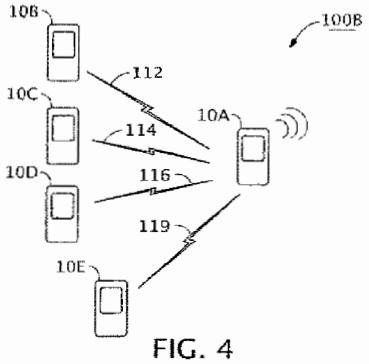


FIG. 4

【図5】

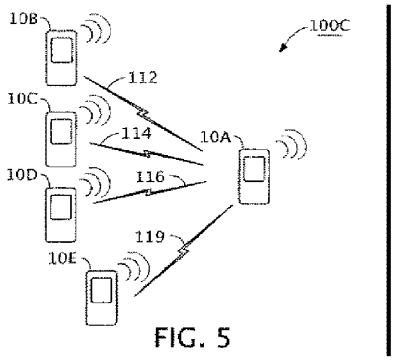


FIG. 5

【図6】

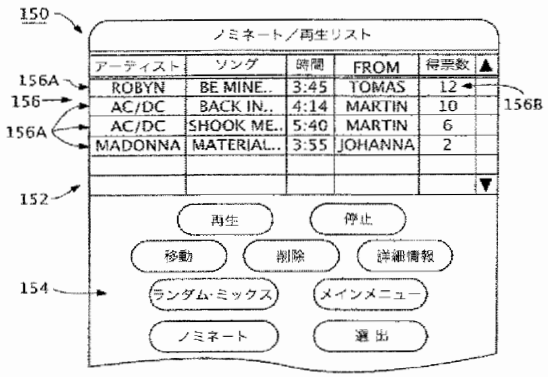

150
ノミネート／再生リスト
アーティスト
ソング
時間
FROM
得票数
156A
156
156A
156B
ROBYN
BE MINE..
3:45
TOMAS
12
AC/DC
BACK IN..
4:14
MARTIN
10
AC/DC
SHOOK ME..
5:40
MARTIN
6
MADONNA
MATERIAL..
3:55
JOHANNA
2
152
再生
停止
移動
削除
詳細情報
154
ランダム・ミックス
メインメニュー
ノミネート
退出

FIG. 6

【図7】

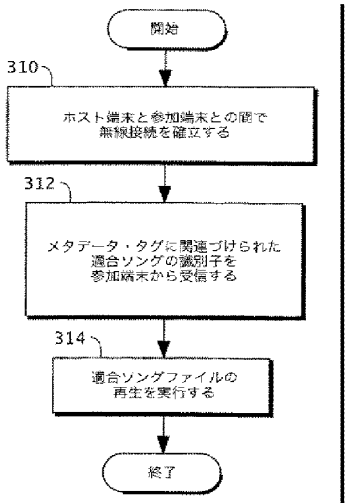

開始
310
ホスト端末と参加端末との間で
無線接続を確立する
312
メタデータ・タグに関連づけられた
適合ソングの識別子を
参加端末から受信する
314
適合ソングファイルの
再生を実行する
終了

FIG. 7

【図8】

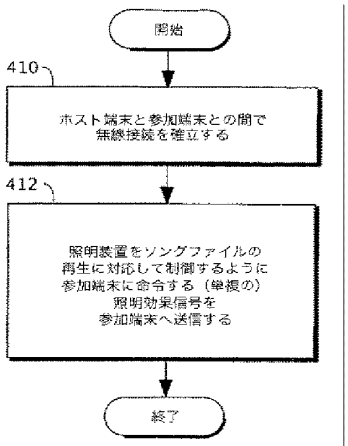

開始
410
ホスト端末と参加端末との間で
無線接続を確立する
412
照明装置をソングファイルの
再生に対応して制御するように
参加端末に命令する（単複の）
照明効果信号を
参加端末へ送信する
終了

FIG. 8

【図9】

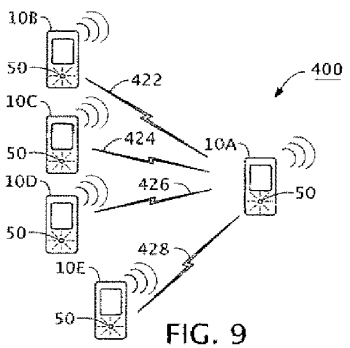


FIG. 9

【図10A】

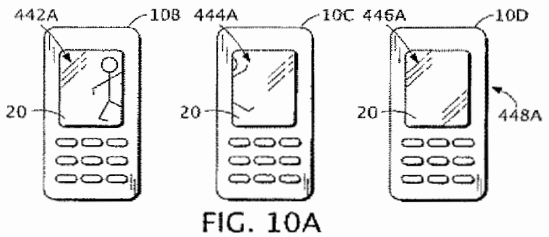


FIG. 10A

【図10B】

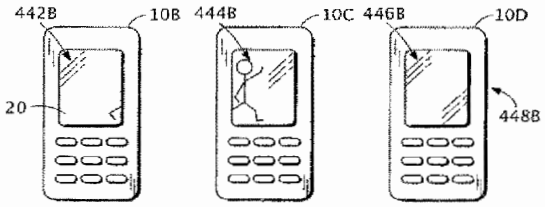


FIG. 10B

【図10C】

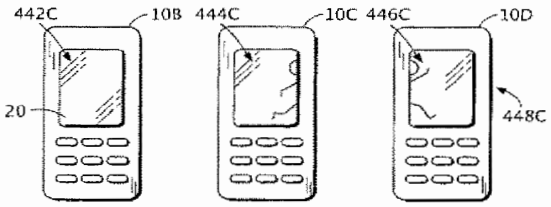


FIG. 10C

【手続補正書】
【提出日】平成20年3月14日(2008.3.14)
【手続補正1】
【補正対象書類名】特許請求の範囲
【補正対象項目名】全文
【補正方法】変更
【補正の内容】
【特許請求の範囲】
【請求項1】
移動無線通信端末であって、
無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、
コントローラであって、
前記無線通信モジュールを通じて１以上の参加無線通信端末との接続を確立し、
前記１以上の参加無線通信端末に格納された適合ソングファイルであって、予め定められたソングファイル・カテゴリに分類されている前記適合ソングファイルを要求し、
前記１以上の参加無線通信端末に格納された適合ソングファイルであって、該適合ソングファイルが前記予め定められたソングファイル・カテゴリに分類されていることを示す、前記適合ソングファイルと関連づけられたメタデータ・タグを有する前記適合ソングファイルの識別子を前記１以上の参加無線通信端末から受信し、
前記適合ソングファイルの再生を実行する
ように構成されたコントローラと、
を備えることを特徴とする移動無線通信端末。
【請求項2】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
該複数の参加無線通信端末のうちの２以上の参加無線通信端末から適合ソングの識別子を受信する
ように構成されることを特徴とする請求項１に記載の無線通信端末。
【請求項3】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末において前記適合ソングファイルの再生を同時に実行するように構成されることを特徴とする請求項１又は２に記載の無線通信端末。
【請求項4】
前記コントローラは、前記適合ソングファイルを前記１以上の参加無線通信端末から再生用として検索するように構成されることを特徴とする請求項１乃至３のいずれか１項に記載の無線通信端末。
【請求項5】
前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、
前記コントローラは、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の参加無線通信端末から前記適合ソングファイルの識別子を受信する
ように構成される
ことを特徴とする請求項１乃至４のいずれか１項に記載の無線通信端末。
【請求項6】
前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項１乃

至５のいずれか１項に記載の無線通信端末。
【請求項7】
前記無線通信端末はセルラ電話機を含むことを特徴とする請求項１乃至６のいずれか１項に記載の無線通信端末。
【請求項8】
移動無線通信端末であって、
無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、
コントローラであって、
前記無線通信モジュールを通じて１以上の参加無線通信端末との接続を確立し、
ノミネートソングファイルのリストを保持し、
前記１以上の参加無線通信端末から１以上の得票メッセージを受信し、
選出されたソングファイルを前記１以上の得票メッセージに基づいて前記ノミネートソングファイルのリストから決定し、
前記選出されたソングファイルの再生を実行する
ように構成されたコントローラと、
を備えることを特徴とする移動無線通信端末。
【請求項9】
前記コントローラは、
ノミネートソングファイルの識別子を前記１以上の参加無線通信端末から受信し、
前記ノミネートソングファイルの前記識別子をノミネートソングファイルの前記リストに追加する
ように構成されることを特徴とする請求項８に記載の無線通信端末。
【請求項10】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末のうちの２以上の参加無線通信端末から得票メッセージを受信する
ように構成されることを特徴とする請求項８又は９に記載の無線通信端末。
【請求項11】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記選出されたソングファイルの再生を前記複数の参加無線通信端末において同時に実行する
ように構成されることを特徴とする請求項８乃至１０のいずれか１項に記載の無線通信端末。
【請求項12】
前記コントローラは、前記選出されたソングファイルを前記１以上の参加無線通信端末から再生用として検索するように構成されることを特徴とする請求項８乃至１１のいずれか１項に記載の無線通信端末。
【請求項13】
前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、
前記コントローラは、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の参加無線通信端末から前記１以上の得票メッセージを受信する
ように構成される
ことを特徴とする請求項８乃至１２のいずれか１項に記載の無線通信端末。

【請求項14】
前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項８乃至１３のいずれか１項に記載の無線通信端末。
【請求項15】
前記無線通信端末はセルラ電話機を含むことを特徴とする請求項８乃至１４のいずれか１項に記載の無線通信端末。
【請求項16】
移動無線通信端末であって、
無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、
コントローラであって、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末の各々の照明装置をソングファイルの再生に対応して制御するように前記複数の参加無線通信端末の各々に命令する照明効果信号を、前記複数の参加無線通信端末の各々へ送信する
ように構成されるコントローラと、
を備え、
前記コントローラは、
前記複数の参加無線通信端末に対して該参加無線通信端末の前記照明装置を互いから別様に制御するように命令する照明効果信号を、前記複数の参加無線通信端末の各参加無線通信端末へ送信するように構成される
ことを特徴とする移動無線通信端末。
【請求項17】
前記コントローラは、
前記複数の参加無線通信端末の各参加無線通信端末へ照明効果信号を送信して、前記複数の参加無線通信端末のうちの第１の参加無線通信端末のディスプレイから、前記複数の参加無線通信端末のうちの第２の参加無線通信端末のディスプレイへ時間の経過と共に動く画像を前記複数の参加無線通信端末に、該参加無線通信端末のそれぞれのディスプレイに表示させる
ように構成されることを特徴とする請求項１６に記載の無線通信端末。
【請求項18】
前記コントローラは、
前記複数の参加無線通信端末の各参加無線通信端末へ照明効果信号を送信して、前記複数の参加無線通信端末のうちの第１の参加無線通信端末の照明装置に第１のオーディオ周波数範囲内のオーディオ信号に応答させるとともに、前記複数の参加無線通信端末のうちの第２の参加無線通信端末の照明装置に、前記第１のオーディオ周波数範囲とは異なる第２のオーディオ周波数範囲内のオーディオ信号に応答させる
ように構成されることを特徴とする請求項１６又は１７に記載の無線通信端末。
【請求項19】
前記コントローラは、前記複数の参加無線通信端末において前記ソングファイルの再生を同時に実行するように構成されることを特徴とする請求項１６乃至１８のいずれか１項に記載の無線通信端末。
【請求項20】
前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、
前記コントローラは、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の照明効果信号を前記１以上の参加無線通信端末へ送信する

ように構成される
ことを特徴とする請求項１６乃至１９のいずれか１項に記載の無線通信端末。
【請求項21】
前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項１６乃至２０のいずれか１項に記載の無線通信端末。
【請求項22】
前記無線通信端末はセルラ電話機を含むことを特徴とする請求項１６乃至２１のいずれか１項に記載の無線通信端末。
【手続補正書】
【提出日】平成21年1月15日(2009.1.15)
【手続補正1】
【補正対象書類名】特許請求の範囲
【補正対象項目名】全文
【補正方法】変更
【補正の内容】
【特許請求の範囲】
【請求項1】
移動無線通信端末であって、
無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、
コントローラであって、
前記無線通信モジュールを通じて１以上の参加無線通信端末との接続を確立し、
ノミネートソングファイルのリストを保持し、
前記１以上の参加無線通信端末から１以上の得票メッセージを受信し、
選出されたソングファイルを前記１以上の得票メッセージに基づいて前記ノミネートソングファイルのリストから決定し、
前記選出されたソングファイルの再生を実行する
ように構成されたコントローラと、
を備え、
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記選出されたソングファイルの再生を前記複数の参加無線通信端末において同時に実行する
ように構成される
ことを特徴とする移動無線通信端末。
【請求項2】
前記コントローラは、
ノミネートソングファイルの識別子を前記１以上の参加無線通信端末から受信し、
前記ノミネートソングファイルの前記識別子をノミネートソングファイルの前記リストに追加する
ように構成されることを特徴とする請求項１に記載の無線通信端末。
【請求項3】
前記コントローラは、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末のうちの２以上の参加無線通信端末から得票メッセージを受信する
ように構成されることを特徴とする請求項１又は２に記載の無線通信端末。
【請求項4】
前記コントローラは、前記選出されたソングファイルを前記１以上の参加無線通信端末から再生用として検索するように構成されることを特徴とする請求項１乃至３のいずれか

１項に記載の無線通信端末。
【請求項5】
前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、
前記コントローラは、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、
前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の参加無線通信端末から前記１以上の得票メッセージを受信する
ように構成される
ことを特徴とする請求項１乃至４のいずれか１項に記載の無線通信端末。
【請求項6】
前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項１乃至５のいずれか１項に記載の無線通信端末。
【請求項7】
前記無線通信端末はセルラ電話機を含むことを特徴とする請求項１乃至６のいずれか１項に記載の無線通信端末。
【請求項8】
移動無線通信端末であって、
無線インタフェースを介して別の通信端末と通信するように構成された無線通信モジュールと、
コントローラであって、
前記無線通信モジュールを通じて複数の参加無線通信端末との接続を確立し、
前記複数の参加無線通信端末の各々の照明装置をソングファイルの再生に対応して制御するように前記複数の参加無線通信端末の各々に命令する照明効果信号を、前記複数の参加無線通信端末の各々へ送信する
ように構成されるコントローラと、
を備え、
前記コントローラは、
前記複数の参加無線通信端末に対して該参加無線通信端末の前記照明装置を互いから別様に制御するように命令する照明効果信号を、前記複数の参加無線通信端末の各参加無線通信端末へ送信するように構成される
ことを特徴とする移動無線通信端末。
【請求項9】
前記コントローラは、
前記複数の参加無線通信端末の各参加無線通信端末へ照明効果信号を送信して、前記複数の参加無線通信端末のうちの第１の参加無線通信端末のディスプレイから、前記複数の参加無線通信端末のうちの第２の参加無線通信端末のディスプレイへ時間の経過と共に動く画像を前記複数の参加無線通信端末に、該参加無線通信端末のそれぞれのディスプレイに表示させる
ように構成されることを特徴とする請求項８に記載の無線通信端末。
【請求項10】
前記コントローラは、
前記複数の参加無線通信端末の各参加無線通信端末へ照明効果信号を送信して、前記複数の参加無線通信端末のうちの第１の参加無線通信端末の照明装置に第１のオーディオ周波数範囲内のオーディオ信号に応答させるとともに、前記複数の参加無線通信端末のうちの第２の参加無線通信端末の照明装置に、前記第１のオーディオ周波数範囲とは異なる第２のオーディオ周波数範囲内のオーディオ信号に応答させる
ように構成されることを特徴とする請求項８又は９に記載の無線通信端末。
【請求項11】

前記コントローラは、前記複数の参加無線通信端末において前記ソングファイルの再生を同時に実行するように構成されることを特徴とする請求項８乃至１０のいずれか１項に記載の無線通信端末。

【請求項12】

前記無線通信モジュールは、ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して別の通信端末と通信するように構成され、

前記コントローラは、

前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記無線通信モジュールを通じて前記１以上の参加無線通信端末との接続を確立し、

前記ダイレクト・ポイント・ツー・ポイント無線インタフェースを介して前記１以上の照明効果信号を前記１以上の参加無線通信端末へ送信する

ように構成される

ことを特徴とする請求項８乃至１１のいずれか１項に記載の無線通信端末。

【請求項13】

前記無線通信モジュールはブルートゥース送信機を備えることを特徴とする請求項８乃至１２のいずれか１項に記載の無線通信端末。

【請求項14】

前記無線通信端末はセルラ電話機を含むことを特徴とする請求項８乃至１３のいずれか１項に記載の無線通信端末。

【国際調査報告】

【図10C】

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/067942

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/06 H04L12/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/075169 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]; PHILIPS CORP [US]; VAN DE SLUIS B) 2 September 2004 (2004-09-02) abstract page 1, line 14 - line 30	1,2,4-7
Y	page 11, line 21 - line 27 page 16, line 13 - line 26 page 21, line 8 - page 22, line 11	3
Y	US 2002/168938 A1 (CHANG CHIN-CHI [TW]) 14 November 2002 (2002-11-14) abstract page 1, paragraphs 9,10 page 2, paragraph 24	3,11

-/--

[X] Further documents are listed in the continuation of Box C.　　[X] See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 April 2007	26/04/2007

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	BLANCO CARDONA, P

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/067942

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/032419 A1 (SHIBASAKI HIROAKI [JP] ET AL) 13 February 2003 (2003-02-13) abstract page 9, paragraphs 138,139 page 10, paragraphs 145,149 page 11, paragraphs 158,159	1
X Y	US 2003/037157 A1 (PESTONI FLORIAN [US] ET AL) 20 February 2003 (2003-02-20) abstract page 1, paragraphs 3,4,11 page 2, paragraphs 21,35,36 page 4, paragraphs 51,59 page 5, paragraphs 67,68 page 6, paragraphs 78,80,85,87	8-10, 12-15 11
X A	US 2005/160270 A1 (GOLDBERG DAVID [US] ET AL) 21 July 2005 (2005-07-21) abstract page 2, paragraph 18 page 3, paragraph 33 page 12, paragraph 172 page 29, paragraph 330-333 page 30, paragraph 340 page 34, paragraphs 377,378	16-18, 20-24 19

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2006/067942

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet (2)) (January 2004)

International Application No. PCT/EP2006/067942

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

Mobile terminal executing playback of a song file simultaneously on a plurality of wireless terminals

2. claims: 8-15

Mobile terminal receiving vote messages for nominated song files

3. claims: 16-24

Mobile terminal sending a signal to other wireless terminals instructing to control a lighting device in correspondence with the playback of a song file

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2006/067942

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004075169 A2	02-09-2004	EP 1597895 A2 JP 2006518507 T KR 20050104382 A	23-11-2005 10-08-2006 02-11-2005
US 2002168938 A1	14-11-2002	US 2004248601 A1	09-12-2004
US 2003032419 A1	13-02-2003	EP 1303077 A2 JP 2003050589 A	16-04-2003 21-02-2003
US 2003037157 A1	20-02-2003	NONE	
US 2005160270 A1	21-07-2005	NONE	

Form PCT/ISA/210 (patent family annex) (April 2005)

(81)指定国　　AP(BW,GH,GM,KE,LS,MW,MZ,NA,SD,SL,SZ,TZ,UG,ZM,ZW),EA(AM,AZ,BY,KG,KZ,MD,RU,TJ,TM),EP(AT,BE,BG,CH,CY,CZ,DE,DK,EE,ES,FI,FR,GB,GR,HU,IE,IS,IT,LT,LU,LV,MC,NL,PL,PT,RO,SE,SI,SK,TR),OA(BF,BJ,CF,CG,CI,CM,GA,GN,GQ,GW,ML,MR,NE,SN,TD,TG),AE,AG,AL,AM,AT,AU,AZ,BA,BB,BG,BR,BW,BY,BZ,CA,CH,CN,CO,CR,CU,CZ,DE,DK,DM,DZ,EC,EE,EG,ES,FI,GB,GD,GE,GH,GM,GT,HN,HR,HU,ID,IL,IN,IS,JP,KE,KG,KM,KN,KP,KR,KZ,LA,LC,LK,LR,LS,LT,LU,LV,LY,MA,MD,MG,MK,MN,MW,MX,MY,MZ,NA,NG,NI,NO,NZ,OM,PG,PH,PL,PT,RO,RS,RU,SC,SD,SE,SG,SK,SL,SM,SV,SY,TJ,TM,TN,TR,TT,TZ,UA,UG,US,UZ,VC,VN,ZA,ZM,ZW

（特許庁注：以下のものは登録商標）
１．ＧＳＭ

(72)発明者　デ　レオン，　デイビッド
スウェーデン国　ルンド　エスイー－２２３　５９，　アルキヴガタン　２４　エー
(72)発明者　スパーレ，　エリク
スウェーデン国　ロンマ　エスイー－２３４　３２，　ヴァルガタン　７エー
(72)発明者　グランストレム，　マルティン
スウェーデン国　マルメ　エスイー－２１１　２１，　レプスラガレガタン
Ｆターム(参考) 5K067 AA34　BB04　BB21　DD51　EE04　EE16　HH21

Espacenet

Bibliographic data: JP2011130496 (A) — 2011-06-30

SOUND OUTPUT DEVICE AND METHOD

Inventor(s): NAKAGAWA TORU ± (NAKAGAWA TORU)

Applicant(s): TOSHIBA CORP ± (TOSHIBA CORP)

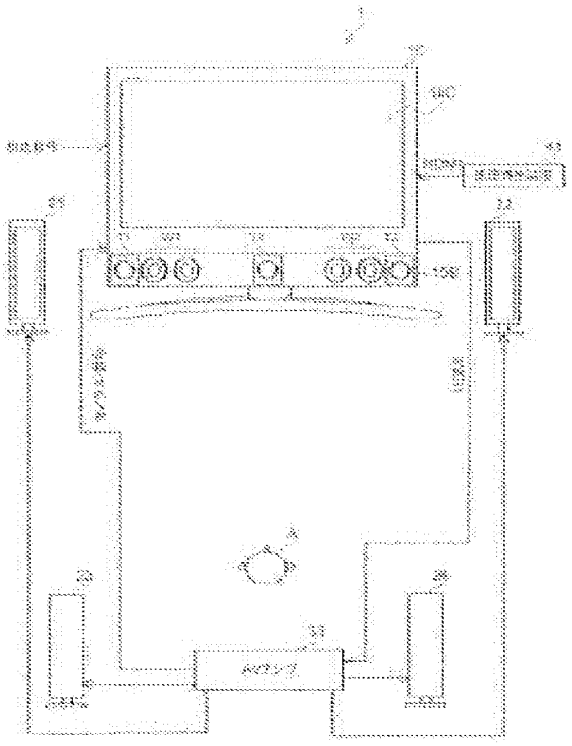
Classification: **- international:** ***H04S5/02***
- cooperative:

Application number: JP20110035874 20110222

Priority number(s): JP20110035874 20110222

Abstract of JP2011130496 (A)

PROBLEM TO BE SOLVED: To provide a sound output device and method, capable of being used as a center speaker upon usage of an external speaker. ;SOLUTION: The sound output device has a first to third speakers disposed in a housing. The first and second speakers are disposed in the right and left of the housing so that the third speaker is interposed therebetween, respectively, and include a speaker which outputs low-tone components of sound signals. The third speaker includes a speaker which outputs high-tone components of sound signals. ;COPYRIGHT: (C)2011,JPO&INPIT



(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2011-130496
(P2011-130496A)
(43)公開日　平成23年6月30日(2011.6.30)

(51)Int.Cl.		F I		テーマコード（参考）
H04S 5/02	(2006.01)	H04S 5/02	P	5D062

審査請求 有　請求項の数 7　ＯＬ　（全 11 頁）

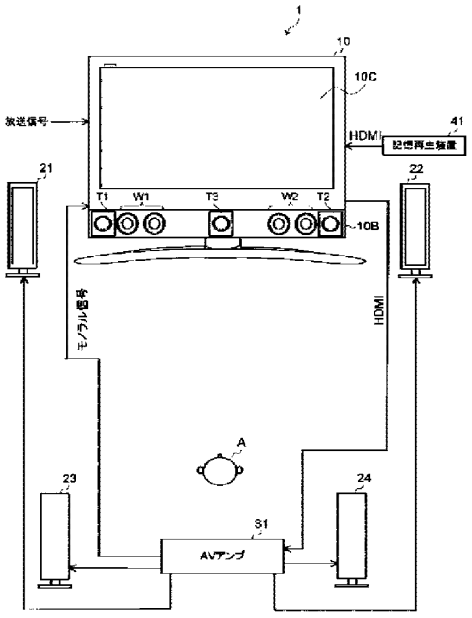
(21)出願番号　特願2011-35874 (P2011-35874)
(22)出願日　平成23年2月22日 (2011.2.22)
(62)分割の表示　特願2009-177780 (P2009-177780)の分割
原出願日　平成21年7月30日 (2009.7.30)

(71)出願人　000003078
株式会社東芝
東京都港区芝浦一丁目１番１号
(74)代理人　110001092
特許業務法人サクラ国際特許事務所
(72)発明者　中川　透
東京都青梅市新町３丁目３番地の１　東芝デジタルメディアエンジニアリング株式会社内

Ｆターム(参考)　5D062 BB10

(54)【発明の名称】音声出力装置、音声出力方法

(57)【要約】
【課題】外部スピーカを使用する際に、センタースピーカとして使用できる音声出力装置および音声出力方法を提供する。
【解決手段】本発明の一態様に係る音声出力装置は、筐体内に配置された第１ないし第３のスピーカを備え、第１，第２のスピーカは、第３のスピーカを挟んで筐体の左右に夫々配置され、音声信号の低音域成分を出力するスピーカを含み、第３のスピーカは、音声信号の高音域成分を出力するスピーカを含む。
【選択図】図１



【特許請求の範囲】
【請求項１】
筐体内に配置された第１ないし第３のスピーカを備え、
前記第１，第２のスピーカは、前記第３のスピーカを挟んで前記筐体の左右に夫々配置され、音声信号の低音域成分を出力するスピーカを含み、
前記第３のスピーカは、音声信号の高音域成分を出力するスピーカを含むことを特徴とする音声出力装置。
【請求項２】
外部スピーカの使用状態を検知する検知信号に基づいて、前記第１、第２のスピーカからステレオ音声信号を出力する第１の態様と、前記第３のスピーカからモノラル音声信号を出力する第２の態様とを切換えることを特徴とする請求項１に記載の音声出力装置。
【請求項３】
前記第２の態様を使用するか否かを設定する設定部をさらに具備し、
前記設定部での設定に基づいて、前記第１の態様と前記第２の態様とを切換えることを特徴とする請求項２に記載の音声出力装置。
【請求項４】
前記第２の態様は、前記第３のスピーカからモノラル音声信号のうち高音域成分を出力し、前記第１，第２のスピーカからモノラル音声信号のうち低音域成分を出力することを特徴とする請求項２または請求項３に記載の音声出力装置。
【請求項５】
前記ステレオ音声信号または前記モノラル音声信号を選択する選択部と、
前記モノラル音声信号をミュートする第１のミュート部と、
前記ステレオ音声信号をミュートする第２のミュート部と、
前記外部スピーカを使用している場合、前記選択部に前記モノラル音声信号を選択させると共に、前記第２のミュート部へ前記ステレオ音声信号をミュートさせ、前記外部スピーカを使用していない場合、前記選択部に前記ステレオ音声信号を選択させると共に前記第１のミュート部へ前記モノラル音声信号をミュートさせる制御部と、
をさらに具備することを特徴とする請求項２に記載の音声出力装置。
【請求項６】
前記第１のミュート部の後段に設けられ、前記モノラル音声信号のうち高音域成分を通過させる第１のフィルタと、
前記第２のミュート部の後段に設けられ、前記ステレオ音声信号のうち高音域成分を通過させる第２のフィルタと、
前記選択部の後段に設けられ、前記選択部により選択されたステレオ音声信号または前記モノラル音声信号のうち低音域成分を通過させる第３のフィルタと、
をさらに具備することを特徴とする請求項５に記載の音声出力装置。
【請求項７】
第３のスピーカを挟んで筐体の左右に設けられた第１，第２のスピーカから音声信号の低音域成分を出力し、前記第３のスピーカから音声信号の高音域成分を出力することを特徴とする音声出力方法。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、センタースピーカとして使用できる音声出力装置および音声出力方法に関する。
【背景技術】
【０００２】
従来の音声出力装置には、音響の臨場感を高めるため複数のスピーカを利用して音声を再生するもの（特許文献１）がある。この音声出力装置では、ユーザの前方正面、前方左右および後方左右にスピーカをそれぞれ配置する（５チャンネル）。加えて、低音を強化

するサブウーファーを置く（０．１ｃｈ）。上記６つのスピーカ（５．１ｃｈ）を視聴者の周りに配置して音声を出力することで、立体感のある音を得ることができ臨場感が増す。

【先行技術文献】
【特許文献】
【０００３】
【特許文献１】特表２００３－５１８３４５号公報
【発明の概要】
【発明が解決しようとする課題】
【０００４】
しかしながら、この５．１ｃｈの音声出力装置をＴＶ等のＡＶ機器と組み合わせて使用する場合、ＡＶ機器が具備しているスピーカとの位置関係が問題となる。特に、ユーザの前方正面に配置されるスピーカ（センタースピーカ）は、音声の定位を考慮してユーザの正面のＴＶ等の映像表示装置の近くに配置する必要がある。しかし、ＴＶ等のＡＶ機器に具備されたスピーカがその機器の下側に配されている場合など、ＡＶ機器のスピーカの開口部をセンタースピーカが遮る配置となる問題がある。また、センタースピーカをユーザの正面に配置しない場合、音声の定位位置が変わるため特にセンターの定位感が十分に得られない可能性があるなど、ＡＶ機器が具備しているスピーカとの共存性に問題が生じる。

【０００５】
本発明は、かかる従来の問題を解消すべくなされたもので、例えば、５．１ｃｈの音声出力装置で使用される外部スピーカを用いる際に、通常のステレオ用のスピーカとしてだけではなくセンタースピーカとしても使用できる音声出力装置および音声出力方法を提供することを目的とする。
【課題を解決するための手段】
【０００６】
本発明の一態様に係る音声出力装置は、筐体内に配置された第１ないし第３のスピーカを備え、第１，第２のスピーカは、第３のスピーカを挟んで筐体の左右に夫々配置され、音声信号の低音域成分を出力するスピーカを含み、第３のスピーカは、音声信号の高音域成分を出力するスピーカを含む。
【０００７】
本発明の一態様に係る音声出力方法は、第３のスピーカを挟んで筐体の左右に設けられた第１，第２のスピーカから音声信号の低音域成分を出力し、第３のスピーカから音声信号の高音域成分を出力する。
【発明の効果】
【０００８】
本発明によれば、ステレオ用スピーカあるいはセンタースピーカとしても使用できる音声出力装置および音声出力方法を提供できる。
【図面の簡単な説明】
【０００９】
【図１】第１の実施形態に係る音響システムの構成の一例を示す図である。
【図２】ＳＴＢの概要を示す図である。
【図３】第１の実施形態に係る音声信号の処理系統の構成を示す図である。
【図４】第１の実施形態に係る音声出力装置の動作を示すフローチャートである。
【図５】比較例に係る音声信号の処理系統の構成を示す図である。
【図６Ａ】比較例に係るトランジェント特性を示す図である。
【図６Ｂ】比較例に係るトランジェント特性を示す図である。
【図６Ｃ】比較例に係るトランジェント特性を示す図である。
【図７Ａ】第１の実施形態に係るトランジェント特性を示す図である。
【図７Ｂ】第１の実施形態に係るトランジェント特性を示す図である。

【図７Ｃ】第１の実施形態に係るトランジェント特性を示す図である。
【発明を実施するための形態】
【００１０】
以下、図面を参照して、本発明の実施形態を詳細に説明する。
（第１の実施形態）
図１は、第１の実施形態に係る音響システム１の構成を示す図である。第１の実施形態に係る音響システム１は、音声出力装置１０、スピーカ２１から２４、ＡＶアンプ３１、記憶再生装置４１を具備する。
【００１１】
音声出力装置１０は、ＳＴＢ（Set top box）１０Ａ（図示せず）、スピーカ部１０Ｂ、表示部１０Ｃから構成される。ＳＴＢ１０Ａは、図示しないアンテナから入力される放送局等の放送信号をデコードして映像信号および音声信号を生成する。ＳＴＢ１０Ａは、生成した映像信号および音声信号、もしくは外部の記憶再生装置（または再生装置）４１から入力される映像信号、音声信号をスピーカ部１０Ｂ、表示部１０Ｃへそれぞれ入力する。また、ＳＴＢ１０Ａは、音声信号をＡＶアンプ３１へ入力する。表示部１０Ｃは、ＳＴＢ１０Ａから入力される映像信号に基づいて映像を表示する。
【００１２】
スピーカ部１０Ｂは、ＳＴＢ１０Ａ、もしくはＡＶアンプ３１から入力される音声信号に基づいて音声を出力する。スピーカ部１０Ｂは、ステレオ音声再生用のウーハー（Woofer）Ｗ１、Ｗ２とツィータ（Tweeter）Ｔ１、Ｔ２を具備する２ウェイスピーカである。ウーハーＷ１とツィータＴ１、およびウーハーＷ２とツィータＴ２は、一体的に形成されたスピーカボックスの左側および右側にそれぞれ配置される。また、ウーハーＷ１とウーハーＷ２との間には、ツィータＴ３が配置される。ツィータＴ３は、ウーハーＷ１、Ｗ２と共にセンタースピーカとして機能する。ツィータＴ３は、センタースピーカ用の音声信号（センターチャンネル）の高音域、ウーハーＷ１、Ｗ２は、センターチャンネルの低音域を各々受け持つ。なお、ウーハーＷ１、Ｗ２は、フルレンジスピーカであってもよい。
【００１３】
スピーカ２１から２４は、ユーザＡの周りを取り囲むように、ユーザの前方左右および後方左右に配置される。スピーカ２１から２４は、音声出力装置１０のスピーカ部１０Ｂが具備するスピーカ（ツィータＴ３、ウーハーＷ１、Ｗ２）と共に、５．１ｃｈの音響システムを構成する。
【００１４】
ＡＶアンプ３１は、ＨＤＭＩ（High-definition multimedia interface）及び／もしくは光またはコアキシャル方式による音声デジタル伝送（ＳＰＤＩＦ）により音声出力装置１０と接続される。ＨＤＭＩでは、非圧縮でデジタル映像信号、デジタル音声信号が伝送される。ＡＶアンプ３１は、音声出力装置１０から入力される音声信号を増幅し、スピーカ２１から２４へ入力する。
【００１５】
なお、ＡＶアンプ３１には、センタースピーカ用の出力が２種類用意されている。一つは、ボリュームコントロール（音量制御）されたライン出力である。他の一つは、先のボリュームコントロールされたライン出力をさらに増幅した出力である。この第１の実施形態では、ボリュームコントロールされたライン出力が音声出力装置１０へ入力され、センタースピーカとして機能するスピーカ部１０Ｂから音声として出力される。
【００１６】
記憶再生装置４１は、コンテンツを記憶・再生するＤＶＤ（Digital versatile disk）プレーヤまたはＤＶＤレコーダやＨＤＤ（Hard disk drive）レコーダ等である。記憶再生装置４１は、ＨＤＭＩにより音声出力装置１０と接続される。記憶再生装置４１は、再生するコンテンツ（例えば、映画やＰＶ（Promotion video）等）の映像信号、音声信号、制御信号を音声出力装置１０へ入力する。ＨＤＭＩでは、映像信号用、音声信号用、制御信号用のケーブルが一体化しているため配線を簡略化できる。

【００１７】
図２は、第１の実施形態で使用する機器の電子回路（ＳＴＢ１０Ａ）の概略構成を示す図である。ＳＴＢ１０Ａは、選局部１０１、端子１０２、Ｉ／Ｆ１０３、端子１０４、Ｉ／Ｆ１０５、分離部１０６、デコード部１０７、音声信号処理部１０８、増幅部１０９、端子１１０、リモコン受信部１１１を具備する。
【００１８】
選局部１０１は、アンテナで受信された放送信号から所望のチャンネルを選局する。選局部１０１は、選局した放送信号を復調してＴＳ（Transport stream）を生成する。
【００１９】
端子１０２は、記憶再生装置４１を接続するＨＤＭＩ端子である。Ｉ／Ｆ（Inter face）１０３は、端子１０２に接続された記憶再生装置４１との間でデータの送受信を行うためのインターフェースである。
【００２０】
端子１０４は、ＡＶアンプ３１を接続するＨＤＭＩ端子もしくはＳＰＤＩＦ端子である。Ｉ／Ｆ１０５は、端子１０４に接続されたＡＶアンプ３１との間で音声信号（もしくは音声データ）及びデータの送受信を行うためのインターフェースである。
【００２１】
分離部１０６は、選局部１０１で生成したＴＳから放送信号、ＳＩ／ＰＳＩ等を分離する。ＴＳは、放送信号，ＳＩ／ＰＳＩを含む多重化された信号である。放送信号は，例えば，ＭＰＥＧ－２の放送信号である。放送信号は、映像・音声のそれぞれを符号化した音声ＥＳ（Audio elementary stream）と映像ＥＳ（Video elementary stream）である。ＰＳＩは、ＴＳにどのようなプログラムが存在し、ＴＳに含まれる各ＥＳがどのプログラムに属しているかを記した情報である。また、ＳＩは、ＥＰＧ（Electric program guide）情報（番組情報）を含んでいる。
【００２２】
デコード部１０７は、分離部１０６で分離された音声ＥＳ、映像ＥＳをデコードして音声信号、映像信号を生成する。生成された音声信号は、音声信号処理部１０８および（端子１０４を介して）ＡＶアンプ３１へ出力される。また、映像信号は、表示部１０Ｃへ入力される。表示部１０Ｃは、デコード部１０７から入力される映像信号、もしくは端子１０２を介して記憶再生装置４１から入力される映像信号に基づいて映像を表示する。
【００２３】
端子１１０には、ＡＶアンプ３１からの信号ケーブルが接続される。端子１１０を介して、ＡＶアンプ３１から出力されるセンタースピーカ用の音声信号（モノラル音声信号）が音声信号処理部１０８へ入力される。
【００２４】
音声処理部１０８は、ＤＳＰ（Digital signal processor）等の回路により構成される。音声信号処理部１０８は、ＡＶアンプ３１を使用している場合（ＡＶアンプ３１がＯＮしている場合）、ＡＶアンプ３１から入力されるモノラル音声信号をツィータＴ３、およびウーハーＷ１、Ｗ２へ入力する。この場合、ツィータＴ３、およびウーハーＷ１、Ｗ２は、５．１ｃｈの音響システムのセンタースピーカとして機能する。また、ＡＶアンプ３１を使用していない場合、音声信号処理部１０８は、デコード部１０７もしくは端子１０２を介して記憶再生装置４１から入力される音声信号をツィータＴ１，Ｔ２およびウーハーＷ１、Ｗ２へ入力する。増幅部１０９は、音声信号処理部１０８から入力される音声信号を増幅してスピーカ部１０Ｂへ入力する。
【００２５】
図３は、第１の実施形態に係る音声信号の処理系統の構成を示す図である。音声信号処理部１０８は、制御部１０８ａ、ミュート部１０８ｂ，１０８ｃ、セレクタ部１０８ｄ、信号処理部１０８ｅ、ＨＰＦ（High pass filter）１０８ｆ，１０８ｇ、ＬＰＦ（Low pass filter）１０８ｈを具備する。増幅部１０９は、アンプ１０９ａから１０９ｃを具備する。

【００２６】
ミュート部１０８ｂは、制御部１０８ａからの指示に応じて、入力されるモノラル音声信号をミュート（消音）する。ミュート部１０８ｃは、制御部１０８ａからの指示に応じて、入力されるステレオ音声信号をミュート（消音）する。セレクタ部１０８ｄは、制御部１０８ａからの指示に応じて、入力されるステレオ音声信号またはモノラル音声信号のいずれかを選択する。
【００２７】
信号処理部１０８ｅは、ミュート部１０８ｂ，１０８ｃおよびセレクタ部１０８ｄから入力される音声信号を処理する。具体的には、音量制御や音質設定（低音／高音の増幅／減衰）及びサラウンド等の処理を行う。なお、信号処理部１０８ｅを、ミュート部１０８ｂ，１０８ｃおよびセレクタ部１０８ｄの前段へ挿入する形態としてもよい。
【００２８】
ＨＰＦ１０８ｆは、信号処理部１０８ｅから入力されるモノラル音声信号のうち高音域成分（高周波数成分）を通過させ、ＡＭＰ１０９ａへ入力する。ＨＰＦ１０８ｇは、信号処理部１０８ｅから入力されるステレオ音声信号のうち高音域成分を通過させ、ＡＭＰ１０９ｂへ入力する。ＬＰＦ１０８ｈは、信号処理部１０８ｅから入力されるステレオ音声信号もしくはモノラル音声信号のうち低音域成分（低周波数成分）を通過させ、ＡＭＰ１０９ｃへ入力する。
【００２９】
ＡＭＰ１０９ａは、ＨＰＦ１０８ｆから入力されるモノラル音声信号を増幅してツィータＴ３へ入力する。ＡＭＰ１０９ｂは、ＨＰＦ１０８ｇから入力されるステレオ音声信号を増幅してツィータＴ１，Ｔ２へ入力する。ＡＭＰ１０９ｃは、ＬＰＦ１０８ｈから入力されるステレオ音声信号もしくはモノラル音声信号を増幅しウーハーＷ１，Ｗ２へ入力する。
【００３０】
なお、ＨＰＦ１０８ｆ，１０８ｇおよびＬＰＦ１０８ｈは、ＦＩＲ型（Finite impulse response：有限インパルス応答）のフィルタであり、アナログフィルタでは近似的にしか実現できなかったリニアフェーズ（定遅延）特性が実現できる。リニアフェーズとは、位相特性がどの周波数に対しても直線となる特性のことである。つまり、全ての周波数成分が同じ時間だけ遅延するので、波形が乱れることなく忠実な波形の再現が可能となる。このため、フィルタ処理において位相遅れを考慮することなくシステム調整が可能である。なお、アナログフィルタとの比較結果を、図６Ａから図７Ｃを参照して後述する。
【００３１】
制御部１０８ａは、ＡＶアンプ３１を使用しているかどうかに応じて、ミュート部１０８ｂ，１０８ｃおよびセレクタ部１０８ｄを制御する。ＡＶアンプ３１を使用しているかどうかは、ＨＤＭＩによるＡＶアンプ３１との通信から確認できる。なお、ＡＶアンプ３１を使用するかどうかを、後述するリモコン１１２で設定できるように構成し、該設定内容に基づいて、ＡＶアンプ３１の使用の有無を確認してもよい。
【００３２】
ＡＶアンプ３１を使用していない場合、ユーザは、外部スピーカを使用していないため、スピーカ部１０Ｂからステレオ音声を出力する必要がある。このため、制御部１０８ａは、モノラル音声信号をミュートするようミュート部１０８ｂを制御する。また、制御部１０８ａは、ステレオ音声信号を選択するようセレクタ部１０８ｄを制御する。上記制御により、スピーカ部１０Ｂの左右にそれぞれ配置されたウーハーＷ１、ツィータＴ１およびウーハーＷ２、ツィータＴ２からステレオ音声が出力される。
【００３３】
ＡＶアンプ３１を使用している場合、ユーザは、外部スピーカを使用しているため、スピーカ部１０Ｂをセンタースピーカとして使用する必要がある。このため、制御部１０８ａは、ステレオ音声信号をミュートするようミュート部１０８ｃを制御する。また、制御部１０８ａは、モノラル音声信号を選択するようセレクタ部１０８ｄを制御する。上記制

御により、スピーカ部１０Ｂの中央部に配置されたツィータＴ３およびウーハーＷ１，Ｗ２からモノラル音声が出力される。この場合、外部スピーカであるスピーカ２１から２４からも音声が出力される（ＡＶアンプ３１から外部スピーカであるスピーカ２１から２４へ音声信号が入力されているため）。

【００３４】

リモコン受信部１１１は、リモートコントローラ１１２（以下、リモコン１１２と称する）から赤外線等の無線により送信される操作信号を受信する。リモコン１１２は、「選択」キーや「決定」キーなど、音声出力装置１の操作に必要な各種キーを備える。ユーザは、リモコン１１２を使用して、ＡＶアンプ３１および記憶再生装置４１を操作する。

【００３５】

（動作の説明）

次に、第１の実施形態に係る音響システム１の動作について説明する。図４は、第１の実施形態に係る音響システム１の動作を示すフローチャートである。選局部１０１は、アンテナで受信された放送信号から所望のチャンネルを選局する（ステップＳ１０１）。選局部１０１は、選局した放送信号を復調してＴＳ（トランスポートストリーム）を生成する。

【００３６】

分離部１０６は、選局部１０１で生成したＴＳから放送信号、ＳＩ／ＰＳＩ等を分離する（ステップＳ１０２）。デコード部１０７は、分離部１０６で分離された音声ＥＳ、映像ＥＳをデコードして音声信号、映像信号を生成する（ステップＳ１０３）。分離部１０６は、生成した音声信号を音声信号処理部１０８へ入力する。また、分離部１０６は、生成した映像信号を表示部１０Ｃへ入力する。

【００３７】

音声信号処理部１０８の制御部１０８ａは、ＡＶアンプ３１を使用しているかどうかを判定する（ステップＳ１０４）。ＡＶアンプ３１を使用している場合（ステップＳ１０４のＹｅｓ）、制御部１０８ａは、ステレオ音声信号をミュートするようミュート部１０８ｃを制御する（ステップＳ１０５）。また、制御部１０８ａは、モノラル音声信号を選択するようセレクタ部１０８ｄを制御する（ステップＳ１０６）。

【００３８】

ＡＶアンプ３１を使用していない場合（ステップＳ１０４のＮｏ）、制御部１０８ａは、モノラル音声信号をミュートするようミュート部１０８ｂを制御する（ステップＳ１０７）。また、制御部１０８ａは、ステレオ音声信号を選択するようセレクタ部１０８ｄを制御する（ステップＳ１０８）。表示部１０Ｃおよびスピーカ部１０Ｂは、入力される映像信号および音声信号に応じて、映像および音声を出力する（ステップＳ１０９）。なお、上記説明では、放送信号を選局する場合について説明したが、記憶再生装置４１で再生されるコンテンツ等を視聴する場合は、ステップＳ１０４から処理を開始する。

【００３９】

（比較例との比較）

図５は、比較例に係る音声信号の処理系統の構成を示す図である。図５に示すように、比較例では、各スピーカ（図５の場合、ツィータＴ１，Ｔ２およびウーハーＷ１，Ｗ２）に入力する音声信号を共通の（一つの）増幅器ＡＭＰで増幅している。増幅器ＡＭＰで増幅された音声信号は、スピーカ毎に分岐される。分岐された音声信号は、それぞれハイパスフィルタＨＰＦ－Ａ，ＨＰＦ－ＢおよびローパスフィルタＬＰＦ－Ａ，ＬＰＦ－Ｂを介して、ツィータＴ１，Ｔ２およびウーハーＷ１，Ｗ２へ入力される。

【００４０】

ハイパスフィルタＨＰＦ－Ａ，ＨＰＦ－ＢおよびローパスフィルタＬＰＦ－Ａ，ＬＰＦ－Ｂは、コイルＬ及びコンデンサＣの組み合わせで構成されるアナログフィルタである。ハイパスフィルタＨＰＦ－Ａ，ＨＰＦ－Ｂは、入力される音声信号のうち高音域成分を分離して通過させる。ローパスフィルタＬＰＦ－Ａ，ＬＰＦ－Ｂは、入力される音声信号のうち低音域成分を分離して通過させる。

【００４１】
つまり、比較例では、増幅器ＡＭＰの出力をスピーカ内部もしくは近傍に配したコイルＬ及びコンデンサＣの組み合わせで構成されるＬＣネットワーク（図５ではＬＰＦ－Ａ，ＬＰＦ－Ｂ，ＨＰＦ－Ａ，ＨＰＦ－Ｂ）でスピーカ毎の帯域に分離している。具体的には、上記ＬＣネットワークにより音声信号を高音域と低音域に分離し、この分離した音声信号のうち高音域の音声信号をツィータＴ１，Ｔ２へ入力し、低音域の音声信号をウーハーＷ１，Ｗ２へ入力している。

【００４２】
しかしながら、音声信号をハイパスフィルタや高音域または低音域に分離する際、遮断周波数近傍（ネットワークで分離される帯域の端）においてコンデンサＣやコイルＬに起因する位相乱れが発生する。この位相乱れを低減させる手法の一つとして、スピーカ毎に個別のアンプを設けて音声信号を増幅するマルチアンプ方式がある。しかし、上記マルチアンプ方式を用いた場合であっても、音声信号の分離にＦＩＲ（Finite impulse response）に代表されるようなLinkwitz-Riley方式のフィルタを適用すると、合成波形のトランジェント特性（立ち上がりの特性）になまりが生じる。

【００４３】
図６Ａから図６Ｃは、Linkwitz-Riley方式のフィルタを適用した場合におけるトランジェント特性を示す図である。図６Ａは、ウーハーとツィータとの合成波形を示す図である。図６Ｂは、ウーハーの波形を示す図である。図６Ｃは、ツィータの波形を示す図である。Linkwitz-Riley方式のフィルタを適用した場合、図６Ｂ、図６Ｃに示すように、ウーハー、ツィータ共に波形の立ち上がりになまりが生ずる。このため、図６Ａに示すように、ウーハーとツィータとの合成波形においても、波形の立ち上がり（破線で囲んだ部分）になまりが生ずる。

【００４４】
一方、第１の実施形態に係る音声出力装置１０では、ＨＰＦやＬＰＦとしてLinear-Phase Filterを用いている。このため、合成波形のトランジェント特性（立ち上がりの特性）になまりが生じるのを効果的に抑制できる。

【００４５】
図７Ａから図７Ｃは、Linear-Phase Filter方式のフィルタを適用した場合におけるトランジェント特性を示す図である。図７Ａは、ウーハーとツィータとの合成波形を示す図である。図７Ｂは、ウーハーの波形を示す図である。図７Ｃは、ツィータの波形を示す図である。図７Ｂ、図７Ｃに示すように、ウーハー、ツィータ共に波形の立ち上がりにおけるなまりを効果的に抑制できる。このため、図７Ａに示すように、ウーハーとツィータとの合成波形においても、波形の立ち上がり（破線で囲んだ部分）におけるなまりを効果的に抑制できる。

【００４６】
なお、遮断特性（減衰特性）を十分にとるにはＦＩＲのｔａｐ数を増やす必要があった。しかし、近年音声用のＤＳＰ等のデジタルデバイスが高性能化していることから十分な遮断特性（減衰特性）が得られるｔａｐ数を有したＦＩＲを構築することが可能である。このため、Linear-Phase Filterをチャンネルデバイダーとして用いることが可能となった。

【００４７】
以上のように、第１の実施形態に係る音声出力装置１０は、一体的に形成されたスピーカボックスの左右にそれぞれ配置されたステレオ音声再生用のウーハーＷ１、Ｗ２とツィータＴ１、Ｔ２との間にツィータＴ３が配置したスピーカ部１０Ｂを具備する。そして、外部スピーカ２１から２４の使用時には、ツィータＴ１、Ｔ２へのステレオ音声信号の入力を停止し、ＡＶアンプ３１から供給されるモノラル音声信号をウーハーＷ１、Ｗ２およびツィータＴ３へ入力する。つまり、外部スピーカ２１から２４の使用時には、ウーハーＷ１、Ｗ２およびツィータＴ３が５．１ｃｈの音響システムを構成するセンタースピーカとして機能する。

【００４８】
このため、ユーザの正面にセンタースピーカを配置することができ、音声の定位が向上する。また、ウーハーＷ１、Ｗ２の中心に高音用スピーカであるツィータＴ３を配置しているので、スピーカ部１０Ｂをセンタースピーカとして機能させる場合（モノラル音声を出力）、モノラル音声の特性をより効果的に得ることができ音声の定位感が向上する。また、高音用スピーカであるツィータＴ１、Ｔ２をスピーカ部１０Ｂの両端に配置しているので、通常のスピーカとして機能させる場合（ステレオ音声を出力）、ステレオの特性となる左右の分離感が向上しその特性をより効果的に得ることができる。これにより、ユーザによる視聴の弊害となることもなく、また意匠性およびその機能性についても向上することが可能となり、ＡＶ機器が具備しているスピーカとの共存性の問題もなくなる。

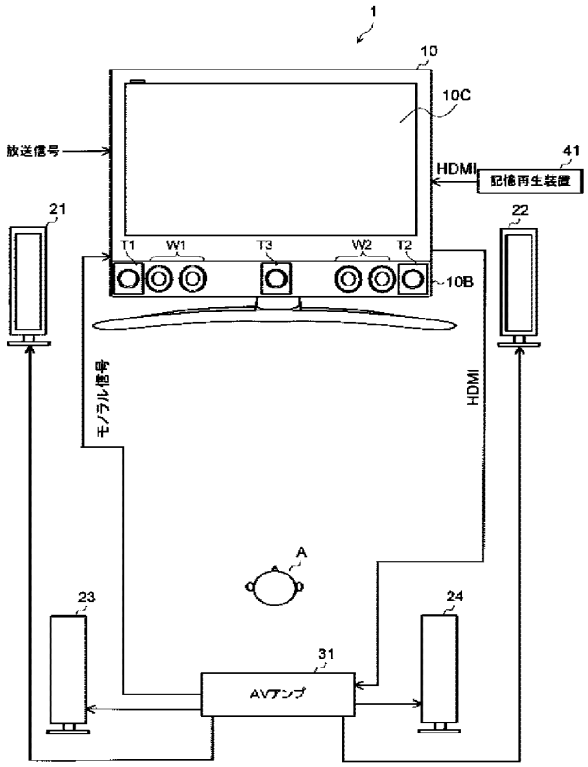
【００４９】
さらに、第１の実施形態では、音声信号処理部１０８をＤＳＰで構成し、ハイパスフィルタＨＰＦ１０８ｆ，１０８ｇやローパスフィルタＬＰＦ１０８ｈとしてLinear-Phase Filterを用いている。このため、合成波形のトランジェント特性（立ち上がりの特性）になまりが生じるのを効果的に抑制できる。アナログフィルタを構成するＬＣネットワークは、最大でも－１８ｄＢ／ｏｃｔが限界であるが、この第１の実施形態に係る音声信号処理部１０８が具備するフィルタでは、図６Ａから図７Ｃを参照して説明したように遮断特性を急峻に設定できる。

【００５０】
このため各スピーカの遮断周波数近傍での相互干渉が低減できる。特に、低音域の音声信号が入力された場合、破損する可能性のあるツィータ（Tweeter）では、音声信号の遮断特性を十分に取れるので、使用できる音声帯域を広く（遮断周波数の設定を低く）することができる。また、一般的には、遮断特性（減衰特性）を大きくした場合、遮断周波数近傍での位相のうねり（位相の回転）が増加する。このため、遮断周波数近傍での各スピーカの音のつながりが悪くなる傾向がある。しかし、この第１の実施形態では、Linear-Phase Filterを用いるので、遮断周波数近傍での急激な位相の回転（位相変化）を抑制できる。このため各スピーカ間の音のつながりを効果的に改善できる。

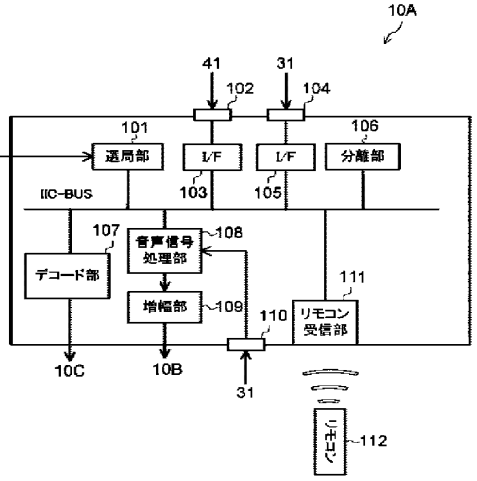
【００５１】
（その他の実施形態）
なお、本発明は上記実施形態そのままに限定されるものではなく、実施段階ではその要旨を逸脱しない範囲で構成要素を変形して具体化できる。例えば、第１の実施形態では、５．１ｃｈの音響システムについて説明したが、センタースピーカを使用する音響システムであれば適用が可能である。また、図１では、記憶再生装置４１を音声出力装置１０へ接続する構成としたが、記憶再生装置４１をＡＶアンプ３１へ接続する構成としてもよい。

【符号の説明】
【００５２】
１…音響システム、１０…音声出力装置、２１から２４…スピーカ、３１…ＡＶアンプ、４１…記憶再生装置、１０１…選局部、１０２，１０４，１１０…端子、１０３，１０５…Ｉ／Ｆ、１０６…分離部、１０７…デコード部、１０８…音声処理部、１０９…増幅部、１１１…リモコン受信部、１１２…リモートコントローラ（リモコン）。

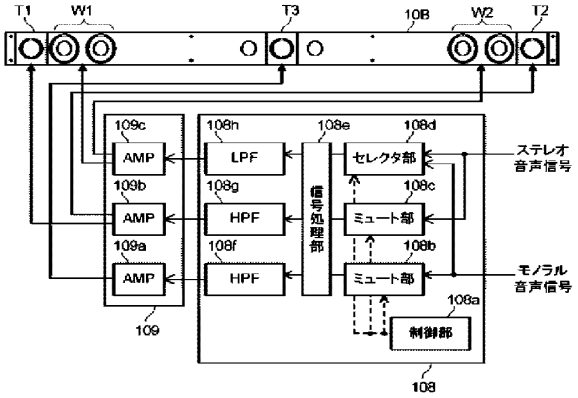
【図１】


1
10
10C
放送信号
HDMI
41
記憶再生装置
21
22
T1
W1
T3
W2
T2
10B
モノラル信号
HDMI
A
23
24
31
AVアンプ

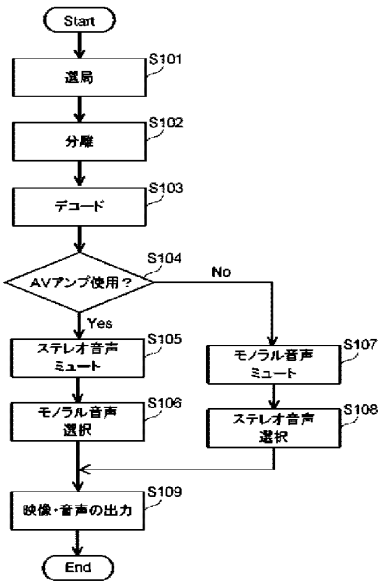
【図２】


10A
41
31
102
104
101
106
放送信号
選局部
I/F
I/F
分離部
IIC-BUS
103
105
107
108
音声信号処理部
デコード部
111
増幅部
109
110
リモコン受信部
10C
10B
31
リモコン
112

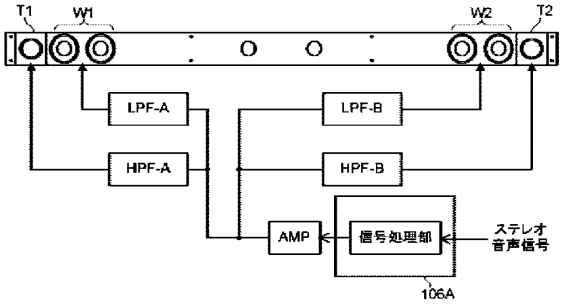
【図３】


T1
W1
T3
10B
W2
T2
109c
AMP
109b
AMP
109a
AMP
109
108h
LPF
108g
HPF
108f
HPF
108e
信号処理部
108d
セレクタ部
108c
ミュート部
108b
ミュート部
108a
制御部
108
ステレオ音声信号
モノラル音声信号

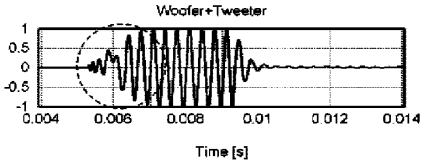
【図４】


Start
選局
S101
分離
S102
デコード
S103
AVアンプ使用？
S104
No
Yes
ステレオ音声ミュート
S105
モノラル音声選択
S106
モノラル音声ミュート
S107
ステレオ音声選択
S108
映像・音声の出力
S109
End

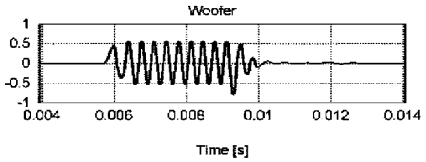
【図５】



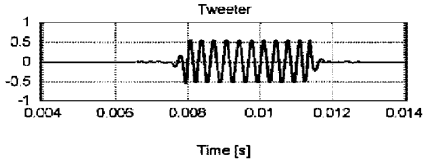
【図６Ａ】



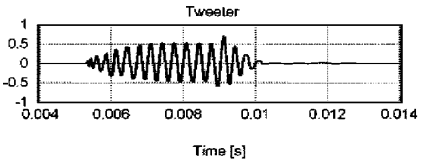
【図６Ｂ】



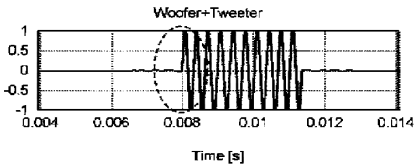
【図７Ｃ】



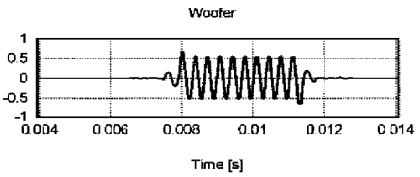
【図６Ｃ】



【図７Ａ】



【図７Ｂ】



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(71) Applicant *(for all designated States except US)*: **SONY ERICSSON MOBILE COMMUNICATIONS AB** [SE/SE]; S-22188 Lund (SE).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **WASSINGBO, Thomas** [SE/SE]; Södra Esplanaden 21, S-22352 Lund (SE).

(74) Agent: **DAHNÉR, Christer**; Valea AB, Box 7086, Sveavägen 24, S-10387 Stockholm (SE).

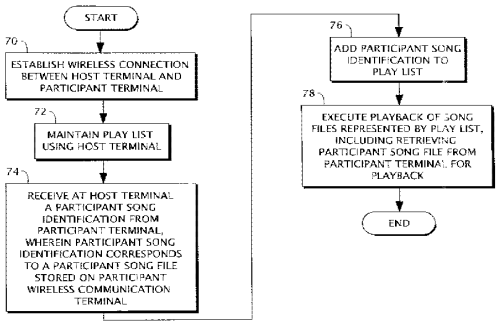
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(54) **Title:** MOBILE WIRELESS COMMUNICATION TERMINALS, SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR PROVIDING A SONG PLAY LIST



(57) **Abstract:** A mobile wireless communication terminal includes a wireless communication module and a controller. The wireless communication module is configured to communicate with other communication terminals over a wireless interface. The controller is configured to establish a connection with a participant wireless communication terminal via the wireless communication module, to maintain a play list representing song files to be played, to receive a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal, to add the participant song identification to the play list, and to thereafter execute playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

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MOBILE WIRELESS COMMUNICATION TERMINALS, SYSTEMS, METHODS, AND COMPUTER PROGRAM PRODUCTS FOR PROVIDING A SONG PLAY LIST

FIELD OF THE INVENTION

[001] The present invention relates to electronic devices and, more particularly, to electronic devices, methods and computer program products for playing song files.

BACKGROUND OF THE INVENTION

[002] Mobile electronic devices, such as wireless communication terminals (*e.g.*, cellular telephones), are widely used to store and playback song files. A user may wish to play a song file on another device such as a media center (*e.g.*, a PC or laptop, a television, an audio receiver, etc.) or another wireless communication terminal. This may be accomplished by connecting the electronic device to the other device via a cable or a wireless link (*e.g.*, a Bluetooth connection) if the other device is equipped with a suitable communication module, which may be an integrated module or an auxiliary (*e.g.*, plug- in) module. Song files may be sent, one by one, from one or more mobile electronic devices to the playback device(s).

SUMMARY OF THE INVENTION

[003] According to embodiments of the present invention, a mobile wireless communication terminal includes a wireless communication module and a controller. The wireless communication module is configured to communicate with other communication terminals over a wireless interface. The controller is configured to establish a connection with a participant wireless communication terminal via the wireless communication module, to maintain a play list representing song files to be played, to receive a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal, to add the participant song identification to the play list, and to thereafter execute playback

of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

[004] The controller may be configured to establish a connection with a plurality of participant wireless communication terminals, to receive a plurality of participant song identifications from the plurality of participant wireless communication terminals, wherein each participant song identification corresponds to a respective participant song file stored on a respective one of the plurality of participant wireless communication terminals, to add each of the participant song identifications to the play list, and to retrieve the participant song files from each of the respective participant wireless communication terminals for playback.

[005] According to some embodiments, the controller is configured to retrieve and execute the participant song file from the participant wireless communication terminal as a streaming music file.

[006] According to some embodiments, the controller is configured to retrieve the participant song file from the participant wireless communication terminal, to store the participant song file on the wireless communication terminal, and to thereafter execute playback of the stored participant song file.

[007] The controller may be configured to send a playback signal to a media center for playback of the song files represented by the play list on the media center.

[008] According to some embodiments, the wireless communication terminal includes a sound transducer. The controller is configured to play the song files represented by the play list using the sound transducer.

[009] The controller may be configured to send a playback signal to at least one participant wireless communication terminal for playback of the song files represented by the play list on the at least one participant wireless communication terminal.

[010] The controller may be configured to receive a song catalog listing from the participant wireless communication terminal representing available song files stored on the participant wireless communication terminal, to receive user input selecting from the available song files, and to add the selected available song files to the play list.

[011] According to some embodiments, the controller is configured to send a listing signal to the participant wireless communication terminal representing the play list for display of the play list on the participant wireless communication terminal.

[012] The controller may be configured to modify the play list responsive to user input.

[013] According to some embodiments, the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface. The controller is configured to establish the connection with the participant wireless communication terminal, receive the participant song identification from the participant wireless communication terminal, and retrieve the participant song file from the participant wireless communication terminal for playback all via the direct point-to-point wireless interface.

[014] According to some embodiments, the wireless communication module comprises a short range transmitter. The controller is configured to establish the connection with the participant wireless communication terminal, receive the participant song identification from the participant wireless communication terminal, and retrieve the participant song file from the participant wireless communication terminal for playback all via the short range transmitter. The short range transmitter may be a Bluetooth™ transmitter.

[015] The wireless communication terminal may include a cellular telephone.

[016] According to further embodiments of the present invention, a system for providing a song play list includes a host mobile wireless communication terminal and a participant wireless communication terminal. The host wireless communication terminal includes a wireless communication module and a controller. The wireless communication module is configured to communicate with other communication terminals over a wireless interface. The controller is configured to establish a connection with the participant wireless communication terminal via the wireless communication module, to maintain a play list representing song files to be played, to receive a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal, to add the participant song identification to the play list, and to thereafter execute playback of the song files

represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

[017] According to some embodiments, the system includes a plurality of participant wireless communication terminals. The controller is configured to establish a connection with each of the plurality of participant wireless communication terminals, to receive a plurality of participant song identifications from the plurality of participant wireless communication terminals, wherein each participant song identification corresponds to a respective participant song file stored on a respective one of the plurality of participant wireless communication terminals, to add each of the participant song identifications to the play list, and to retrieve the participant song files from each of the respective participant wireless communication terminals for playback.

[018] According to further embodiments of the present invention, methods for providing a song play list using a host wireless communication terminal includes: establishing a wireless connection between the host wireless communication terminal and a participant wireless communication terminal; maintaining a play list using the host wireless communication terminal, the play list representing song files to be played; receiving at the host wireless communication terminal a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal; adding the participant song identification to the play list; and thereafter executing playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

[019] According to further embodiments of the present invention, a computer program product for providing a song play list using a host wireless communication terminal includes a computer usable medium having computer usable program code embodied therein, the computer usable program code comprising: computer usable program code configured to establish a wireless connection between the host wireless communication terminal and a participant wireless communication terminal; computer usable program code configured to maintain a play list using the host wireless communication terminal, the play list representing song files to be played; computer usable program code configured to receive at the host wireless communication

terminal a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal; computer usable program code configured to add the participant song identification to the play list; and computer usable program code configured to thereafter execute playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

[020] Further features, advantages and details of the present invention will be appreciated by those of ordinary skill in the art from a reading of the figures and the detailed description of the preferred embodiments that follow, such description being merely illustrative of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[021] **Figure 1** is a schematic diagram of a mobile wireless communication terminal according to some embodiments of the present invention and an exemplary base station transceiver.

[022] **Figure 2** is a flowchart illustrating methods in accordance with some embodiments of the present invention.

[023] **Figure 3** is a schematic diagram of a song file playback system according to some embodiments of the present invention including the mobile wireless communication terminal of **Figure 1**.

[024] **Figure 4** is a schematic diagram illustrating a display of the mobile wireless communication terminal of **Figure 1** in accordance with some embodiments of the present invention.

[025] **Figure 5** is a schematic diagram of a song file playback system according to further embodiments of the present invention including the mobile wireless communication terminal of **Figure 1**.

[026] **Figure 6** is a schematic diagram of a song file playback system according to further embodiments of the present invention including the mobile wireless communication terminal of **Figure 1**.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[027] The present invention now will be described more fully with reference to the accompanying drawings, in which embodiments of the invention are shown. However, this invention should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

[028] As used herein, the term "comprising" or "comprises" is open-ended, and includes one or more stated features, integers, elements, steps, components or functions but does not preclude the presence or addition of one or more other features, integers, elements, steps, components, functions or groups thereof.

[029] As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

[030] As used herein, the common abbreviation "*e.g.*", which derives from the Latin phrase "exempli gratia," may be used to introduce or specify a general example or examples of a previously mentioned item, and is not intended to be limiting of such item. If used herein, the common abbreviation "*i.e.*", which derives from the Latin phrase "id est," may be used to specify a particular item from a more general recitation.

[031] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise.

[032] Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

[033] It will be understood that when an element is referred to as being "coupled" or "connected" to another element, it can be directly coupled or connected to the other element or intervening elements may also be present. In contrast, when

an element is referred to as being "directly coupled" or "directly connected" to another element, there are no intervening elements present. Furthermore, "coupled" or "connected" as used herein may include wirelessly coupled or connected.

[034] Well-known functions or constructions may not be described in detail for brevity and/or clarity.

[035] The present invention may be embodied as methods, electronic devices, and/or computer program products. Accordingly, the present invention may be embodied in hardware and/or in software (including firmware, resident software, micro-code, *etc.*), which may be generally referred to herein as a "circuit" or "module". Furthermore, the present invention may take the form of a computer program product on a computer-usable or computer-readable storage medium having computer-usable or computer-readable program code embodied in the medium for use by or in connection with an instruction execution system. In the context of this document, a computer-usable or computer-readable medium may be any medium that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

[036] Embodiments according to the present invention are described with reference to block diagrams and/or operational illustrations of methods and communication terminals. In this regard, each block may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s). It is to be understood that each block of the block diagrams and/or operational illustrations, and combinations of blocks in the block diagrams and/or operational illustrations, can be implemented by radio frequency, analog and/or digital hardware, and/or program instructions. These program instructions may be provided to a controller, which may include one or more general purpose processors, special purpose processors, ASICs, and/or other programmable data processing apparatus, such that the instructions, which execute via the controller and/or other programmable data processing apparatus, create means for implementing the functions/acts specified in the block diagrams and/or operational block or blocks. In some alternate implementations, the functions/acts noted in the blocks may occur out of the order noted in the operational illustrations. For example, two blocks shown in succession may in fact be executed substantially concurrently or

the blocks may sometimes be executed in the reverse order, depending upon the functionality/acts involved.

[037] These computer program instructions may also be stored in a computer-usable or computer-readable memory that may direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer usable or computer-readable memory produce an article of manufacture including instructions that implement the function specified in the flowchart and/or block diagram block or blocks.

[038] The computer-usable or computer-readable medium may be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-readable medium include the following: hard disks, optical storage devices, a transmission media such as those supporting the Internet or an intranet, magnetic storage devices, an electrical connection having one or more wires, a portable computer diskette, a random access memory (RAM), a read-only memory (ROM), an erasable programmable read-only memory (EPROM or Flash memory), an optical fiber, and a compact disc read-only memory (CD-ROM).

[039] Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language and/or a lower level assembler language. It will be further appreciated that the functionality of any or all of the program modules may also be implemented using discrete hardware components, one or more application specific integrated circuits (ASICs), or a programmed digital signal processor or microcontroller.

[040] As used herein, "electronic component" means an active device as contrasted with a passive electrical connector or the like. An electronic component may include a processor.

[041] As used herein, "streamed" or "streaming" means that a file, such as an audio or song file, is continuously sent via a digital signal to a receiving device where

the audio or song file is concurrently played via a suitable receiving application. The digital signal is typically buffered.

[042] As used herein, a "communication terminal" includes, but is not limited to, a terminal that is configured to receive/transmit communication signals via a wireline connection, such as via a public-switched telephone network (PSTN), digital subscriber line (DSL), digital cable, or another data connection/network, and/or via a wireless interface with, for example, a cellular network, a satellite network, a wireless local area network (WLAN), and/or another communication terminal.

[043] When the communication terminal is configured to communicate over a wireless interface, it is referred to herein as a "wireless communication terminal" or a "wireless terminal." Examples of wireless terminals include, but are not limited to, a cellular telephone, personal data assistant (PDA), pager, and/or a computer that is configured to communicate data over a wireless communication interface that can include a cellular telephone interface, a Bluetooth interface, a wireless local area network interface (*e.g.*, 802.11), another RF communication interface, and/or an optical/infra-red communication interface.

[044] As used herein, "mobile terminals" may be portable, transportable, installed in a vehicle (aeronautical, maritime, or land-based), or situated and/or configured to operate locally and/or in a distributed fashion at any other location(s) on earth and/or in space.

[045] Some embodiments of the present invention will now be described below with respect to **Figures 1-6**. Some embodiments of the present invention provide mobile wireless communication terminals capable of providing a song play list including one or more song identifications from another wireless communication terminal.

[046] Referring now to **Figure 1**, an exemplary mobile wireless communication terminal **10A** in accordance with some embodiments of the present invention is illustrated. The wireless terminal **10A** is configured to communicate data with one or more other wireless terminals over a direct wireless communication interface therebetween, over another wireless communication interface through one or more cellular base stations, and/or over another wireless communication interface through a wireless local area network (WLAN) router.

[047] The wireless terminal **10A** may be a mobile radiotelephone forming a part of a radiotelephone communication system **2** as illustrated in **Figure 1**. The system **2** includes the mobile wireless communication terminal **10A** and a base station transceiver, which is part of a wireless communications network **5**. In some embodiments of the present invention, the network **5** includes a base station transceiver that includes the radio transceiver(s) that define an individual cell in a cellular network and communicates with the mobile terminal **10A** (via an interface **7**) and other mobile terminals in the cell using a radio-link protocol. It will be understood that, in some embodiments of the present invention, many base station transceivers may be connected through, for example, a mobile switching center and other devices to define the wireless communications network **5**.

[048] The mobile terminal **10A** in the illustrated embodiments includes a portable housing assembly **12**, a display **20**, a user interface **22** (*i.e.*, a man machine interface (MMI)) including a speaker **24** (*i.e.*, a sound transducer), a controller **30**, a communication module **32**, and a memory **34**. The foregoing components of the mobile terminal **10A** may be included in many conventional mobile terminals and their functionality is generally known to those skilled in the art. The mobile terminal **10A** further includes a song management module **40**, which may be stored in the memory **34**.

[049] The display **20** may be any suitable display screen assembly. For example, the display screen **28** may be a liquid crystal display (LCD) with or without auxiliary lighting (*e.g.*, a lighting panel).

[050] The user interface **22** may include any suitable input device(s) including, for example, a touch activated or touch sensitive device (*e.g.*, a touch screen), a joystick, a keyboard/keypad, a dial, a directional key or keys, and/or a pointing device (such as a mouse, trackball, touch pad, etc.). The speaker **24** generates sound responsive to an input audio signal. The user interface **22** can also include a microphone coupled to an audio processor that is configured to generate an audio data stream responsive to sound incident on the microphone.

[051] The controller **30** may support various functions of the mobile terminal **10A**. The controller **30** can be any commercially available or custom microprocessor, for example. In use, the controller **30** of the mobile terminal **10A** generates a display image on the display **20**.

[052] The memory **34** is configured to store digital information signals and data such as a digital audio signal and/or digital audio files.

[053] The communication module **32** is configured to communicate data over one or more wireless interfaces (*e.g.*, wireless interfaces **7**, **112**, **114**, **116**, **122**, and **134** as discussed herein (**Figures 1** and **3**)) to another remote wireless terminal as discussed herein. The communication module **32** can include a cellular communication module, a direct point-to-point connection module, and/or a WLAN module.

[054] With a cellular communication module, the wireless terminal **10A** can communicate via the base station(s) of the network **5** using one or more cellular communication protocols such as, for example, Advanced Mobile Phone Service (AMPS), ANSI-136, Global Standard for Mobile (GSM) communication, General Packet Radio Service (GPRS), enhanced data rates for GSM evolution (EDGE), code division multiple access (CDMA), wideband-CDMA, CDMA2000, and Universal Mobile Telecommunications System (UMTS). The cellular base stations may be connected to a Mobile Telephone Switching Office (MTSO) wireless network, which, in turn, can be connected to a PSTN and/or another network.

[055] A direct point-to-point connection module may include a direct RF communication module or a direct IR communication module. The direct RF communication module may include a Bluetooth module. With a Bluetooth module, the wireless terminal **10A** can communicate via an ad-hoc network through a direct point-to-point interface.

[056] With a WLAN module, the wireless terminal **10A** can communicate through a WLAN (*e.g.*, a router **120** (**Figure 3**)) using a communication protocol that may include, but is not limited to, 802.11a, 802.11b, 802.11e, 802.11g, and/or 802.11i.

[057] The communication module **32** can include a transceiver typically having a transmitter circuit and a receiver circuit, which respectively transmit outgoing radio frequency signals (*e.g.*, to the network **5**, a router or directly to another terminal) and receive incoming radio frequency signals (*e.g.*, from the network **5**, a router or directly to another terminal), such as voice and data signals, via an antenna. The communication module **32** may include a short range transmitter and receiver, such as a Bluetooth transmitter and receiver. The antenna may be an embedded

antenna, a retractable antenna or any antenna known to those having skill in the art without departing from the scope of the present invention. The radio frequency signals transmitted between the mobile terminal **10A** and the network **5**, router or other terminal may include both traffic and control signals (*e.g.*, paging signals/messages for incoming calls), which are used to establish and maintain communication with another party or destination. The radio frequency signals may also include packet data information, such as, for example, cellular digital packet data (CDPD) information. In addition, the transceiver may include an infrared (IR) transceiver configured to transmit/receive infrared signals to/from other electronic devices via an IR port.

[058] The mobile terminal **10A** may also be configured to electrically couple with another terminal via a wireline or cable for the transmission of digital communication signals therebetween. The mobile terminal **10A** may include further components such as a camera device configured to generate a still image and/or video data stream based on incident light.

[059] According to some embodiments, the mobile terminal **10A** is a handheld mobile terminal. By "handheld mobile terminal," it is meant that the outer dimensions of the mobile terminal are adapted and suitable for use by a typical operator using one hand. According to some embodiments, the total volume of the handheld mobile terminal **10A** is less than about 200 cc. According to some embodiments, the total volume of the handheld terminal **10A** is less than about 100 cc. According to some embodiments, the total volume of the handheld mobile terminal **10A** is between about 50 and 100 cc. According to some embodiments, no dimension of the handheld mobile terminal **10A** exceeds about 200 mm.

[060] A method for providing a song play list using a wireless communication terminal (*e.g.*, the mobile terminal **10A**) according to some embodiments of the present invention will now be described with reference to the flowchart of **Figure 2**. Referring to the embodiments of **Figure 2**, the method includes establishing a wireless connection between the host wireless communication terminal and a participant wireless communication terminal (**Block 70**). A play list is maintained using the host wireless communication terminal (**Block 72**). The play list represents song files to be played. A participant song identification from the participant wireless communication terminal is received at the host wireless

communication terminal (**Block 74**). The participant song identification corresponds to or designates a participant song file stored on the participant wireless communication terminal. The participant song identification is added to the play list (**Block 76**). Thereafter, playback of the song files represented by the play list is executed (**Block 78**). Execution of playback of the song file includes retrieving the participant song file from the participant wireless communication terminal for playback.

[061] According to some embodiments, connections are established between the host wireless communication terminal and a plurality of participant wireless communication terminals, and the host wireless communication terminal receives a plurality of participant song identifications from the plurality of participant wireless communication terminals, adds each of the participant song identifications to the play list, and retrieves the participant song files from each of the respective participant wireless communication terminals for playback. According to some embodiments, communication between the host wireless communication terminal and the participant wireless communication terminal is accomplished via a direct point-to-point interface, such as a Bluetooth wireless RF connection. According to some embodiments, communication between the host wireless communication terminal and the participant wireless communication terminal is accomplished via an indirect interface, such as through a WLAN or cellular-based system. Further aspects and embodiments of the present invention will be apparent from the following descriptions of further embodiments.

[062] With reference to **Figure 3**, a song file playback system **100A** according to embodiments of the present invention is shown therein. The system **100A** includes the mobile wireless communication terminal **10A** (also referred to herein as the "host wireless communication terminal" or "host terminal"), a plurality of additional participant wireless communication terminals **10B**, **10C**, **10D**, and **10E** (also referred to herein as the "participant wireless communication terminals" or "participant terminals"), and a media center **130**.

[063] The terminals **10B-E** may be configured as described above with regard to the terminal **10A**. The terminals **10B-E** each include a wireless communication module **32** and a song management module **40**. However, the respective song management modules may be differently configured for each terminal

10A-E depending on the intended functionality of the device. According to some embodiments, all or some of the terminals **10B-E** are mobile wireless communication terminals. According to some embodiments, all or some of the terminals **10A-E** are handheld mobile wireless communication terminals.

[064] The media center **130** includes apparatus adapted to convert an audio signal (*e.g.*, a digital audio signal) to corresponding sound. The media center **130** may include, for example, a PC or laptop, a television, an audio receiver, stereo equipment, etc. The illustrated media center **130** includes a wireless communication module **132** and sound transducers (speakers) **136**. The wireless communication module **132** may be integrated with the media center **130** or may be an auxiliary or plug-in wireless communication module such as the Bluetooth Media Viewer MMV-100 module or Bluetooth Media Viewer MMV-200 module, each available from Sony Ericsson of Sweden.

[065] The system **100A** will now be described using an illustrative example of use. A group of users at a gathering each have a respective one of the terminals **10A-E**. Various songs are stored on one or more (typically two or more) of the terminals **10A-E**. The users may wish to share the songs stored on their mobile terminals with the other users at the gathering by playing their songs on the media center **130**. With known and available technology, this can be accomplished by having each user send (via Bluetooth, etc.) his or her songs (*i.e.*, music audio files) to the media center **130** one at a time, song by song. However, this method requires substantial and active interaction from each contributing user. Such involvement may be inconvenient and/or not conducive to the setting (*e.g.*, a party).

[066] In accordance with embodiments of the present invention, the foregoing shortcomings can be overcome by creating and maintaining a play list of songs and executing playback of the songs (*i.e.*, the music audio files) using the host terminal **10A**. Typically, each terminal **10A-E** will have the appropriate song management module **40** (*e.g.*, software or firmware application) installed thereon.

[067] The host terminal **10A** is chosen to be the master or host terminal and the participant terminals **10B-E** are each designated as slave or participant terminals. The controller **30** of the host terminal **10A** establishes a wireless connection (*i.e.*, communicatively couples) with each of the participant terminals **10B-E**. According to some embodiments the wireless connection is a direct wireless communication

interface connection, according to some embodiments, a direct RF connection and, according to some embodiments, a Bluetooth connection. The connections may be established in known manner. For example, in the case of Bluetooth connections, the participant (slave) terminals **10B-E** may be set to a searchable/discoverable state and the host (master) terminal **10A** emits an inquiry to identify the available participant (slave) terminals **10B-E** to form a piconet or personal area network.

[068] As illustrated, the host terminal **10A** communicates with the participant terminals **10B**, **10C** and **10D** via direct point-to-point wireless interfaces or links **112**, **114** and **116**, respectively, and with the participant terminal **10E** via wireless interfaces or links **118**, **122** through a WLAN router **120**. It will be appreciated that, according to some embodiments, the interfaces may be various combinations of wireless interfaces that are direct (*e.g.*, Bluetooth) or indirect (*e.g.*, via a WLAN router or a cellular network **5**). According to some contemplated embodiments, all of the signals provided between the host terminal **10A** and the participant terminals **10B-E** to execute the song sharing procedure are provided via direct point-to-point wireless interfaces. According to some contemplated embodiments, all of the signals provided between the host terminal **10A** and the participant terminals to execute the song sharing procedure are provided via direct wireless radio frequency (RF) interfaces such as Bluetooth interfaces.

[069] Before or after establishing the connections, the host terminal **10A** may identify and designate valid participant terminals by any suitable method. According to some embodiments, the host terminal **10A** will poll or send an invitation to all or a selected group of potential participant terminals (*e.g.*, those within operational range of the host terminal's Bluetooth signal). The potential participant terminals may then opt in by replying with an acceptance of the invitation. Alternatively or additionally, the host terminal **10A** may accept unsolicited requests from participant terminals to participate. The host terminal **10A** may be used to define specific groups such as a listing of the potential participant terminals that will be permitted to participate (*i.e.*, contribute songs to the play list).

[070] The host terminal **10A** is also communicatively coupled to the media center **130** to provide wireless song data signals via a wireless interface or link **134** to the communication module **132**. Alternatively, the host terminal **10A** can be connected to the media center **130** using a wireline or signal cable.

[071] Once the connections are established between the host terminal **10A** and the participant terminals **10B-E**, each participant can send a participant song identification designating a song stored on the participant's terminal **10B-E**. The song management module **40** of the sending participant terminal **10B-E** may provide a user interface to facilitate the selection and sending of the song identification(s). For example, the module **40** may generate a list of the available stored songs and check boxes for selecting the song(s) to send to the host terminal **10A**.

[072] The host terminal **10A** receives the participant song identifications from the participant terminals **10B-E**. The song management module **40** of the host terminal **10A** creates and maintains a host play list of these song identifications. The host play list represents song files to be played.

[073] Each song management module **40** provides a display **150** on the associated terminal **10A-E** as shown in **Figure 4**. The display provided on the host terminal **10A** may differ from the display provided on the participant terminals **10B-E**. For example, the portions of the display **150** related to management functionality may be omitted from the participant terminal displays. Alternatively, the song management module **40** may provide no display on the participant terminals **10B-E**.

[074] In the illustrated embodiment, the display **150** includes a play list field **152** and control buttons **154** (*e.g.*, soft keys). The control buttons **154** will typically only be displayed on the host terminal display. A play list **156** is displayed in the play list field **152**. The play list **156** includes a row-by-row series of song identifications **156A**, each corresponding to a respective song file. As illustrated, each song identification includes a song artist, a song name, and a song play time corresponding to the associated song file, as well as an identification of the participant that has submitted the song identification. It will be appreciated that more, less and/or different information may be provided as well.

[075] The host may selectively manage play of the songs represented by the song list **156** using the control buttons **154**, for example. For example, the "PLAY" and "STOP" buttons may be used to start and stop transmission of the song files to the media center **130**. The "MOVE" button may be used to prioritize or change the order of the song identifications **156A** in the play list **156** (*i.e.*, to change the order in which the associated song files will be played). The "DELETE" button may be used to delete a song identification **156A** from the play list **156**. The "DETAILS" button may

be used to delete a song identification **156A** from the play list **156** so that the associated song file will not be played. The "RANDOM MIX" button may be used to cause the host terminal **10A** to execute playback of the song files (*i.e.*, send the song files to the media center **130**) in a random or other non-sequential order. Typically, the host terminal **10A** will execute playback of the song files in the listed sequence unless the random or other non-sequential mode is in effect.

[076] Other functionality could also be provided. For example, the host terminal **10A** may allow the user to change the order of the song identifications **156A** according to one or more selected attributes (*e.g.*, contributing participant, song length, etc.). The host terminal **10A** may be configured to designate which of the participant terminals **10B-E** are permitted to add song identifications to the play list **156**. The participant terminals **10B-E** may be enabled to edit or modify the song list **156** in addition to adding song identifications. In this case, the host terminal **10A** may be configured to allow the host to select which of the participant terminals **10B-E** are and are not authorized to modify the song play list **156** (*i.e.*, enable and disable the play list edit capability of the participant terminals).

[077] When the host terminal **10A** is in play mode, the controller **30** of the host terminal **10A** will identify the song identification **156A** that is to be played thereafter. The song identification identified may be the song identification that is to be played next. The host terminal **10A** will then send a song file request to the corresponding one of the participant terminals **10B-E** to retrieve the song file corresponding to the song identification.

[078] The corresponding participant terminal will then send a copy of the identified song file (which is stored on the participant terminal) to the host terminal **10A**. According to some embodiments, the participant terminal sends the song file to the host terminal **10A** as a copy of the song file that is then temporarily stored on the host terminal **10A** (*e.g.*, in the memory **34**). According to other embodiments, the participant terminal sends the song file to the host terminal **10A** as a streaming song file. According to some embodiments, the request and song file signals between the host terminal and the participant terminal are sent wirelessly and, according to some embodiments, via a direct wireless RF connection such as Bluetooth.

[079] The controller **30** of the host terminal **10A** then executes playback of the retrieved song file by sending the song file to the media center **130**. The song file

may be stored on the media center **130** for playback. Alternatively, the song file may be streamed to the media center **130**, for example, as the song file is streamed from the originating participant terminal to the host terminal **10A**. It may be preferable or necessary to stream the song file from the participant terminal to the host terminal and/or from the host terminal to the media center **130** if the allocated memory space on the host terminal **10A** is insufficient and/or storage of the song file on the host terminal **10A** is prevented or illegal. According to some embodiments, the song file, whether streamed or stored in whole, will be automatically erased (*i.e.*, without user intervention) from the host terminal **10A** during or after playback.

[080] The controller **30** of the host terminal **10A** may execute the foregoing steps for each song identification **156A** in turn and automatically (*i.e.*, without user intervention). As the host terminal **10A** runs through the song list **156** in this fashion, the host may modify the play list **156** as desired. Also, according to some embodiments, the participant terminals **10B-E** can add new song identifications to the song list **156** as the controller **30** of the host terminal **10A** runs through the play list **156**. According to some embodiments, new participant terminals can join the group and submit song identifications as the host terminal **10A** runs through the play list **156**.

[081] The system **100A** can provide a convenient and enjoyable mechanism for playing songs selected by a group of people. The system **100A** provides playback execution functionality and also allows the host terminal (and, in some cases, the participant terminals) to create, coordinate, control and/or manage the song play list. In practice, for example, partygoers can add songs from their own participant terminals to a song play list maintained on a host terminal (*e.g.*, the party host's own mobile terminal). When their song's turn arrives in the playback sequence, a copy of the song file will automatically be sent to the host terminal and played. Thus, the partygoer need not take any further action. When, in accordance with some embodiments, the request and song transfer signals are communicated between the host terminal and the participant terminal via a direct wireless connection (*e.g.*, an RF interface such as a Bluetooth connection), the partygoer may simply place his or her participant terminal in a pocket or handbag. Participants may be added and removed as the procedure is executed. For example, when a participant leaves the Bluetooth range, his or her songs may be deleted from or moved down the play list.

[082] Referring now to **Figure 5**, a system **100B** according to further embodiments of the present invention is shown therein including the host terminal **10A** and the participant terminals **10B-E**. The system **100B** differs from the system **100A** (**Figure 2**) in that the media center **130** is omitted and playback of the song files from the song play list **156** is conducted via the speaker **24** of the host terminal **10A**.

[083] Referring now to **Figure 6**, a system **100C** according to further embodiments of the present invention is shown therein including the host terminal **10A** and the participant terminals **10B-E**. The system **100C** differs from the system **100B** (**Figure 5**) in that playback of the song files from the song play list **156** is conducted via the speaker **24** of the host terminal **10A** and, additionally, through the respective speakers of the participant terminals **10B-E** and/or through one or more headsets (*e.g.*, in-ear stereo headsets) operatively connected to the participant terminals **10B-E**. More particularly, the controller **30** of the host terminal **10A** plays each song file in the same manner as described above and also sends the song file to the participant terminals **10B-E** for simultaneous playback. Thus, the host terminal **10A** creates and manages a song play list that may include song identifications from the participant terminals **10B-E**, retrieves copies of the song files from the appropriate participant terminals **10B-E** as needed, and distributes the copies of the song files to the participant terminals **10B-E** for playback. According to some embodiments, the song transfer signal is sent from the host terminal **10A** to the participant terminals **10B-E** wirelessly and, according to some embodiments via a direct wireless RF connection such as Bluetooth. According to some embodiments, the song files are streamed to the participant terminals **10B-E**. The host terminal **10A** may be configured to permit the host to designate which of the participant terminals **10B-E** will receive playback signals and which of the participant terminals **10B-E** are authorized to submit song identifications to the play list **156**, and these two groups may differ.

[084] The host terminal **10A** may be configured to allow the user to selectively choose the device or combination of devices for playback from the various options discussed above. For example, the host terminal **10A** may be configured to execute playback via only the speaker **24** of the host terminal **10A**, via the speaker of the host terminal **10A** and the speakers of the participant terminals **10B-E**, via the speakers of the participant terminals **10B-E** and the media center **130**, etc. It will be

appreciated that, when the song files are played back via the speakers of the participant terminals **10B-E**, the user of a given one of the participant terminals may disable the speaker thereof and/or may relay the song file for playback on another device (*e.g.*, an associated further media center or the like).

[085] According to further embodiments, the controller **30** of the host terminal **10A** may request and/or accept unsolicited a song catalog listing from a participant terminal. The song catalog listing includes song identifications representing each of the song files on the participant terminal or song identifications for all such song files the participant wishes to make available. The host terminal **10A** may thereafter enable the host to select the song identifications of the song catalog listing the host wishes to add to the play list.

[086] The application programs described herein, including the song management module **40**, are illustrative of programs that implement various features according to embodiments of the present invention. It will be appreciated that other and/or additional application programs may be employed in accordance with embodiments of the present invention.

[087] Although **Figure 1** illustrates an exemplary hardware/software architecture that may be used in mobile terminals and/or other electronic devices for management and playback of song files, it will be understood that the present invention is not limited to such a configuration but is intended to encompass any configuration capable of carrying out operations described herein. For example, although the memory **34** is illustrated as separate from the controller **30**, the memory **34** or portions thereof may be considered as a part of the controller **30**. More generally, while particular functionalities are shown in particular blocks by way of illustration, functionalities of different blocks and/or portions thereof may be combined, divided, and/or eliminated. Moreover, the functionality of the hardware/software architecture of **Figure 1** may be implemented as a single processor system or a multi-processor system in accordance with various embodiments of the present invention.

[088] Many alterations and modifications may be made by those having ordinary skill in the art, given the benefit of present disclosure, without departing from the spirit and scope of the invention. Therefore, it must be understood that the illustrated embodiments have been set forth only for the purposes of example, and that

it should not be taken as limiting the invention as defined by the following claims. The following claims, therefore, are to be read to include not only the combination of elements which are literally set forth but all equivalent elements for performing substantially the same function in substantially the same way to obtain substantially the same result. The claims are thus to be understood to include what is specifically illustrated and described above, what is conceptually equivalent, and also what incorporates the essential idea of the invention.

THAT WHICH IS CLAIMED IS:

1. A mobile wireless communication terminal comprising:

a wireless communication module that is configured to communicate with other communication terminals over a wireless interface; and

a controller that is configured to establish a connection with a participant wireless communication terminal via the wireless communication module, to maintain a play list representing song files to be played, to receive a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal, to add the participant song identification to the play list, and to thereafter execute playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

2. The wireless communication terminal of Claim 1 wherein the controller is configured to establish a connection with a plurality of participant wireless communication terminals via the wireless communication module, to receive a plurality of participant song identifications from the plurality of participant wireless communication terminals, wherein each participant song identification corresponds to a respective participant song file stored on a respective one of the plurality of participant wireless communication terminals, to add each of the participant song identifications to the play list, and to retrieve the participant song files from each of the respective participant wireless communication terminals for playback.

3. The wireless communication terminal of Claim 1 or 2 wherein the controller is configured to retrieve and execute the participant song file from the participant wireless communication terminal as a streaming music file.

4. The wireless communication terminal of Claim 1 or 2 wherein the controller is configured to retrieve the participant song file from the participant

wireless communication terminal, to store the participant song file on the wireless communication terminal, and to thereafter execute playback of the stored participant song file.

5. The wireless communication terminal of any previous Claim wherein the controller is configured to send a playback signal to a media center for playback of the song files represented by the play list on the media center.

6. The wireless communication terminal of any previous Claim including a sound transducer and wherein the controller is configured to play the song files represented by the play list using the sound transducer.

7. The wireless communication terminal of any previous Claim wherein the controller is configured to send a playback signal to at least one participant wireless communication terminal for playback of the song files represented by the play list on the at least one participant wireless communication terminal.

8. The wireless communication terminal of any previous Claim wherein the controller is configured to receive a song catalog listing from the participant wireless communication terminal representing available song files stored on the participant wireless communication terminal, to receive user input selecting from the available song files, and to add the selected available song files to the play list.

9. The wireless communication terminal of any previous Claim wherein the controller is configured to send a listing signal to the participant wireless communication terminal representing the play list for display of the play list on the participant wireless communication terminal.

10. The wireless communication terminal of any previous Claim wherein the controller is configured to modify the play list responsive to user input.

11. The wireless communication terminal of any previous Claim wherein:

the wireless communication module is configured to communicate with other communication terminals over a direct point-to-point wireless interface; and

the controller is configured to establish the connection with the participant wireless communication terminal via the wireless communication module, receive the participant song identification from the participant wireless communication terminal, and retrieve the participant song file from the participant wireless communication terminal for playback all via the direct point-to-point wireless interface.

12. The wireless communication terminal of any previous Claim wherein the wireless communication module comprises a short range transmitter, and the controller is configured to establish the connection with the participant wireless communication terminal, receive the participant song identification from the participant wireless communication terminal, and retrieve the participant song file from the participant wireless communication terminal for playback all via the short range transmitter.

13. The wireless communication terminal of Claim 12 wherein the short range transmitter is a Bluetooth transmitter.

14. The wireless communication terminal of any previous Claim wherein the wireless communication terminal includes a cellular telephone.

15. A system for providing a song play list, the system comprising:
a host mobile wireless communication terminal;
a participant wireless communication terminal;
wherein the host wireless communication terminal includes:
a wireless communication module that is configured to communicate with other communication terminals over a wireless interface; and
a controller that is configured to establish a connection with the participant wireless communication terminal via the wireless

communication module, to maintain a play list representing song files to be played, to receive a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal, to add the participant song identification to the play list, and to thereafter execute playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

16. The system of Claim 15 including a plurality of participant wireless communication terminals, and wherein the controller is configured to establish a connection with each of the plurality of participant wireless communication terminals, to receive a plurality of participant song identifications from the plurality of participant wireless communication terminals, wherein each participant song identification corresponds to a respective participant song file stored on a respective one of the plurality of participant wireless communication terminals, to add each of the participant song identifications to the play list, and to retrieve the participant song files from each of the respective participant wireless communication terminals for playback.

17. A method for providing a song play list using a host wireless communication terminal, the method comprising:

establishing a wireless connection between the host wireless communication terminal and a participant wireless communication terminal;

maintaining a play list using the host wireless communication terminal, the play list representing song files to be played;

receiving at the host wireless communication terminal a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal;

adding the participant song identification to the play list; and thereafter

executing playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

18. A computer program product for providing a song play list using a host wireless communication terminal, the computer program product comprising:

a computer usable medium having computer usable program code embodied therein, the computer usable program code comprising:

computer usable program code configured to establish a wireless connection between the host wireless communication terminal and a participant wireless communication terminal;

computer usable program code configured to maintain a play list using the host wireless communication terminal, the play list representing song files to be played;

computer usable program code configured to receive at the host wireless communication terminal a participant song identification from the participant wireless communication terminal, wherein the participant song identification corresponds to a participant song file stored on the participant wireless communication terminal;

computer usable program code configured to add the participant song identification to the play list; and

computer usable program code configured to thereafter execute playback of the song files represented by the play list, including retrieving the participant song file from the participant wireless communication terminal for playback.

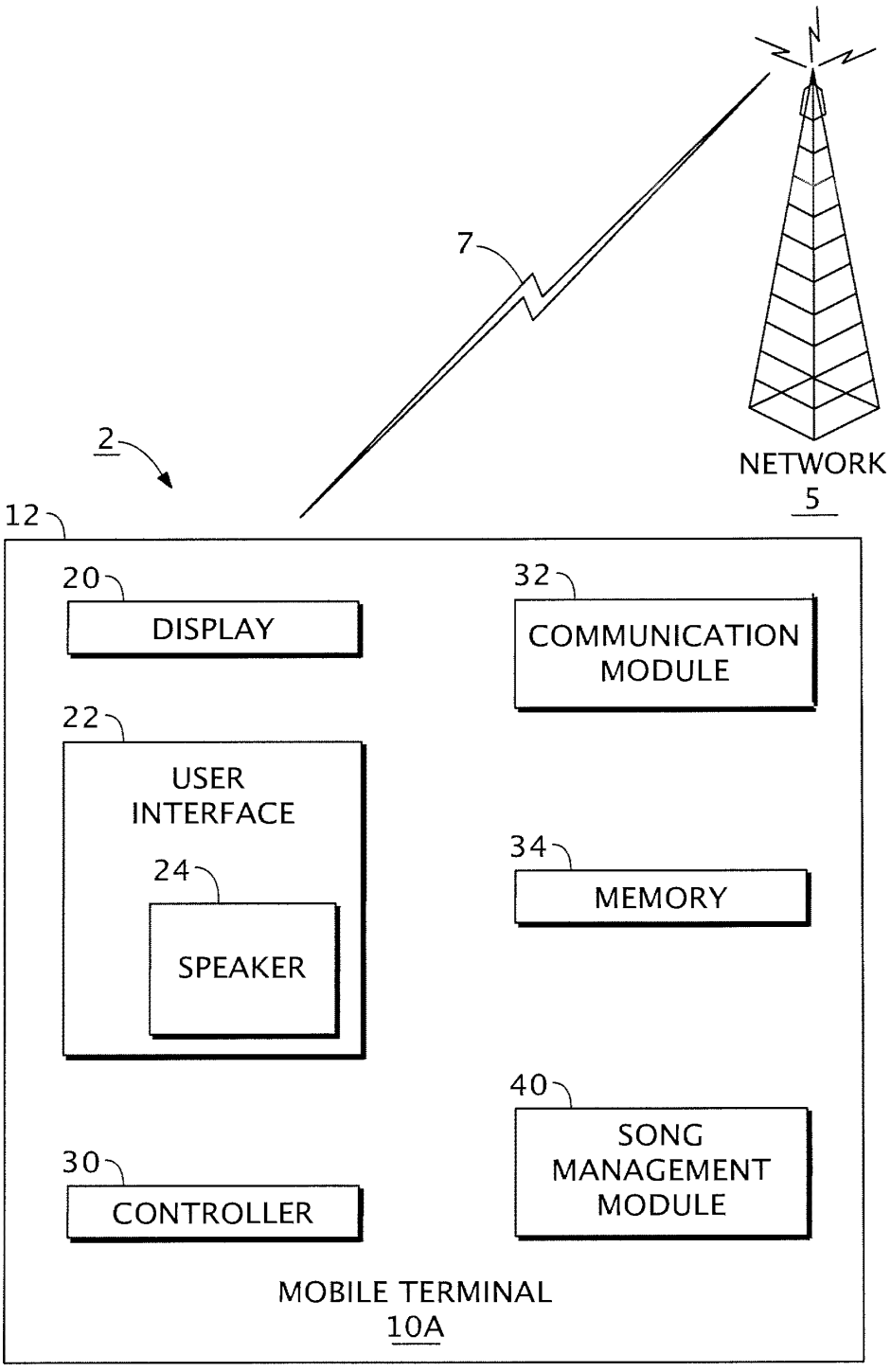

7
2
NETWORK
5
12
20
DISPLAY
32
COMMUNICATION MODULE
22
USER INTERFACE
24
SPEAKER
34
MEMORY
40
SONG MANAGEMENT MODULE
30
CONTROLLER
MOBILE TERMINAL
10A

FIG. 1

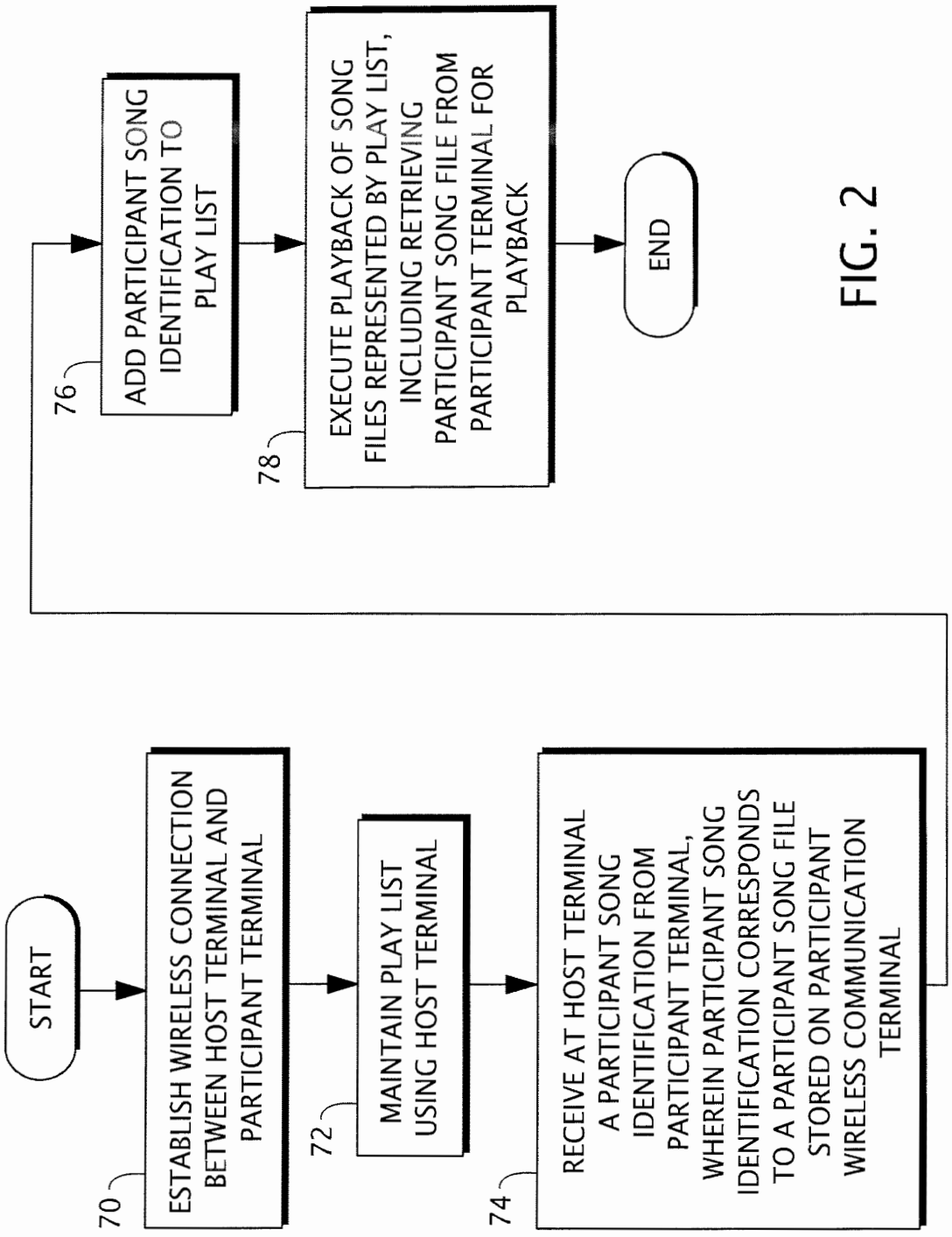

START
ESTABLISH WIRELESS CONNECTION BETWEEN HOST TERMINAL AND PARTICIPANT TERMINAL
70
MAINTAIN PLAY LIST USING HOST TERMINAL
72
RECEIVE AT HOST TERMINAL A PARTICIPANT SONG IDENTIFICATION FROM PARTICIPANT TERMINAL, WHEREIN PARTICIPANT SONG IDENTIFICATION CORRESPONDS TO A PARTICIPANT SONG FILE STORED ON PARTICIPANT WIRELESS COMMUNICATION TERMINAL
74
ADD PARTICIPANT SONG IDENTIFICATION TO PLAY LIST
76
EXECUTE PLAYBACK OF SONG FILES REPRESENTED BY PLAY LIST, INCLUDING RETRIEVING PARTICIPANT SONG FILE FROM PARTICIPANT TERMINAL FOR PLAYBACK
78
END

FIG. 2

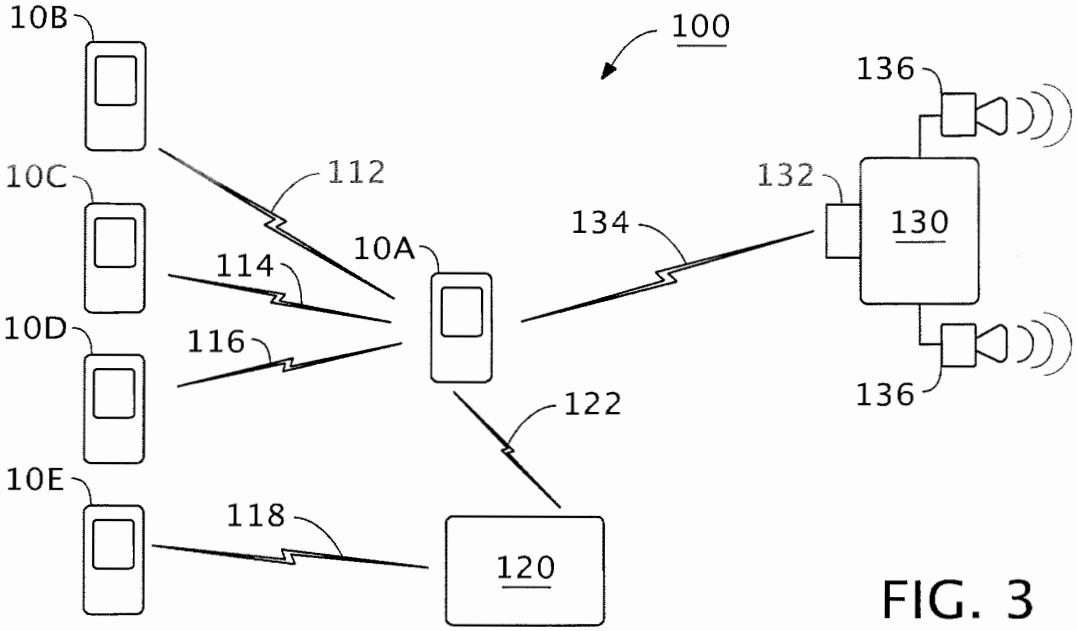

10B
100
136
10C
112
132
134
130
10A
114
10D
116
122
136
10E
118
120

FIG. 3

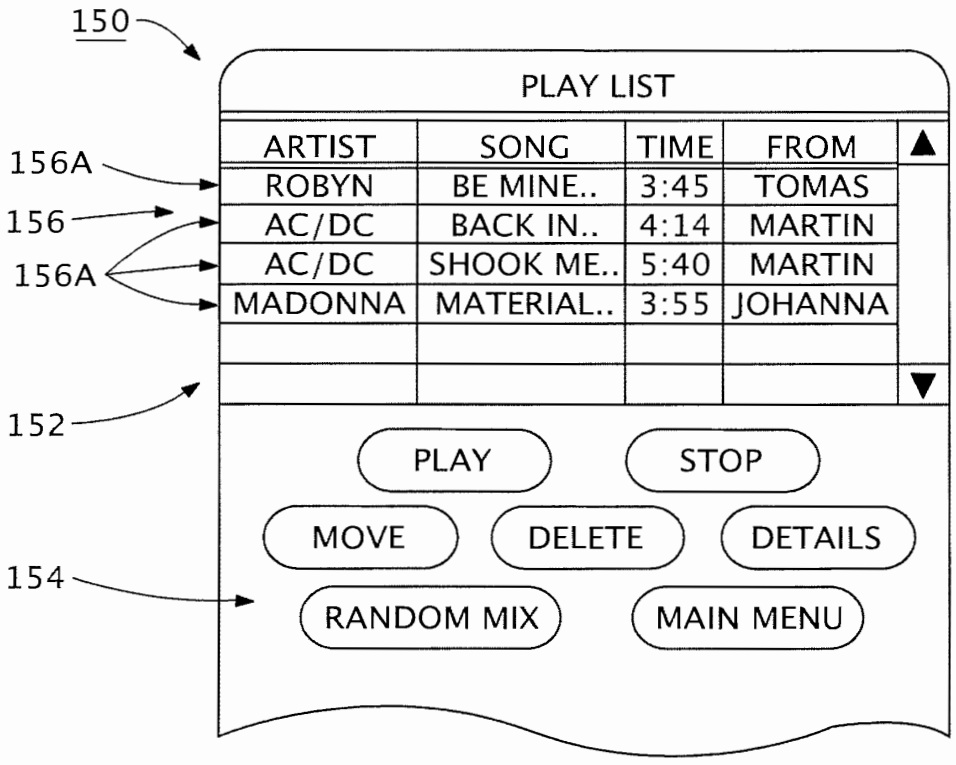

150
PLAY LIST
ARTIST
SONG
TIME
FROM
156A
ROBYN
BE MINE..
3:45
TOMAS
156
AC/DC
BACK IN..
4:14
MARTIN
156A
AC/DC
SHOOK ME..
5:40
MARTIN
MADONNA
MATERIAL..
3:55
JOHANNA
152
PLAY
STOP
MOVE
DELETE
DETAILS
154
RANDOM MIX
MAIN MENU

FIG. 4

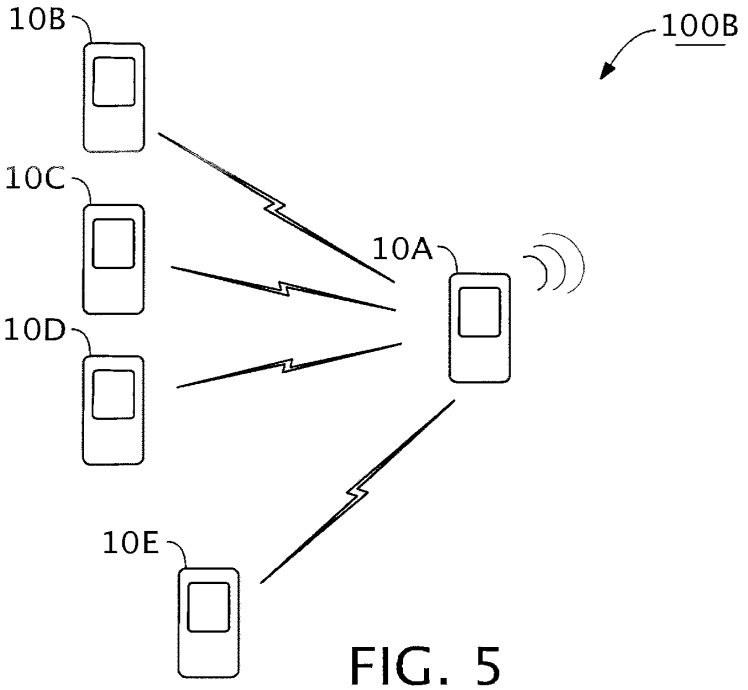


FIG. 5

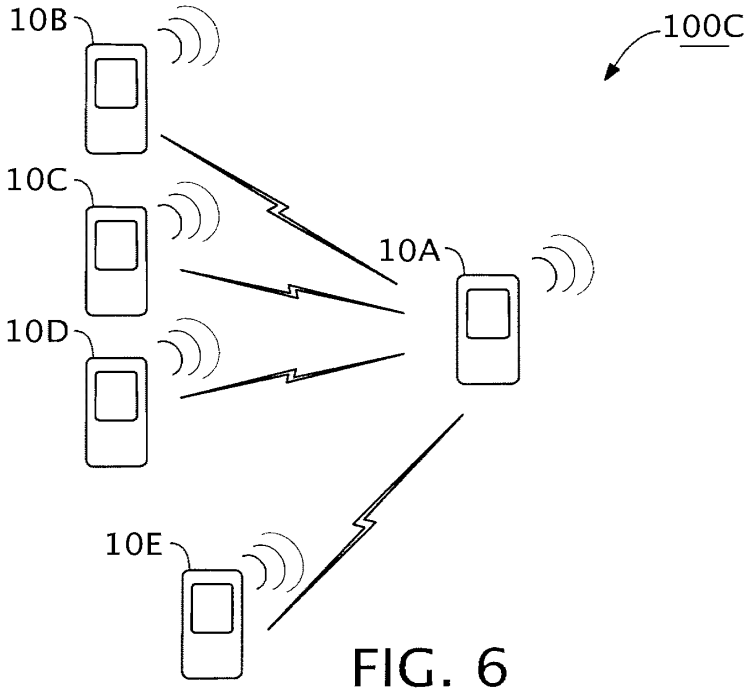


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/065350

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/037157 A1 (PESTONI FLORIAN [US] ET AL) 20 February 2003 (2003-02-20) paragraph [0020] - paragraph [0021] paragraph [0034] - paragraph [0040] paragraph [0046] paragraph [0051] paragraph [0058] - paragraph [0065] paragraph [0074] figures 4,5	1-18
X	WO 2005/073856 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]; PHILIPS CORP [US]; GUILLORIT FABI) 11 August 2005 (2005-08-11) page 1, line 20 - page 2, line 6 page 2, line 15 - line 31 page 3, line 9 - page 6, line 21	1-18

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 November 2006	24/11/2006

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Homan, Peter

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2006/065350

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003037157 A1	20-02-2003	NONE	
WO 2005073856 A2	11-08-2005	EP 1711895 A2	18-10-2006

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(71) 出願人 (米国を除く全ての指定国について): パイオニア株式会社 (PIONEER CORPORATION) [JP/JP]; 〒1538654 東京都目黒区目黒１丁目４番１号 Tokyo (JP).

(72) 発明者; および

(75) 発明者/出願人 (米国についてのみ): 大石 享子 (OISHI, Kyoko) [JP/JP]; 〒3590047 埼玉県所沢市花園４丁目２６１０番地 パイオニア株式会社 所沢事業所内 Saitama (JP).

(74) 代理人: 藤村 元彦 (FUJIMURA, Motohiko); 〒1040045 東京都中央区築地４丁目１番１号 東劇ビル 藤村合同特許事務所 Tokyo (JP).

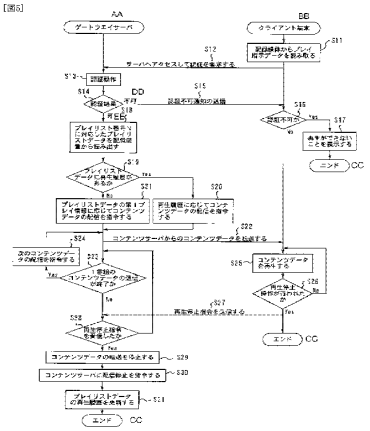
(81) 指定国 (表示のない限り、全ての種類の国内保護が可能): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) 指定国 (表示のない限り、全ての種類の広域保護が可能): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), ユーラシア (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), ヨーロッパ (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK,

[続葉有]

(54) **Title:** CONTENT REPRODUCING SYSTEM AND ITS CONTROL METHOD

(54) 発明の名称: コンテンツ再生システム及びその制御方法



AA GATEWAY SERVER
BB CLIENT SERVER
S11 READ PLAY INSTRUCTION DATA FROM RECORDING MEDIUM
S12 ACCESS SERVER AND REQUEST FOR AUTHENTICATION
S13 AUTHENTICATION OPERATION
S14 AUTHENTICATION RESULT
DD UNSUCCESSFUL
EE SUCCESSFUL
S15 TRANSMIT UNSUCCESSFUL AUTHENTICATION NOTIFICATION
S16 UNSUCCESSFUL AUTHENTICATION?
S17 DISPLAY THAT REPRODUCTION IS IMPOSSIBLE
CC END
S18 READ PLAY LIST DATA CORRESPONDING TO PLAY LIST NUMBER IN FROM STORAGE DEVICE
S19 PLAY LIST DATA INCLUDE REPRODUCTION HISTORY?
S20 INSTRUCT TO DELIVER CONTENT DATA ACCORDING TO REPRODUCTION HISTORY
S21 INSTRUCT TO DELIVER CONTENT DATA ACCORDING TO FIRST PLAY INFORMATION OF PLAY LIST DATA
S22 TRANSFER CONTENT DATA FROM CONTENT SERVER
S23 CONTENT DATA TRANSMISSION OF FIRST PROGRAM COMPLETED?
S24 INSTRUCT TO DELIVER NEXT CONTENT DATA
S25 REPRODUCE CONTENT DATA
S26 REPRODUCTION STOP OPERATION PERFORMED?
S27 TRANSMIT REPRODUCTION STOP INSTRUCTION
S28 REPRODUCTION STOP INSTRUCTION RECEIVED?
S29 STOP TRANSFERRING OF CONTENT DATA
S30 INSTRUCT CONTENT SERVER TO STOP DELIVERY
S31 UPDATE REPRODUCTION HISTORY OF PLAY LIST DATA

(57) **Abstract:** Play list data is created that indicates, for each program, the stored position and reproduction order of the content data stored in a server device, and is stored into a storage means. Play instruction data including play list specification information for specifying the play list data is recorded onto a recording medium. A terminal reads out the play instruction data on the recording medium, according to which the terminal transmits the information for specifying the play list data to the server device and receives content data delivered from the server device.

(57) 要約: サーバ装置において蓄積しているコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶し、そのプレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを記録媒体に記録し、端末において記録媒体のプレイ指示データを読み出してそれに応じてサーバ装置にプレイリストデータ特定する情報を送信してサーバ装置からコンテンツデータの配信を受ける。

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TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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明 細 書

コンテンツ再生システム及びその制御方法

技術分野

[0001] 本発明は、コンテンツデータをネットワークを介して端末に配信してそこで再生するシステム及びその制御方法に関する。

背景技術

[0002] インターネット等のネットワークを利用して映像や音声を示すコンテンツデータを端末に配信するシステムがある。このようなシステムにおいては、コンテンツデータを蓄積したデータベースを有するサーバ装置と、少なくとも1つの端末とがネットワークを介して接続されている(例えば、特許文献1参照)。端末からサーバ装置にアクセスすると、サーバ装置では配信できるコンテンツを番組単位でリスト表示するためのメニューデータが端末に送信される。端末ではメニューデータに応じてリスト表示がされ、そのリスト表示からユーザが所望の番組を選択することによりサーバ装置にコンテンツ選択指令が届き、サーバ装置ではそのコンテンツ選択指令に対応したコンテンツデータをデータベースから読み出してストリーミング配信することが行われる。端末では配信されたコンテンツデータの再生が行われ、それによりユーザは映像や音声を得ることができる。

特許文献1:特開2003－69956号公報

発明の開示

発明が解決しようとする課題

[0003] しかしながら、上記したような従来のコンテンツ再生システムにおいては、コンテンツデータがストリーミング配信されて映像や音声が実際に端末で得られるまでには通常、端末のユーザは煩雑な操作を必要とする。例えば、サーバ装置の選択操作、パスワードを入力を含むユーザ認証操作、コンテンツ選択操作が必要とである。よって、年寄りや子供には操作が難しいためコンテンツデータの配信により映像や音声を容易に楽しむことはできないという問題がある。

[0004] 本発明が解決しようとする課題には、上記の欠点が一例として挙げられ、端末のユ

ーザが極めて簡単な操作でコンテンツデータの配信を受けて映像や音声を容易に楽しむことができるコンテンツ再生システム及びその制御方法を提供することが本発明の目的である。

課題を解決するための手段

[0005] 請求項1に係る発明のコンテンツ再生システムは、コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムであって、コンテンツ配信サーバ装置は、前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理手段と、前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを作成するデータ作成手段と、前記プレイ指示データを記録媒体に記録する記録手段と、を備え、前記端末は、前記記録媒体の前記プレイ指示データを読み取る読取手段と、前記読取手段によって読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記管理手段に送信する送信手段と、を備え、前記管理手段は、前記送信手段からの前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末は前記管理手段によって転送された前記コンテンツデータを受信して再生すること特徴としている。

[0006] 請求項6に係る発明のコンテンツ再生システムの制御方法は、コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムの制御方法であって、前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理ステップと、前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを作成するステップと、前記プレイ指示データを記録媒体に記録するステップと、前記記録媒体の前記プレイ指

示データを前記端末にて読み取る読取ステップと、前記読取ステップにて読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記コンテンツ配信サーバ装置に送信する送信ステップと、を備え、前記管理ステップでは、前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末ではその転送された前記コンテンツデータを受信して再生すること特徴としている。

図面の簡単な説明

[0007] [図1]本発明によるコンテンツ再生システムの構成を示すブロック図である。

[図2]コンテンツリストデータを示す図である。

[図3]プレイリスト登録動作を示すフローチャートである。

[図4]プレイリスト作成動作を示すフローチャートである。

[図5]クライアント端末からの再生動作を示すフローチャートである。

[図6]プレイリスト再編集動作を示すフローチャートである。

符号の説明

[0008] 1 コンテンツ配信サーバ装置

2 クライアント端末

11, 12 コンテンツサーバ

14 ゲートウエイサーバ14

15 LAN回線

16 記録媒体

発明を実施するための最良の形態

[0009] 請求項1に係る発明のコンテンツ再生システム及び請求項6に係る発明のコンテンツ再生システムの制御方法においては、コンテンツ配信サーバ装置では、データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータが作成されて記憶手段に保存され、そのプレイリストデータを特定するためのプレイ指示データが記録媒体に記録される。端末では、記録媒体のプレイ指示

データを読み取ってそのプレイ指示データ中の少なくともプレイリスト特定情報をコンテンツ配信サーバ装置に送信することが行われる。コンテンツ配信サーバ装置では、端末から受信したプレイリスト特定情報に対応したプレイリストデータが記憶手段から読み出され、そのプレイリストデータに示された蓄積位置及び再生順番で番組毎にコンテンツデータがデータベースから読み出されて端末に転送される。端末は転送されたコンテンツデータを受信して再生する。

[0010] よって、端末のユーザは記録媒体をセットするだけでコンテンツデータの配信を受けることができるので、映像や音声を容易に楽しむことができる。

実施例

[0011] 以下、本発明の実施例を図面を参照しつつ詳細に説明する。

[0012] 図1は本発明によるコンテンツ再生システムを示している。このコンテンツ再生システムは、コンテンツ配信サーバ装置1とクライアント端末2とを備えている。コンテンツ配信サーバ装置1とクライアント端末2とはインターネット等のネットワーク20によって接続されている。

[0013] コンテンツ配信サーバ装置1は第1及び第2コンテンツサーバ11，12、ネットワーク機能付き再生装置13及びゲートウエイサーバ14からなる。コンテンツサーバ11，12、再生装置13及びゲートウエイサーバ14はLAN回線15で互いに接続されている。コンテンツ配信サーバ装置1は一般家庭のホームサーバ装置或いは、オフィスの業務装置であっても良い。

[0014] 第1及び第2コンテンツサーバ11，12各々は、LAN回線15に接続可能なPC（パーソナルコンピュータ）やハードディスクレコーダからなり、コンテンツデータのデータベース11a，12aを備え、コンテンツ配信サーバ装置1内の再生装置13及びゲートウエイサーバ14にコンテンツデータを直接配信する機能を有している。また、クライアント端末2等の外部の端末からのデータ要求に応答してコンテンツデータをゲートウエイサーバ14を介して配信する機能を有している。コンテンツデータとはテレビの放送番組等の番組単位の映像データ及び音声データを含むデータであり、例えば、MPEG2形式で構成されている。データベースにおいてはコンテンツデータは番組毎のファイルとして存在する。

[0015] また、第1及び第2コンテンツサーバ11，12各々は配信可能なコンテンツデータについて番組名等の番組情報を示すコンテンツリストデータを有している。コンテンツリストデータは図2(a)及び(b)に示すように、少なくともコンテンツId、番組名Title、記録日時Date、記録時間長Duration等のを示すデータである。コンテンツIdはコンテンツデータの格納アドレス及びファイル名からなる。また、リストデータは新たなコンテンツデータがデータベースに加えられる毎にゲートウエイサーバ14に供給されるか、ゲートウエイサーバ14が定期的に第1及び第2コンテンツサーバ11，12各々にリストデータが更新されたかどうか問い合わせ、更新されている場合にリストデータの供給を受ける。

[0016] ゲートウエイサーバ14はコンテンツデータを送信先に転送する。コンテンツサーバ11又は12からクライアント端末2に向けて送信されたコンテンツデータはLAN回線15、ゲートウエイサーバ14、ネットワーク20を介してクライアント端末2に伝送される。

[0017] また、ゲートウエイサーバ14においては、ディスプレイ14aの他にキーボードやマウス等の操作部14bが備えられ、そのディスプレイ14aに表示されるメニュー映像に従ってユーザが操作部14bを直接操作してプレイリストを作成することができる。プレイリストは第1及び第2コンテンツサーバ11，12が備えている上記のコンテンツリストデータに応じて作成され、サーバの固有識別子、プレイリスト番号、コンテンツの格納位置（アドレス及びファイル名を含む）、番組名、記録日時、記録時間長、デジタル証明書を示す。作成されたプレイリストはゲートウエイサーバ14内のハードディスク装置等の記憶装置14cにプレイリストデータとして保存される。

[0018] ゲートウエイサーバ14はプレイリストデータの一部のデータを記録媒体16に記録するための記録装置14dを備えている。プレイリストデータの一部のデータとは少なくともサーバの固有識別子、プレイリスト番号及びデジタル証明書からなるプレイ指示データである。プレイ指示データのプレイリスト番号がプレイリスト特定情報である。記録媒体としてはこの実施例ではCD－R、DVD－R、DVD－RW等の書込可能なディスクが用いられるが、持ち運ぶことができるUSBメモリ等の半導体メモリでも良い。更に、Blutoothや赤外線通信等により外部とデータ通信が可能な携帯電話機を用いて携帯電話機内のメモリにプレイ指示データを書き込んでも良い。

[0019] 再生装置13は第1及び第2コンテンツサーバ11，12各々に記録されたコンテンツデータを選択的に再生することができ、また記録媒体16に書き込まれたプレイリストデータを読み取ることができる。

[0020] クライアント端末2はネットワーク20を介してゲートウエイサーバ14等の他の通信機器と通信する機能と、受信したコンテンツデータを再生して映像表示しかつ音声出力する機能とを有するPCで良い。また、クライアント端末2は再生装置13と同様の、通信機能を有する再生装置でも良い。クライアント端末2は記録媒体16に書き込まれたプレイ指示データを読み取るためにドライブ装置21を備えている。ドライブ装置21に記録媒体16が挿入されると、それによって自動的に記録媒体16に書き込まれたプレイ指示データを読み取って後述する通信再生動作を行うことができる。なお、PC以外のクライアント端末2としては、専用端末、携帯電話機、カーナビゲーション装置、携帯ゲーム端末が利用可能である。

[0021] 次に、かかる構成のコンテンツ再生システムのゲートウエイサーバ14において行われるプレイリスト登録動作について具体的に説明する。プレイリスト登録動作は上記したように、プレイリストを作成してそれを記憶装置14cに保存する動作である。

[0022] プレイリスト登録動作は、ユーザが新規のプレイリスト登録を上記のメニュー映像から選択操作することにより開始される。ゲートウエイサーバ14のプロセッサ14eは、プレイリスト登録動作では図3に示すように、先ず、新規プレイリスト番号Nを作成し（ステップS1）、第1パスワード及び第2パスワードを設定する（ステップS2，S3）。新規プレイリスト番号Nは予め定められた順番の番号であり、プレイリストの登録のために付けられる。第1パスワードはプレイリストを新規登録後に再編集する際に必要なパスワードである。第2パスワードは遠隔アクセスの際、例えば、クライアント端末2からゲートウエイサーバ14にアクセスする際に必要となるパスワードである。第1パスワード及び第2パスワードとしてはユーザによる操作部14bの操作によって任意の英数字を指定しても良い。或いは、プロセッサ14eによりランダムにそれらパスワードを生成してそれをユーザに対して表示しても良い。ただし、第1パスワード及び第2パスワード各々の設定は必須ではなく、いずれか一方或いは両方を省略しても良い。

[0023] 次に、ゲートウエイサーバ14のプロセッサ14eは、プレイリスト名を設定する（ステッ

プS4)。プレイリスト名としては初期名としてプレイリスト番号Nに基づいて例えば、「PlayList N:作成日時」がユーザに対して示されるが、ユーザが操作部14bを操作して任意の文字を入力することにより指定することが可能である。

[0024] そして、サーバの固有識別子、プレイリスト番号N、第1パスワード、第2パスワード及び作成日時に基づいてデジタル証明書を作成する(ステップS5)。サーバの固有識別子はゲートウエイサーバ14のネットワーク20上のアドレス位置を示し、例えば、IPアドレスである。プレイリスト番号N、第1及び第2パスワードはステップS1～S3で決定されたものである。デジタル証明書は、クライアント端末2等の遠隔地の端末でプレイリストを用いる際に正規の登録プレイリストであることを証明するために用いられる。

[0025] デジタル証明書の作成後、ゲートウエイサーバ14のプロセッサ14eは、プレイリスト作成を行う(ステップS6)。

[0026] プレイリスト作成では、図4に示すように、先ず、利用可能なコンテンツサーバの名称がディスプレイ14aに選択メニューとして表示される(ステップS61)。ユーザはその選択メニューに従って操作部14bの操作によってコンテンツサーバを選択する。この実施例では第1及び第2コンテンツサーバ11，12の名称、例えば、コンテンツ1、コンテンツ2の如くが選択メニューとして表示される。ユーザがこの選択メニューから選択操作を行うことにより、コンテンツサーバが選択される。実際にはコンテンツ1、コンテンツ2のような表示ではなく、レコーダの機種名、PCのネットワーク配信ソフトのアプリケーション名などが表示されても良い。また、ユーザはどのサーバにどのコンテンツがあるのかか、把握していない状況もありえるので、全てのコンテンツサーバのコンテンツを一覧にして、コンテンツの付属情報として、どのコンテンツサーバ内のコンテンツであるのかを表示するなどして、ステップS61と次のステップS62を1ステップで実現する方法でも良い。更に、コンテンツ選択の補助として、ソート機能を有しても良い。

[0027] そして、その選択されたコンテンツサーバのコンテンツがディスプレイ14aにリスト表示される(ステップS62)。リスト表示は第1及び第2コンテンツサーバ11，12各々のコンテンツリストデータに応じて行われる。コンテンツリストデータにはコンテンツサーバが配信可能なコンテンツの番組名が示されているので、それが読み出されて番組リストとして表示される。ユーザは操作部14bの操作によって番組リストから1つの番組を

任意に選択することができる。1つの番組が選択されると、その選択番組についてのリストデータ内の番組情報が読み出されて、それがプレイリストデータにプレイ情報として加えられ(ステップS63)、そのプレイリストデータの現在の内容がディスプレイ14aに表示される(ステップS64)。プレイリストデータにおいては、第1プレイ情報、第2プレイ情報、……のように選択順にブロックが形成される。プレイリストデータの現在の内容表示ではユーザによって選択された番組がその番組名で選択順に示される。なお、選択順が再生順でもある。再生動作については後述するが、第1プレイ情報に対応した番組のコンテンツデータが最初に再生されることになる。

[0028] ステップS64の実行後、ユーザが更なるコンテンツのプレイリストへの追加を指示したか否かを判別する(ステップS65)。操作部14bの操作によって更なるコンテンツのプレイリストへの追加が指示された場合には、ステップS61が再度実行される。一方、更なるコンテンツのプレイリストへの追加が指示されていない場合には、ユーザがプレイリスト作成の終了を指示したか否かを判別する(ステップS66)。操作部14bの操作によって終了が指示された場合にはプレイリスト作成が終了したと判断される。

[0029] プレイリスト作成の作成後、ゲートウエイサーバ14のプロセッサ14eは、その時点におけるプレイリストデータを記憶装置14cに保存して管理する(ステップS7)。その保存されるプレイリストデータには上記のサーバの固有識別子、プレイリスト番号N、第1パスワード、第2パスワード、作成日時及びデジタル証明書が付加される。第1パスワード及び第2パスワードについてはステップS2, 3で一方又は双方が省略された場合には省略されたパスワードはプレイリストデータに付加されない。そして、記録媒体16にプレイリストデータのうちの少なくともサーバの固有識別子、プレイリスト番号N及びデジタル証明書からなるプレイ指示データの書き込みを記録装置14dに対して指令する(ステップS8)。その書き込み指令に応じて記録装置14dは記録媒体16にプレイ指示データを書き込む。このようなプレイ指示データが書き込まれた記録媒体16をユーザは記録装置14dから取り出して持ち運ぶことができる。

[0030] なお、プレイリストデータには再生履歴が含まれる。再生履歴は前回の再生コンテンツ(コンテンツId)の再生中断位置情報である。また、クライアント端末2からゲートウエイサーバ14にアクセスする際に第2パスワードの入力を要求する場合には、プレイ

指示データには第2パスワードが含まれる。ただし、第2パスワードについては、プレイ指示データを記録した記録媒体が盗まれたり、紛失した場合に第2パスワードが無意味なものになってしまう可能性があるので、実際には記録媒体には第2パスワードをプレイ指示データと共に記録せず、アクセスの際にはデジタル証明書と入力されたパスワードからなる別の証明書を作り、それによってゲートウエイにアクセス認証をする形の方が良い。

[0031] 次に、この記録媒体16を用いてクライアント端末2でコンテンツ再生する場合の動作について説明する。なお、クライアント端末2を操作するユーザはゲートウエイサーバ14においてプレイリスト登録を操作したユーザと同一でも良いし、別のユーザでも良い。

[0032] クライアント端末2のドライブ装置21に記録媒体16がセットされると、コンテンツ再生動作が開始される。図5に示すように、コンテンツ再生動作ではクライアント端末2のプロセッサは記録媒体16に記録されたプレイ指示データをドライブ装置21を介して読み取り(ステップS11)、サーバへのアクセスを行って認証を要求する(ステップS12)。ステップS11ではプレイ指示データに含まれているサーバの固有識別子、プレイリスト番号N及びデジタル証明書が得られる。ステップS12ではその得られた固有識別子で示されるアドレス位置にアクセスが行われる。この実施例ではクライアント端末2からゲートウエイサーバ14へのアクセスが行われて通信が可能になるとする。認証要求ではプレイリスト番号N及びデジタル証明書が送信される。

[0033] ゲートウエイサーバ14は認証要求を受信すると、ゲートウエイサーバ14のプロセッサ14eは認証要求に含まれるプレイリスト番号N及びデジタル証明書に応じて認証動作を行う(ステップS13)。認証動作ではデジタル証明書が正規のものであるかが判別され、その判別ではプレイリスト番号に対応して記憶装置14cに保存されているデジタル証明書が参照される。認証動作の結果が判別され(ステップS14)、認証不可ならば、認証不可通知がクライアント端末2に送信される(ステップS15)。

[0034] ゲートウエイサーバ14が認証動作するのではなく、専用の認証サーバが認証動作を行う形態でも勿論良い。その場合は、クライアント端末2はまず、その認証サーバにアクセスし、認証サーバによってデジタル証明書が認証されると、ゲートウエイサーバ

14のアドレスがクライアント端末2に通知され、それから、クライアント端末2がゲートウエイサーバ14にアクセスすることになる。

[0035] クライアント端末2のプロセッサは認証不可通知を受信すると(ステップS16のYes)、そのユーザにコンテンツ再生ができないことをディスプレイに表示する(ステップS17)。ステップS17ではサーバが認証しなかったことを表示しても良い。

[0036] ゲートウエイサーバ14のプロセッサ14eは、認証動作の結果が認証可ならば、プレイリスト番号Nに対応したプレイリストデータを記憶装置14cから読み出す(ステップS18)。プレイリストデータに再生履歴があるか否かを判別する(ステップS19)。再生履歴がある場合には、その再生履歴、すなわちコンテンツId及び再生中断位置情報に応じてコンテンツデータの配信を指令する(ステップS20)。再生履歴がない場合には、プレイリストデータの第1プレイ情報によって指定されるコンテンツデータの配信を指令する(ステップS21)。

[0037] ステップS20又はS21の指令に応じて第1コンテンツサーバ11又は第2コンテンツサーバ12は指定のコンテンツデータを読み出してゲートウエイサーバ14に供給する。ゲートウエイサーバ14は第1コンテンツサーバ11又は第2コンテンツサーバ12からのコンテンツデータをクライアント端末2に向けて転送する(ステップS22)。コンテンツデータはいわゆるストリーミングデータとしてクライアント端末2に送信される。

[0038] ゲートウエイサーバ14のプロセッサ14eは、1番組についてのコンテンツデータの読み出しが終了すると(ステップS23のYes)、プレイリストデータの次のプレイ情報によって指定されるコンテンツデータの読み出しを指令する(ステップS24)。ステップS24の指令に応じて第1コンテンツサーバ11又は第2コンテンツサーバ12は指定のコンテンツデータを読み出してゲートウエイサーバ14に供給する。そして、ステップS22によってゲートウエイサーバ14は第1コンテンツサーバ11又は第2コンテンツサーバ12からのコンテンツデータをクライアント端末2に向けて転送する。

[0039] クライアント端末2のプロセッサは、コンテンツデータを受信すると、コンテンツデータを再生して映像信号及び音声信号を生成する(ステップS25)。その映像信号に応じてクライアント端末2のディスプレイに映像が表示され、その音声信号に応じてクライアント端末2のスピーカから音響出力が得られる。

[0040] クライアント端末2においては、コンテンツ再生動作中にユーザによって再生停止操作が行われたか否かが判別される(ステップS26)。再生停止操作が行われた場合には、再生停止指令がゲートウエイサーバ14に送信される(ステップS27)。

[0041] ゲートウエイサーバ14のプロセッサ14eは、ステップS22にてコンテンツデータの転送開始後、クライアント端末2からの再生停止指令を受信したか否かを判別する(ステップS28)。再生停止指令を受信した場合には、コンテンツデータのクライアント端末2に向けての転送を停止し(ステップS29)、コンテンツデータを配信中の第1コンテンツサーバ11又は第2コンテンツサーバ12に配信停止を指令し(ステップS30)、記憶装置14c内のプレイリスト番号Nに対応したプレイリストデータの再生履歴を更新する(ステップS31)。すなわち、プレイリストデータの再生履歴更新ではコンテンツデータの転送停止した時点における当該コンテンツデータに応じてコンテンツId及び再生中断位置情報を書き換えることが行われる。

[0042] なお、クライアント端末2のドライブ装置21に記録媒体16がセットされると、直ちにユーザに対して上記した第2パスワードの入力を要求しても良い。ユーザによる入力操作によって入力されたパスワードがステップS3で設定された第2パスワードに等しい場合にのみコンテンツ再生動作が開始される。

[0043] ゲートウエイサーバ14において、ユーザがプレイリスト再編集を上記のメニュー映像から選択操作すると、プレイリスト再編集動作が開始される。

[0044] プレイリスト再編集動作においては、プロセッサ14eはユーザに対してプレイリスト番号Nの入力を要求する(ステップS41)。これはディスプレイ14aにプレイリスト番号Nの入力要求又は選択が表示される。プレイリスト番号Nが入力されると、プレイリスト番号Nに対応したプレイリストデータを記憶装置14cから読み出す(ステップS42)。読み出したプレイリストデータに第1パスワードが含まれているか否かを判別する(ステップS43)。プレイリストデータに第1パスワードが含まれている場合には、第1パスワードの入力をユーザに対して要求する(ステップS44)。ユーザの操作部14bの入力操作によってパスワードが入力されると、その入力パスワードが第1パスワードと一致するか否かを判別する(ステップS45)。ステップS45にてパスワードが一致すると判別すると、プレイリスト番号Nのプレイリストデータの現在の内容をディスプレイ14aに表

示する(ステップS46)。プレイリストデータの現在の内容表示ではユーザによって選択された番組がその番組名で選択順に示される。

[0045] ステップS43の判別においてプレイリストデータに第1パスワードが含まれていない場合には、ゲートウエイサーバ14のプロセッサ14eは直ちにステップS46を実行する。

[0046] ステップS46の実行後、例えば、編集開始をユーザが指令する操作を行うと上記のステップS6のプレイリスト作成動作(ステップS61～S66)が行われる。なお、プレイリスト再編集動作では番組を追加するだけでなく、既に設定した番組を変更したり、再生順を変更しても良い。

[0047] プレイリスト再編集は、プレイリスト指示データを記録した記録媒体を用いて、クライアント端末2で再生動作を行った後でも可能であり、その場合は、記録媒体のデータを更新することなく、再生するコンテンツの追加や、削除が可能となる。また、記録媒体の紛失や盗難により、正規でないユーザがゲートウエイサーバ14にアクセスする恐れが生じた場合には、当該プレイリストを削除することにより、無効化することができる。

[0048] このように、本発明によるコンテンツ再生システムにおいては、番組単位のコンテンツデータの再生順を示すプレイリストデータが作成された後、そのプレイリストデータを指定するプレイ指示データが記録媒体16に記録されると、その記録媒体16をクライアント端末2のドライブ装置21にセットするだけでプレイリストデータに従ってコンテンツデータの再生動作が行われる。クライアント端末2のユーザの操作としては記録媒体16をドライブ装置21に挿入或いは直接セットするだけで良いので、難しい操作をしなくてもコンテンツサーバに保存されたコンテンツデータのストリーミング再生が可能となり、そのユーザは番組のデータ再生映像及び音声を楽しむことができる。よって、本発明による再生システムは年寄りや子供のように難しい操作ができない端末ユーザには特に好適である。

請求の範囲

[1] コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムであって、

コンテンツ配信サーバ装置は、前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理手段と、

前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを作成するデータ作成手段と、

前記プレイ指示データを記録媒体に記録する記録手段と、を備え、

前記端末は、前記記録媒体の前記プレイ指示データを読み取る読取手段と、

前記読取手段によって読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記管理手段に送信する送信手段と、を備え、

前記管理手段は、前記送信手段からの前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末は前記管理手段によって転送された前記コンテンツデータを受信して再生すること特徴とするコンテンツ再生システム。

[2] 前記端末は、前記コンテンツデータの再生中に操作に応じて再生停止指令を発生してその再生停止指令を前記管理手段に送信する手段を有し、

前記管理手段は、前記再生停止指令に応答して前記端末への前記コンテンツデータの転送を停止し、その転送停止のコンテンツデータについてのコンテンツ中断位置情報を示す再生履歴を前記プレイリストデータに加えて前記記憶手段に記憶する手段と、

前記プレイリストデータを前記記憶手段から読み出したときには前記プレイリストデータ中に前記再生履歴があるか否かを判別する手段と、を有し、

前記再生履歴がある場合には前記再生履歴に示される前記コンテンツ中断位置情

報に応じて前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送することを特徴とする請求項1記載のコンテンツ再生システム。

[3] 前記コンテンツ配信サーバ装置は前記1つのデータベースを含む複数のデータベースを有し、

前記プレイリストデータは前記複数のデータベース各々に蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すこと特徴とする請求項1記載のコンテンツ再生システム。

[4] 前記プレイ指示データは前記プレイリスト特定情報の他に、前記管理手段の固有識別子と、前記管理手段が認証用のデジタル証明書とを含み、

前記送信手段は、前記読取手段によって読み取られたプレイ指示データ中の前記プレイリスト特定情報及び前記デジタル証明書を、前記管理手段の固有識別子によって示される前記管理手段のアドレスに向けて送信し、

前記管理手段は、前記送信手段からの前記デジタル証明書に応じて認証動作を行って前記プレイリスト特定情報が正規のものであることを確認した後、前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出すこと特徴とする請求項1記載のコンテンツ再生システム。

[5] 前記管理手段、前記データ作成手段及び前記記録手段はゲートウエイサーバ内に構成され、

前記ゲートウエイサーバと前記データベースを有するコンテンツサーバとローカルネットワークを介して接続されていることを特徴とする請求項1記載のコンテンツ再生システム。

[6] コンテンツデータを番組単位で蓄積した少なくとも1つのデータベースを有するコンテンツ配信サーバ装置と、コンテンツデータの再生機能を有する少なくとも1つの端末とがネットワークを介して接続されたコンテンツ再生システムの制御方法であって、

前記データベースに蓄積されたコンテンツデータの番組毎の蓄積位置及び再生順番を示すプレイリストデータを作成して記憶手段に記憶して管理する管理ステップと、

前記プレイリストデータを特定するプレイリスト特定情報を含むプレイ指示データを

作成するステップと、

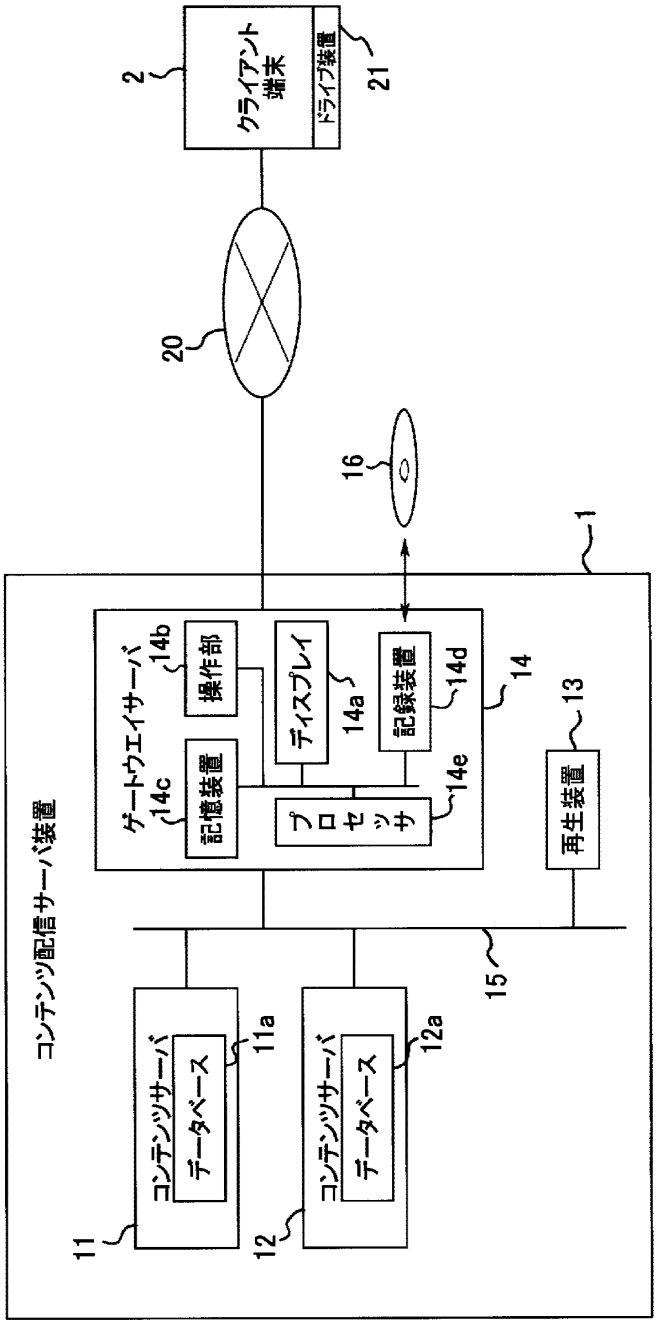
前記プレイ指示データを記録媒体に記録するステップと、

前記記録媒体の前記プレイ指示データを前記端末にて読み取る読取ステップと、

前記読取ステップにて読み取られたプレイ指示データ中の少なくともプレイリスト特定情報を前記コンテンツ配信サーバ装置に送信する送信ステップと、を備え、

前記管理ステップでは、前記プレイリスト特定情報に対応した前記プレイリストデータを前記記憶手段から読み出し、その読み出した前記プレイリストデータに示された蓄積位置及び再生順番で番組毎に前記コンテンツデータを前記データベースから読み出してそれを前記端末に前記ネットワークを介して転送し、前記端末ではその転送された前記コンテンツデータを受信して再生すること特徴とする制御方法。

[図1]


2
クライアント端末
ドライブ装置
21
20
16
1
ゲートウエイサーバ
14b
操作部
14c
記憶装置
ディスプレイ
14a
記録装置
14d
14
プロセッサ
14e
13
再生装置
15
コンテンツサーバ
データベース
11a
11
コンテンツサーバ
データベース
12a
12
コンテンツ配信サーバ装置

[図2]

(a)

第1コンテンツサーバのコンテンツリストデータ

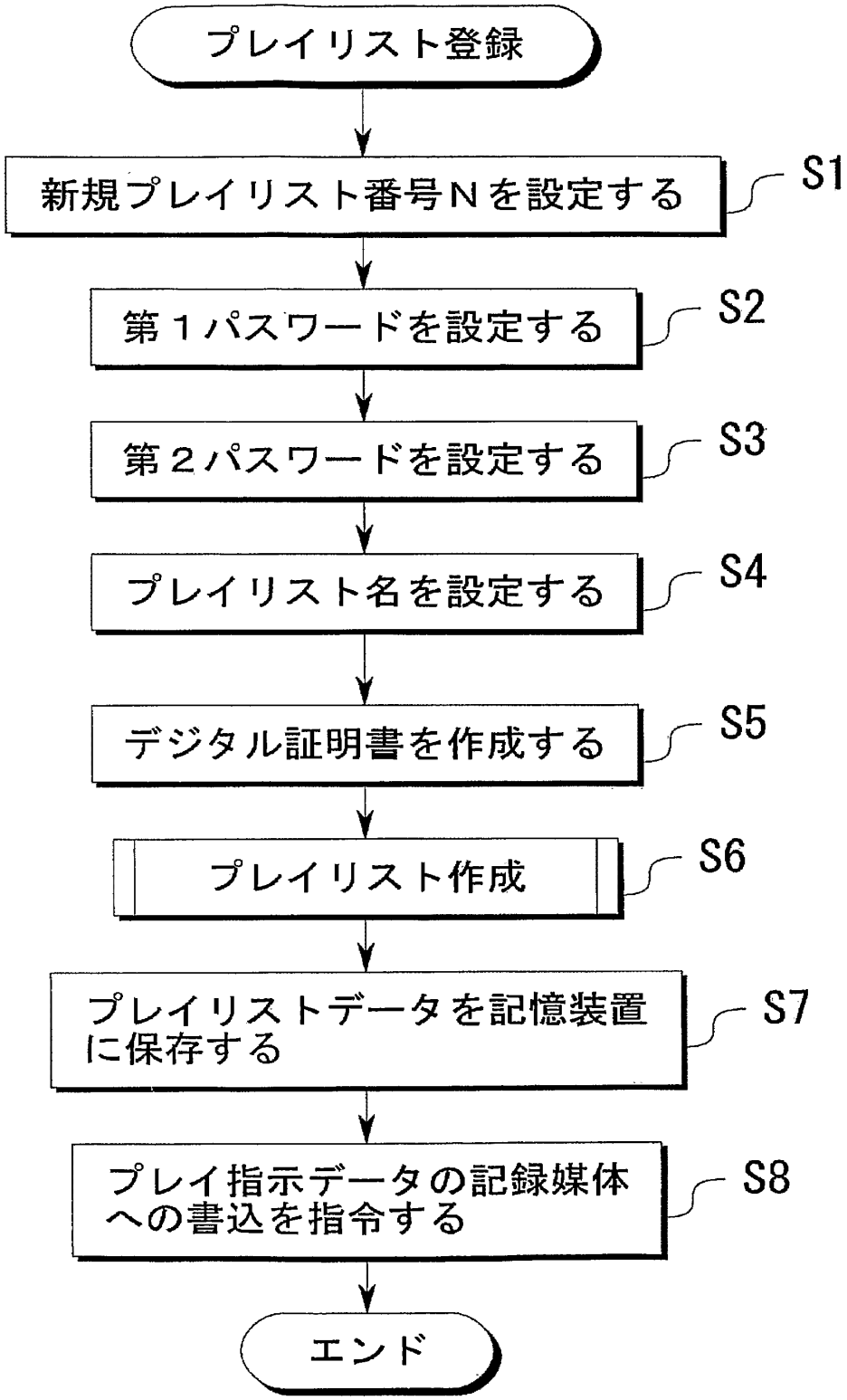
Id=/Video/PS_28.mpg
Title:7時のニュース;
Date: 2006-08-23T11:30:00
Duration=00:29:41.000
Info=・・・
Id=/Video/PS_29.mpg
Title:ワイド！スクランブル;
Date: 2006-08-30T10:00:00
Duration=01:00:00.000
Info=・・・
Id=/Video/PS_30.mpg
Title:駅伝中継;
Date: 2006-09-01T13:30:00
Duration=03:29:05.000
Info=・・・
Id=/Video/PS_31.mpg
Title:洋画劇場;
Date: 2006-09-02T21:30:00
Duration=01:55:00.000
Info=・・・
Id=/Video/PS_32.mpg
Title: 笑いのオリンピック;
Date: 2006-09-03T22:00:00
Duration=00:59:00.000
Info=・・・
Id=/Video/PS_33.mpg
Title: ドラマ「風」;
Date: 2006-09-04T19:30:00
Duration=00:58:30.000
Info=・・・

(b)

第2コンテンツサーバのコンテンツリストデータ

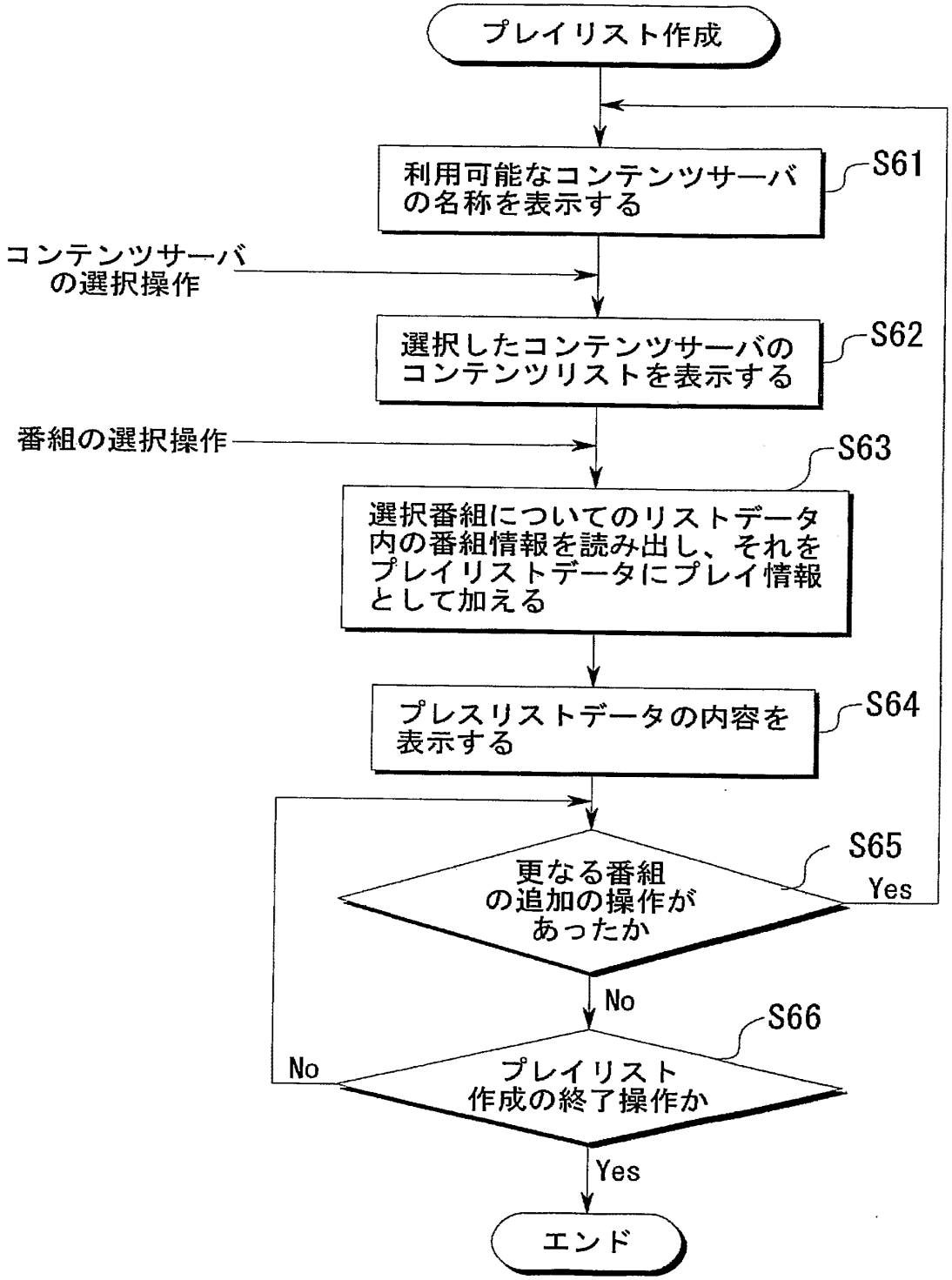
Id=/Video/PS_01.mpg
Title:9時のニュース;
Date: 2006-08-10T21:00:00
Duration=00:45:27.000
Info=・・・
Id=/Video/PS_02.mpg
Title:情報番組;
Date: 2006-08-16:T10:00:00
Duration=01:00:00.000
Info=・・・
Id=/Video/PS_03.mpg
Title:野球中継;
Date: 2006-09-01T18:56:00
Duration=002:43:05.000
Info=・・・

[図3]



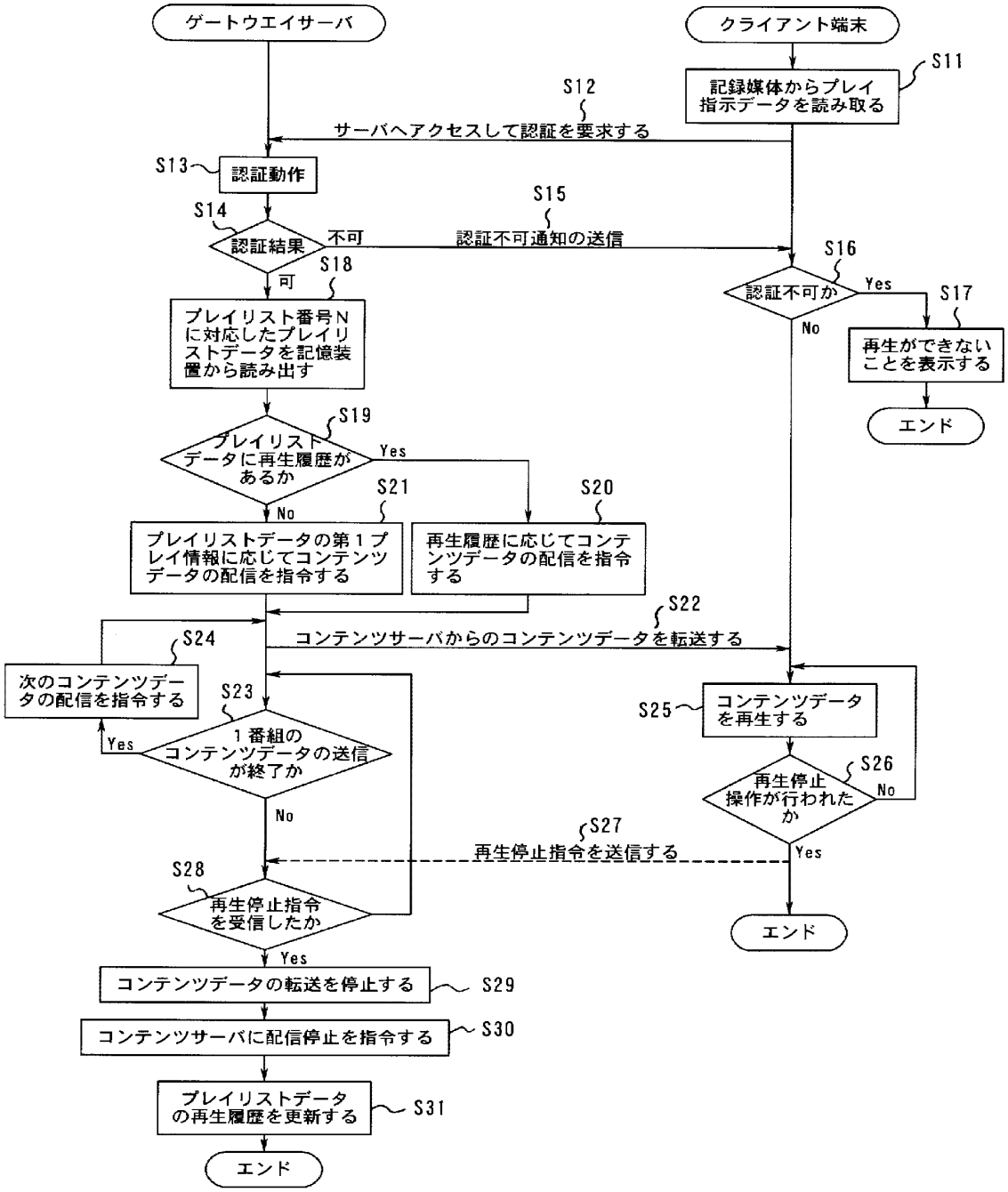
差替え用紙 (規則26)

[図4]

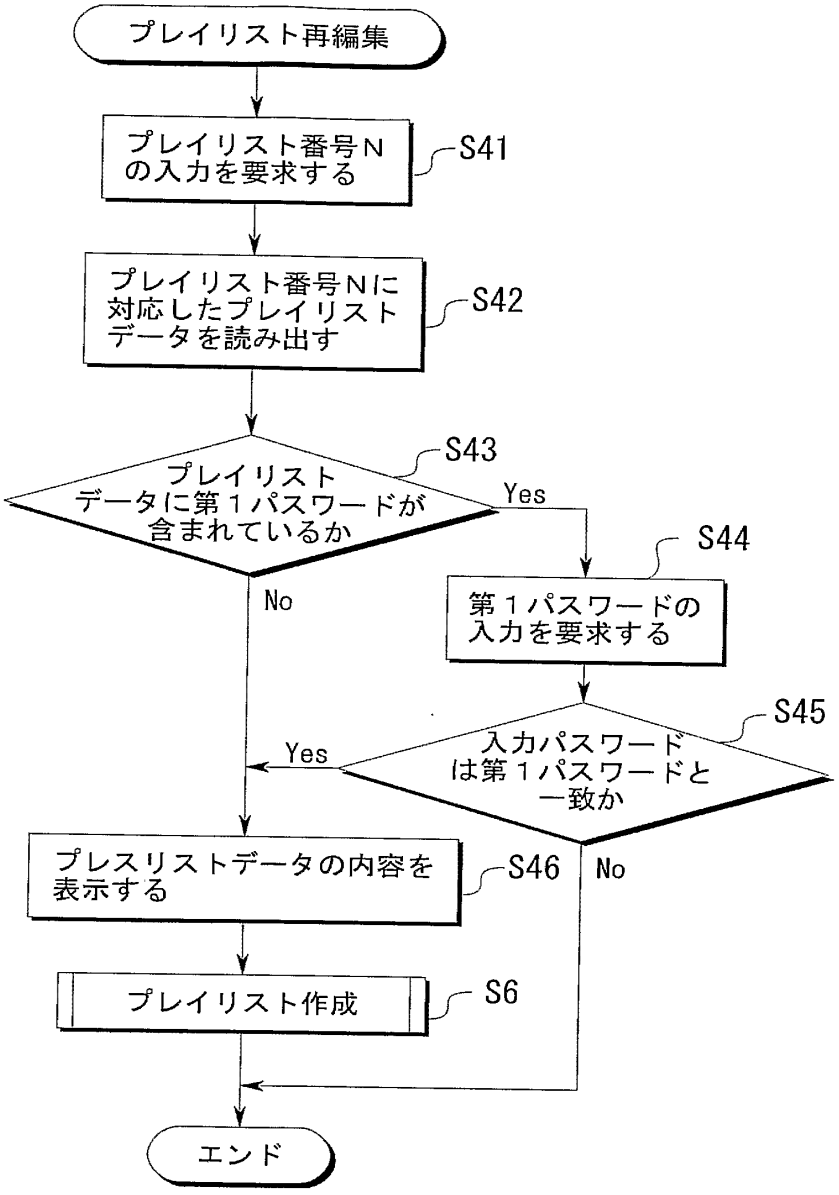


差替え用紙 (規則26)

[図5]


ゲートウエイサーバ
クライアント端末
S11
記録媒体からプレイ指示データを読み取る
S12
サーバへアクセスして認証を要求する
S13
認証動作
S14
認証結果
不可
S15
認証不可通知の送信
S16
認証不可か
Yes
S17
再生ができないことを表示する
エンド
No
可
S18
プレイリスト番号Nに対応したプレイリストデータを記憶装置から読み出す
S19
プレイリストデータに再生履歴があるか
Yes
No
S21
プレイリストデータの第1プレイ情報に応じてコンテンツデータの配信を指令する
S20
再生履歴に応じてコンテンツデータの配信を指令する
S22
コンテンツサーバからのコンテンツデータを転送する
S24
次のコンテンツデータの配信を指令する
S23
1番組のコンテンツデータの送信が終了か
Yes
No
S25
コンテンツデータを再生する
S26
再生停止操作が行われたか
No
Yes
S27
再生停止指令を送信する
S28
再生停止指令を受信したか
Yes
エンド
コンテンツデータの転送を停止する
S29
コンテンツサーバに配信停止を指令する
S30
プレイリストデータの再生履歴を更新する
S31
エンド

[図6]



差替え用紙 (規則26)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2007/055548

A. CLASSIFICATION OF SUBJECT MATTER
H04N7/173(2006.01)i, *G06F21/20*(2006.01)i, *G10K15/02*(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04N7/16-7/173, G06F21/20, G10K15/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2007
Kokai Jitsuyo Shinan Koho 1971-2007 Toroku Jitsuyo Shinan Koho 1994-2007

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2006-172392 A (Kenwood Corp.), 29 June, 2006 (29.06.06), Par. Nos. [0068] to [0069]; all drawings (Family: none)	1-3,5,6 4
Y A	WO 2003/102919 A1 (Onkyo Corp.), 11 December, 2003 (11.12.03), Pages 43 to 56; Figs. 24 to 29 & AU 2003/241772 A1 & EU 1508892 A1 & KR 2005/003371 A & US 2005/0203991 A1 & CN 1659623 A	1-3,5,6 4

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 June, 2007 (15.06.07)	26 June, 2007 (26.06.07)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2007/055548

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2001-249694 A (Matsushita Electric Industrial Co., Ltd.), 14 September, 2001 (14.09.01), Par. Nos. [0272] to [0281]; Figs. 74 to 77 & EP 1056093 A1 & WO 2000/074060 A1 & CN 1321319 A & KR 2001-085310 A & MX 2001/000997 A1 & US 6832293 B1	2 1,3-6
A	JP 2006-47644 A (Denso Corp.), 16 February, 2006 (16.02.06), Par. Nos. [0053] to [0083]; Figs. 1 to 16 (Family: none)	1-6
A	WO 2006/092996 A1 (Matsushita Electric Industrial Co., Ltd.), 08 September, 2006 (08.09.06), All pages; all drawings (Family: none)	1-6

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

国際調査報告

国際出願番号　ＰＣＴ／ＪＰ２００７／０５５５４８

Ａ．　発明の属する分野の分類（国際特許分類（ＩＰＣ））

Int.Cl.　H04N7/173(2006.01)i, G06F21/20(2006.01)i, G10K15/02(2006.01)i

Ｂ．　調査を行った分野

調査を行った最小限資料（国際特許分類（ＩＰＣ））

Int.Cl.　H04N7/16 - 7/173, G06F21/20, G10K15/02

最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報	１９２２－１９９６年
日本国公開実用新案公報	１９７１－２００７年
日本国実用新案登録公報	１９９６－２００７年
日本国登録実用新案公報	１９９４－２００７年

国際調査で使用した電子データベース（データベースの名称、調査に使用した用語）

Ｃ．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
Y A	JP 2006-172392 A（株式会社ケンウッド）2006.06.29, 段落[0068]-[0069]，全図（ファミリーなし）	1-3,5,6 4
Y A	WO 2003/102919 A1（オンキヨー株式会社）2003.12.11, 第43-56頁，第24-29図 & AU 2003/241772 A1　& EU 1508892 A1 & KR 2005/003371 A　& US 2005/0203991 A1 & CN 1659623 A	1-3,5,6 4

☑　Ｃ欄の続きにも文献が列挙されている。　☐　パテントファミリーに関する別紙を参照。

＊　引用文献のカテゴリー
「Ａ」特に関連のある文献ではなく、一般的技術水準を示すもの
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「Ｌ」優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献（理由を付す）
「Ｏ」口頭による開示、使用、展示等に言及する文献
「Ｐ」国際出願日前で、かつ優先権の主張の基礎となる出願の日の後に公表された文献
「Ｔ」国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
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「Ｙ」特に関連のある文献であって、当該文献と他の１以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「＆」同一パテントファミリー文献

国際調査を完了した日 １５．０６．２００７	国際調査報告の発送日 ２６．０６．２００７
国際調査機関の名称及びあて先 日本国特許庁（ＩＳＡ／ＪＰ） 郵便番号１００－８９１５ 東京都千代田区霞が関三丁目４番３号	特許庁審査官（権限のある職員）　５Ｃ　９７４６ 古川　哲也 電話番号　０３－３５８１－１１０１　内線　３５４１

様式ＰＣＴ／ＩＳＡ／２１０（第２ページ）（２００５年４月）

Ｃ（続き）．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
Y A	JP 2001-249694 A（松下電器産業株式会社）2001.09.14, 段落[0272]-[0281]，第74-77図 & EP 1056093 A1　& WO 2000/074060 A1 & CN 1321319 A　& KR 2001-085310 A & MX 2001/000997 A1　& US 6832293 B1	2 1,3-6
A	JP 2006-47644 A（株式会社デンソー）2006.02.16, 段落[0053]-[0083]，第1-16図（ファミリーなし）	1-6
A	WO 2006/092996 A1（松下電器産業株式会社）2006.09.08, 全頁，全図（ファミリーなし）	1-6

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(71) Applicant *(for all designated States except US)*: **BEYOND OBLIVION INC.** [US/US]; 16 East 40th Street, Suite 802, New York, New York 10016 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **KIDRON, Adam** [US/US]; 1075 Grand Concourse, Apt. 6R, Bronx, New York 10452 (US).

(74) Agent: **HANCHUK, Walter**; Chadbourne & Parke LLP, 30 Rockefeller Plaza, New York, New York 10112 (US).

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Published:

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WO 2012/050927 A2

(54) Title: CONTENT DISCOVERY AND DELIVERY PLATFORM APPARATUSES, METHODS AND SYSTEMS

(57) Abstract: The content discovery and delivery platform apparatuses, methods and systems ("CDDP") transform content seed selections and recommendations via CDDP components such as discovery and gurus into events and discovery of other contents for users and revenue for right-holders. In one embodiment, the CDDP may provide facilities for obtaining a universally resolvable list of content items on a local client and identifying a non-local item from the list that is absent on the local client. The CDDP may generate a local cache request for the identified non-local item having an associated universally resolvable content identifier and transmit the generated local cache request to a universally resolvable content server. The CDDP may then receive, in response to the transmitted request, a universally resolvable content item corresponding to the local cache request and may mark the requested item as temporary and locally available upon receiving the content item.

CONTENT DISCOVERY AND DELIVERY PLATFORM APPARATUSES, METHODS AND SYSTEMS

[0001] This patent application disclosure document (hereinafter "description" and/or "descriptions") describes inventive aspects directed at various novel innovations (hereinafter "innovation," "innovations," and/or "innovation(s)") and contains material that is subject to copyright, mask work, and/or other intellectual property protection. The respective owners of such intellectual property have no objection to the facsimile reproduction of the patent disclosure document by anyone as it appears in published Patent Office file/records, but otherwise reserve all rights.

CLAIM FOR PRIORITY

[0002] This application claims priority to and benefit from U.S. Provisional Application Serial No. 61/526,210 filed on August 22, 2011 titled CONTENT DISCOVERY AND DELIVERY PLATFORM APPARATUSES, METHODS AND SYSTEMS (Attorney Docket No. 20676-012PV1); U.S. Provisional Application Serial No. 61/496,512 filed on June 13, 2011 titled CONTENT DISCOVERY AND DELIVERY PLATFORM APPARATUSES, METHODS AND SYSTEMS (Attorney Docket No. 20676-012PV); U.S. Provisional Application Serial No. 61/387,450 filed on September 28, 2010, titled APPARATUSES, METHODS AND SYSTEMS FOR A MOLECULAR MULTIMEDIA SEARCH PLATFORM (Attorney Docket No. 20676-003PV); and U.S. Provisional Application Serial No. 61/387,453 filed on September 28, 2010 titled

APPARATUSES, METHODS AND SYSTEMS FOR A MULTIMEDIA PIVOT SEARCH PLATFORM (Attorney Docket No. 20676-004PV).

[0003] The entire contents of the aforementioned applications are herein expressly incorporated by reference.

APPLICATIONS OF INTEREST

[0004] Applications of interest include: International Application Number PCT/US2009/061296, filed 20 October 2009, and entitled A METHOD AND SYSTEM FOR ACCOUNTING FOR DOWNLOAD TRANSACTIONS AND SOCIAL NETWORK INTERACTION (Attorney Docket No. 20676-017PC3); International Application Number PCT/US2009/061307, filed 20 October 2009, and entitled A METHOD AND SYSTEM FOR ACCOUNTING FOR DOWNLOAD TRANSACTIONS AND SOCIAL NETWORK INTERACTION (Attorney Docket No. 20676-017PC2); and International Application Number PCT/US2009/061309, filed 20 October 2009, and entitled A METHOD AND SYSTEM FOR ACCOUNTING FOR DOWNLOAD TRANSACTIONS AND SOCIAL NETWORK INTERACTION (Attorney Docket No. 20676-017PC1).

[0005] The entire contents of the aforementioned applications are herein expressly incorporated by reference.

FIELD

[0006] The present innovations are directed generally to apparatuses, methods, and systems for multimedia applications, and more particularly, to CONTENT

DISCOVERY AND DELIVERY PLATFORM APPARATUSES, METHODS AND SYSTEMS.

BACKGROUND

[0007] Consumers of music and other multimedia have several options to purchase music that they like. They may go to music retail stores such as BEST BUY, TARGET or other independent stores and purchase a copy of their desired album packaged in the ubiquitous compact disc (CD) format. Consumers may also purchase digital copies of music from online music stores such as ITUNES and AMAZON, and subscription based services from service providers such as NAPSTER.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The accompanying appendices and/or drawings illustrate various non-limiting, example, innovative aspects in accordance with the present descriptions:

[0009] FIGURE 1 shows a diagram illustrating discovery aspects in one embodiment of the CDDP;

[0010] FIGURE 2 shows a diagram illustrating example modes of discovery in some embodiments of the CDDP;

[0011] FIGURE 3 shows an example data flow illustrating generation of a magic playlist in some embodiments of the CDDP;

[0012] FIGURES 4a-b are logic flow diagrams illustrating magic playlist generation component in one embodiment of the CDDP;

[0013] FIGURE 4c-d are data flow diagrams illustrating remote client play in some embodiments of the CDDP;

[0014] FIGURE 4e is a logic flow diagram illustrating non-local content cache component in some embodiments of the CDDP;

[0015] FIGURE 4f is a logic flow diagram illustrating smart caching component in some embodiments of the CDDP;

[0016] FIGURE 5 shows a logic flow diagram illustrating stagelight/spotlight search in some embodiment of the CDDP;

[0017] FIGURE 6a shows an example shared discovery in some embodiments of the CDDP;

[0018] FIGURE 6b shows an example shared discovery settings configuration in some embodiments of the CDDP;

[0019] FIGURES 7a-c show logic flow diagrams illustrating shared discovery components in some embodiments of the CDDP;

[0020] FIGURE 8a shows a logic flow diagram illustrating the Gurus rewarding component in some embodiments of the CDDP;

[0021] FIGURE 8b shows a logic flow diagram illustrating the Gurus offer delivery and redemption component in some embodiments of the CDDP;

[0022] FIGURES 9-14 are schematic views of the example CDDP application interface in some embodiments of the CDDP;

[0023] FIGURES 15a-g are schematic views of the example stagelight/spotlight interface in some embodiments of the CDDP;

[0024] FIGURES 16a-c are schematic views of the discover stream component in some embodiments of the CDDP;

[0025] FIGURES 17a-f are schematic views of the discover lens component in some embodiments of the CDDP;

[0026] FIGURES 18a-c are schematic views of the discover stacking component in some embodiments of the CDDP;

[0027] FIGURES 19a-g are schematic views of the molecular discovery component in some embodiments of the CDDP;

[0028] FIGURES 20a-n are schematic views of the example mobile application interfaces in some embodiments of the CDDP;

[0029] FIGURES 21a-b are schematic views of the example mobile application molecular interfaces in some embodiments of the CDDP;

[0030] FIGURE 22a is a data flow diagram of an example content identification component in some embodiments of the CDDP;

[0031] FIGURE 22b is a logic flow diagram illustrating an example content identification in some embodiments of the CDDP;

[0032] FIGURE 23 is a logic flow diagram illustrating an example license acquisition component in some embodiments of the CDDP;

[0033] FIGURES 24a-b are data flow diagrams illustrating example licensing component in some embodiments of the CDDP;

[0034] FIGURE 24c is a logic flow diagram illustrating an example license acquisition component in some embodiments of the CDDP;

[0035] FIGURE 25 is a data flow diagram illustrating an example usage reporting component in some embodiments of the CDDP;

[0036] FIGURES 26a-b are logic flow diagrams illustrating example play count reporting components in some embodiments of the CDDP;

[0037] FIGURE 27 is a logic flow diagram illustrating an example royalty reporting component in some embodiments of the CDDP; and

[0038] FIGURE 28 shows a block diagram illustrating embodiments of a CDDP controller.

[0039] The leading number of each reference number within the drawings indicates the figure in which that reference number is introduced and/or detailed. As such, a detailed discussion of reference number 101 would be found and/or introduced in FIGURE 1. Reference number 201 is introduced in FIGURE 2, etc.

DETAILED DESCRIPTION

CDDP

[0040] In one embodiment, the CDDP allows unlimited, lifetime-of-device and lifetime-of-ownership access to a comprehensive catalog of music ("Infinite Music Library," "universal music library, "CDDP catalog") on licensed devices (LDs). Such LDs support digital rights management (DRM) and adhere to the CDDP specification for reporting instances of digital downloads and/or plays ("play count"). LDs include a licensed CDDP client ("application"), a full-features music management application providing access to a comprehensive catalog of music via catalog browsing, music discovery, social networking, track download and playback, and/or the like.

[0041] In some embodiments, the CDDP may include facilities for music downloads, music playback controls, library management, playlist management and sharing, license activation, account registration, artist, album or Guru browsing, automatic disc-space management features, music search, a variety of discovery interfaces include molecular, lens, streaming and stacking discovery interfaces, automatic playlist synchronization to the universal music library, and across one or more user devices, user library reconciliation ("beyondization"), side-loaded device management, direct social interaction through the CDDP community and extended social interaction with existing online communities such as FACEBOOK, MYSPACE, TWITTER and LINKEDIN, player add-ons that extend the capabilities of the CDDP application in search, recommendation, sharing and discovery, and/or the like.

[0042] In some embodiments, the CDDP may include a web-based browser interface with search, discovery, cloud-based content sync, social music features and

other components. For example, a CDDP user ("user," "consumer" or "customer") may download tracks, albums or playlists, may obtain song previews or listen to full length tracks, learn more about artists and their music, and discover related artists and their music.

[0043] In some other embodiments, the CDDP may include a portal or an application client for web-based partner (B2B) account management and partner interface functioning as the face of the one or more databases and/or tables. Some components of the CDDP may account for and pay copyright owners royalties, in a way that ASCAP, Harry Fox, SESAC or BMI may do, for each and every play of a digital music file on an LD. Copyright owners, including record labels, publishers, and other entities associated with content rights are referred to as partners.

[0044] The CDDP catalog includes a large number of content items that have been cleared for legal distribution and sharing among the CDDP users. Each content item in the CDDP catalog is uniquely identified. Some embodiments of the CDDP may facilitate assigning of unique identifier for licensed and distributable music. Other embodiments of the CDDP may further facilitate assigning of unique identifiers for unlicensed music on a local client device, thereby uniquely and universally resolving each content item.

[0045] The CDDP's user interfaces facilitate several modes of content discovery. Content discovery may allow users to discover new music, new social connections, new information, and/or the like. The CDDP may further facilitate users to expand and/or refine their own music preferences and knowledge base from others users' usage history, playlists, favorites, etc. In some embodiments, discovery may be driven by driven by a variety of factors including Gurus, personal usage patterns and/or content meta data. In

other embodiments, discovery may be facilitated by a variety of visually engaging and interactive user interfaces.

[0046] As such, aspects of the CDDP facilitate discovery, sharing, playback, and secure usage data aggregation and reporting, and/or the like.

[0047] The CDDP application may run on a variety of operating system platforms including Windows, Macintosh, iOS (Apple iPhone, iPod Touch, etc.), Android, Symbian, Java/J2ME, Samsung Bada, Windows Mobile 7, RIM Blackberry, HP Palm WebOS, Google Chrome, set top boxes (Linux), automotive devices, other mobile handsets, portable media players and consumer electronic devices. In some implementations, manufacturers may install a copy of the application in devices during manufacturing. The CDDP application may also be installed on devices, post-manufacture, by device resellers (e.g., mobile carriers), by technicians at a point-of-sale location, or by consumers themselves (e.g., from a website, an application store for mobile devices, web stores such as Chrome web store, etc.).

[0048] FIGURE 1 shows a diagram illustrating discovery aspects in one embodiment of the CDDP Platform. As illustrated in the diagram, a user 104/108 may be uninterested in his or her current selection of music on his or her LD. He or she may desire to know not just what is currently popular, or on the top 40 lists, but also what his or her friends are listening to, which tracks are being recommended, and/or the like. The discovery interface 116 facilitates the discovery of music which the user may enjoy using LDs 106/110.

[0049] In one implementation, the discovery interface 116 may include a network of friends 112 and/or subject experts known as "Gurus" 114 through whom the user

104/108 may discover music. Gurus are users who have opted in to the Guru program which is discussed in detail with respect to the Guru program component.

[0050] FIGURE 2 shows a diagram illustrating example modes of discovery in some embodiments of the CDDP. Examples modes of discovery 200 include, for example, Gurus 202, magic playlist 204, deep/molecular discovery 206, shared discovery 208, search 210, stagelight/spotlight search 212, infinite library home 214, and/or the like. Each of these modes of discovery 200 is discussed in greater detail below.

Magic Playlist Generation (MPG) Component

[0051] Magic playlists are automatically generated playlist of content related to a "seed" item such as an artist, an album, a track, a playlist, another user or a combination thereof. In one embodiment, a magic playlist generation algorithm may utilize historical (e.g., listening/usage history), social (e.g., what friends are listening to), usage, profile, Gurus, track rating, crowd sourcing and other data to create a magic playlist. In one implementation of the MPG algorithm, these factors may be weighted using one or more weighting criteria. For example, in one implementation, a "social" weighting criterion may be selected. Such "social" criteria may result in more weight being accorded to social factors such as friends' listening history, Guru recommendations, crowd sourcing, etc. Similarly, other criteria may include personal usage (e.g., emphasis on the listener's usage history), profile (e.g., emphasis on the listener provided profile information), promotional (e.g., emphasis on music promoted by advertisers or other third parties), music traits (e.g., emphasis on music trait analysis), and/or the like. In some

implementations, a combination of one or more of these criteria may be utilized to identify tracks that a user is likely to enjoy and/or share with other users.

[0052] FIGURE 3 shows an example data flow illustrating generation of a magic playlist in some embodiments of the CDDP. As shown in FIGURE 3, in one implementation, a user 302 may request a magic playlist at 310 by selecting, for example an artist, as a content seed and clicking a "magic playlist" icon. In one implementation, the magic playlist request may be packaged as an HTTP(S) POST message for transmission to the servers 306. An example magic playlist request message 312 formatted in the eXtensible Markup Language (XML) form may be as follows:

```
POST /magicplaylist.php HTTP/1.1
Host: www.websitename.com
Content-Type: Application/XML
Content-Length: 1306
<?XML version = "1.0" encoding = "UTF-8"?>
<MagicPlaylist>
        <Username>dingdong555@gmail.com</Username>
        <Timestamp>2011-02-22 15:22:43</Timestamp>
        <ClientDetails>
            <ClientIP>192.168.23.126</ClientIP>
            <ClientType>smartphone</ClientType>
            <ClientModel>HTC Hero</ClientModel>
            <OS>Android 2.2</OS>
            <AppIinstalledFlag>true</AppInstalledFlag>
        </ClientDetails>
        <EventDetails>
            <Event>create magic playlist</Event>
            <SeedType>artist</SeedType>
            <SeedName>pink floyd</SeedName>
        </EventDetails>
</MagicPlaylist>
```

[0053] The magic playlist request message 312 may be transmitted to the servers 306 over the communication network 300 for further processing. In one implementation, the request 312 may be routed to those servers that are geographically proximal to the location of the user's client device 304. At 314, the servers may initiate generation of the requested magic playlist that may include a list of tracks selected based on the seed item and/or other factors. In one implementation, the servers 306

may execute the magic playlist generation algorithm to obtain a list of tracks for the requested magic playlist. Details of the magic playlist generation algorithm(s) are discussed with respect to FIGUREs 4a and 4b.

[0054] At 316, the created magic playlist may be saved in a playlist database 308. The playlists in the playlist database 308 may be available to all users or may be subject to restrictions imposed by the respective creators. At 318, content related to the magic playlist tracks may be retrieved. For example, if the magic playlist includes a track by the artist "Eagles," the related content may include, for example, a list of playlists including the same track that are created and shared by other users. Similarly, information such as similar artists, albums corresponding to the tracks, etc., may also be retrieved. Identification of related content information is further discussed in detail with respect to the SC component.

[0055] At 320, the generated magic playlist may be sent by the servers 306 over the communications network 300 to the client device 304. At 322, the related content information may also be sent over the communications network 300 to the client device 304. In one implementation, the response message 320 and/or 322 from the servers 306 may include track IDs and thumb nail images corresponding to the tracks in the magic playlist. In a further implementation, the response message 320 and/or 322 may also include information on related tracks, artists, albums, playlists including the magic playlist tracks, Gurus associated with the magic playlist tracks, and/or the like. The response message may specifically include track names, track IDs, album names, album IDs, artist names, artist IDs associated with the related content. An example response message 320 and/or 322 may be in XML format substantially in the following form:

```
<XML>
  <MagicPlaylist>
    <PlaylistInfo>
      <Username>dingdong555@gmail.com</Username>
      <Timestamp>2011-02-22 15:23:00</Timestamp>
      <PlaylistName>Pink Floyd Magic Playlist</PlayListName>
      <PlaylistImg>DM2345.png</PlaylistImg>
      <SeedType>artist</SeedType>
      <SeedName>pink floyd</SeedName>
    </PlayListInfo>
    <TrackIDInfo>
      <TrackID1>6786865</TrackID1>
      .
      .
      .
      <TrackID20>342554</TrackID20>
    </TrackIDInfo>
    <TrackImgInfo>
      <TrackImg1>DM3243.png</TrackImg1>
      .
      .
      .
    </TrackImgInfo>
    <RelatedArtistInfo>
      <RelatedArtist1>Genesis</RelatedArtist1>
      .
      .
      .
      </RelatedArtist9>Peter Gabriel</RelatedArtist9>
    </RelatedArtistInfo>
    <RelatedPlaylistInfo>
      <Playlist1>Jeb loves Roger Waters</Playlist1>
      <Playlist2>Jenna's Wall</Playlist2>
      .
      .
      .
    </RelatedPlaylistInfo>
  </MagicPlaylist>
</XML>
```

[0056] In one implementation, the CDDP client may receive the message 320 and/or 322 and may parse the received message to extract the track IDs. The CDDP client may also use the extracted track IDs to retrieve and display track information such as track name, track length, location of the track (e.g., local library, cloud library or connected device library), images, and/or the like.

[0057] In some implementations, the CDDP client may keep a log of various events associated with playlists which may include magic playlists. For example, a user may remove a track that was part of a playlist, and may create a new version of the playlist without the removed track. As another example, a user may reorder the tracks

within a playlist in a different sequence. Example playlist events logged by the CDDP client may include, but is not limited to: tracks removed from the playlist, name of artist upon which magic playlist was created, name of track upon which magic playlist was created, name of tracks in playlist, name of playlist upon which magic playlist was created, name of album upon which magic playlist was created, total times a playlist was renamed (track composition may or may not have changed), total times playlist was reordered, and/or the like. The log may be periodically uploaded to the CDDP server(s).

[0058] FIGUREs 4a and 4b are logic flow diagrams illustrating the MPG component in one embodiment of the CDDP. In one implementation, the CDDP may receive seed item information such as an artist, a track, an album, a playlist, a Guru, and/or the like at 402, which is provided as an input to the MPG algorithm. The seed item may be universally resolvable. A user may provide this information by selecting or entering the seed item. If the seed item is a content item as determined at 404, one or more content attributes that define the seed item may be extracted at 404. Examples of content attributes may include, for example, track meta data information such as album, artist, comment, copyright, title, track, performers, genre, label, cover art, song length, a globally unique identifier (GUID), and/or the like. The content attributes may further include stylistic traits such as female vocal, electric guitar, tonality, tempo, bass, etc. and/or the like.

[0059] If the user provided content seed is not a content item, the content seed may be analyzed using several heuristics. Examples of non-content items, i.e., items that are not content and do not have a corresponding media file, may include, for example, an entity graph, a Guru name, mood, tempo, comment and/or the like. At 418, content

seed representation heuristics may be determined. Examples of the content seed representation heuristics may include a specified default or predetermined item 418a, currently played track 418b, most played track 418c, favorite track 418d, favorite genre 418e, last purchase 418f, others 418g and/or the like. These representative heuristics may also be derived from aggregated correlation among entire community of users, circle of friends or entity graph.

[0060] In some implementations, entity graph may include social graph and interest graph. Social graph may include categories of friends and/or acquaintances from social networks such as FACEBOOK, MYSPACE, TWITTER, GOOGLE+, and/or the like. Social graph may also include categories of friends and acquaintances from the CDDP community and/or other communication media such as instant messengers, contacts from address books, and/or the like. Interest graph may include categories of friends and acquaintances from any of the above social networks and the CDDP community who have an interest profile similar to a user. Additionally, an interest graph of a user is more expansive and may include people that do not have a social relationship with the user, but with who the user may share similar interests, usage pattern, listening history, and/or the like. In addition to people, entities may also include organizations and companies reachable through any of the mentioned social networks, CDDP community network and other communication media.

[0061] Referring to FIGURE 4a, content information pertaining to one or more of these heuristics may be retrieved at 420. For example, for the last purchase heuristic 418f, an album ID or a track ID corresponding to the last purchase made by the user

may be obtained. Now that the non-content item seed is transformed using heuristics to a content item seed, the attributes of the content item seed may be determined at 406.

[0062] At 414, user profile preference information may be retrieved. The user profile preference information may include user provided information such as favorite artist, favorite genre, album, etc. Such information may be provided by the user during registration, profile creation or profile update. The user profile preference may also be derived from the user's CDDP profile. The CDDP profile may be an "in house" profile organically built over time using information learned from the user, such as listening history. The CDDP profile may include not only information such as the user's preferred album, tracks, artists, genre and other attributes, but also a breakdown of the user's preferences according to location, time, mood (e.g., mood indicated by the user's mood status) and/or the like. For example, the CDDP may track and analyze the user's listening history over time to surmise that the user is likely to listen to ambient music late at night, rock music in early morning, and instrumental music at midday, etc. Furthermore, the user profile preference information may facilitate the CDDP's efforts to pre-fetch tracks in anticipation of the user's desire to listen to such pre-fetched tracks.

[0063] Further at 416, the user's social graph information may be retrieved. Social graph information may include friends, family, acquaintances, corporate entities, and/or the like. Social graph connections may exist within the CDDP network as well as other social network sites such as FACEBOOK, TWITTER and LINKEDIN. Using the entity graph information, the CDDP may obtain information such as music his or her friends are interested, their listening history, playlists, currently played, most played, favorite, last purchased tracks, artists or albums, and/or the like. In a further

implementation, the degree of separation and/or degree of friendship between the user and members of his or her social network may be taken into consideration. The degree of friendship may be established using information provided by the user and/or information derived from the frequency of communication exchanged between two users, existence of similar relationship in multiple social networks, and/or the like. The degree of separation may be established using the social graphs of various users in the network.

[0064] In one implementation, one or more weighting categories may be established in order to determined a magic playlist that embodies not just the musical attributes, but also one or more social and personal preferences. These categories may be selected manually at 422, which may trigger a dialog box requesting, for example, the user to select or input one or more social/personal categories that should be considered. The user selected category preferences may then be loaded at 428. On the other hand, these categories may be predefined parameters in the algorithm, in which case, applicable categories may be retrieved at 424. These categories may include, for example, the user's listening history, thumbs up/down rating of tracks, Guru rating of tracks, the user's friends' listening history, most recently played, most frequently played, most shared, most purchased, recently released, day/time preferences, and/or the like. Further, each category may be assigned its category weight. In one implementation, these category weights may be predetermined and as such, set by the CDDP at 426. In an alternate implementation, these category weights may be included in the loaded preferences specified by the user at 428. The user, when asked for category selections, may also be requested to specify how important that category is for the user. (For e.g.,

How important is social influence - select one: (a) very important, (b) not so important or (c) indifferent).

[0065] Referring now to FIGURE 4b, the extracted content attributes, along with the retrieved user profile preferences and social graph information, may be utilized to form a query for searching a list of content items that have matching or similar content attributes. Such a search may be executed on one or more databases and/or tables of the CDDP at 430. Further, such a search may be executed for relevancy, popularity, aggregated popularity, and/or the like. Relevancy, for example, may be established in various ways. Consider, for example, an artist ATB as a seed item. ATB may have attributes such as trance roots, dance feel and female vocal. A relevancy search based on these attributes may find other artists/tracks having these attributes. Further, a three attribute match may be considered more relevant than a two-attribute match. In some implementations, relevancy search may be based on fingerprinting technologies provided by third party services such as Gracenote.

[0066] At 432, for each heuristic category, the magic playlist algorithm may be used to identify content items for the magic playlist. A query based on each content criterion may be constructed and run on one or more databases and/or tables at 432. Although each query may result a small or large number of results, only the first n number of results having high similarity metric may be selected. At 436, the category weight may be assigned to each category items obtained from the query. The process may continue until all the category item results have been assigned category weights. When all the categories have been exhausted at 438, each content item result for each category may be assigned a position factor or ranking based on relevance at 440. In one

implementation, the algorithm may determine "relevancy" by calculating a relevancy score for each identified track. Table 1 below illustrates example results from a query based on four criteria and the calculation of the relevancy score for each unique result.

CATEGORY (C) *POSITION (P)*	*1*	*2*	*3*	*4*
10	Track A	Track B	Track C	Track D
9	Track X	Track A	Track Y	Track A
8	Track B	Track P	Track Q	Track E
7	Track C	Track R	Track F	Track J
...	...	...	...	...
1	Track Q	Track J	Track J	Track A

[0067] For each unique track t, based on the category weight (C) and the position weight (P), the relevancy score may be calculated as below in one implementation:

[0068]
$$S_{t=1\,to\,x} = \sum_{j=1}^{M}\sum_{k=1}^{N} C_j \times P_{jk}$$

[0069] Where, S = relevancy score, x = track, j = category and k = position in the list. In this example, M = 4 and N = 10.

[0070] At 442, the weights (category and position) may be used to input in the formula above to obtain the relevancy score for each unique track identified. The highest value tracks i.e., the unique tracks having the highest relevancy scores S may be sorted at 444. At 446, top x number of the highest value tracks (e.g., 20 tracks) may be selected

for inclusion in the requested magic playlist. In some implementations, other methods of calculating relevancy based on weighted criteria may be utilized.

[0071] Once the content items for the magic playlist have been identified, the magic playlist may be sent to the requesting user's client device. The user may then select a content item to play. FIGUREs 4c-d show data flow diagrams illustrating remote client play in some embodiments of the CDDP. In FIGURE 4c, a client device 478 may make an application programming interface (API) request to an API server 476 that returns metadata information for the selected content item. If the content item is licensed for the authenticated user, download universal resource locators (URLs) for standard/mobile audio files may be included. The API request 484 may in one implementation be a JSON over HTTP POST request. Another HTTP post request 486 may then be made to a content distribution network (CDN) 480 for downloading an audio/video file for the requested content item using the appropriate download URL obtained from the API server 476. In one implementation, the CDN may be utilized for facilitating faster downloads. The CDN may be in communication with a media server 482 over HTTP for 486 for obtaining copies of the audio/video files. The downloaded audio/video file may then be played back by the user.

[0072] Referring now to FIGURE 4d, data flow between the CDN 480, the CDDP client and the user interface 494 is discussed in more detail. In one implementation, the CDDP client may include a download thread 490a, a media player 490b and an Input/Output (I/O) stream interface 490c. In one implementation, the download thread 490a and/or the I/O stream interface 490c may be substantially implemented using C++. In some implementations, the media player 490b may be implemented using a

software development kit (SDK) that are digital rights management (DRM) compatible. The download thread 490a may track the download status of a content item (e.g., an audio file). For example, the item being downloaded may be saved locally as a local audio file 490. The download thread 490a may track the download status and may issue download status events to indicate state transitions for the local file. Examples of state transitions may include "downloading" to "playable" to "downloaded."

[0073] When the user interface 494 receives the download status event 496a from the download thread 490a indicating that the local audio file is playable, it can start playback. When the user selects a play control from the user interface 494, the play event 492b may be sent to the media player 490b to begin playback of the requested local audio file 490. The media player 490b may then issue playback events that are used in the generation of playback status events 492c for the user interface, and in playcount event recording. In one implementation, the audio file may become playable after only a small portion of the file is downloaded. In one implementation, the small portion may include only the license, the MP4 atoms, and/or the portion of the encrypted content that contains the first sample of the unencrypted content. For a track that is 3 minutes and 30 seconds long, it may be playable after approximately 30kB (e.g., mobile quality file size), and approximately 50 kB (e.g., standard quality file) have been downloaded.

Content Caching Component

[0074] In some embodiments of the CDDP, one or more local client devices may be provided with facilities for media content caching. In one implementation, caching may be limited to those content items that are not available locally in the client device.

In another implementation, caching may be for those content items that match the client device owner specified preferences. Caching may be carried out in the background without any active user intervention in some implementations.

[0075] FIGURE 4e is a logic flow diagram illustrating the content caching component in some embodiments of the CDDP. In one implementation, a user may select or input a content item at 450. For example, a user may select an artist as a content seed. The selected content item may be received by the server at 452. The server may then identify the selected content item at 454 and determine related content based on the item at 456. For example, if the user selected artist "Janelle Monae", the CDDP platform may identify tracks related to the artist, albums related to the artist, information about the artist, playlists including tracks by the artist, artists similar to Janelle Monae, and/or the like. The determination may include creating a content query based on the received input and/or other input identifying information and querying one or more content databases using the created content query. The related content data determined by the CDDP may be sent to the user's client device at 458 and may be received by the user's client device at 460.

[0076] In one implementation, at 462, a determination as to whether any of the tracks returned by the search are non-local tracks. In some implementations, non-local tracks are tracks that are not available locally in the client device. For example, non-local tracks may be present in the universal music library in the cloud, but are absent in the user's local device, either in one or more media folders, or cache. This determination may be achieved, for example, by comparing the track IDs returned from the search with the track IDs of the tracks saved locally. If there are no non-local tracks, i.e., all tracks

from the search result are local, those tracks may be marked as locally available using an indicator at 466 to distinguish them from non-local tracks. The related content may then be displayed on the client device at 468.

[0077] On the other hand, if one or more tracks are non-local tracks, a local cache request may be generated for requesting the non-local tracks from the server. In one implementation, the local cache request for the non-local tracks may be in XML format substantially in the following form:

```
<XML>
     <ClientDetails>
          <ClientIP>192.168.22.111</ClientIP>
          <ClientType>smartphone</ClientType>
          <ClientModel>HTC Hero</ClientModel>
          <OS>Android 2.2</OS>
      </ClientDetails>
     <UserName>JaneSmith@gmail.com</UserName>
     <NonLocalTrackDetails>
          <Track1ID>238348</Track1ID>
          <Track2ID>338458</Track2ID>
          .
          .
          .
          <Track18ID>245788</Track18ID>
     </NonLocalTrackDetails>
</XML>
```

[0078] The server may receive the request for non-local track and may retrieve the requested tracks from one or more media content databases using the universally resolvable track ID in the XML request at 470. The retrieved tracks may then be sent to the requesting user's client device at 472. The requested tracks may be received by the client device at 474 for temporary storage in the client device cache. The received tracks may be encrypted, and may become playable after only a small portion of the content file is downloaded.

[0079] In one implementation, the content items stored in the cache may be made permanent by the user at any time as long as the item has not been cleared from the cache. The CDDP client may mark the previously local tracks as locally available tracks

at 466 and may update the CDDP client interface to display the received and/or identified related content data at 468.

[0080] In another embodiment of the CDDP, the content caching component may facilitate caching of non-local items in a media content collection explored, created or copied by a user. For example, a user may create a playlist (or request a magic playlist) which may include a list of tracks. The CDDP may then automatically determine whether any of the tracks in the list are non-local, and if so, may obtain the non-local tracks for temporary storage in the local cache. Such automatic caching for non-local items may enhance user experience, whether the user is online or offline, with seamless delivery of music.

[0081] In some implementations, the content caching component may include a cache manager component. The cache manager component may facilitate management of content data stored temporarily in the cache. When cache memory is filled up, there may not be enough space in the cache to store new content items. In order to make room for new content items, older content items may have to be deleted. The cache manager may determine which content items to delete based on various factors such as priority, play count, last play date and time, size of content items, date and time of storage, and/or the like. In one implementation, priority may be determined based on user preference. In another implementation, priority may be determined based on track play attributes. For example, if a content item is a recommendation engine ranked song or of a ranked album, the content item may have a higher priority and thus may not be the first track to be deleted.

Smart Caching (SC) Component

[0082] Some embodiments of the CDDP may include an SC component that may facilitate smart caching of content items that are likely to be consumed by a user. The SC component may include a recommendation engine that generates music recommendations based on, in one implementation, users' implicit interests. In a further implementation, the SC may also include a cache manager component that manages caching queue. Together, the recommendation engine and the cache manager may identify tracks that are likely to be of interest to the user, and download the identified tracks to the user's client cache. In one implementation, a user's interests may be derived from the behavioral and use data collected from the user's client and/or website. For example, length of play, i.e., whether the user plays a track for 10 seconds or the full length, may be a strong indicator of the user's interest in that particular track, genre or artist. Similarly, if the user adds a track to a playlist, creates a magic playlist with a track or shares a track, such activities may also be a strong indicator of the perceived value of the track to the user. As yet another example, tracks that are played in proximity in terms of timing and/or session may also suggest common clusters for recommendation.

[0083] In some implementations, the collected play data may include, but are not limited to play data such as track play detail, track added to playlist, track shared, rating, track plays in close proximity, track ID, track bookmarked, track used to create magic playlist, and/or the like. Track play detail may include information such as genre, data and time of play, partial or full play, and/or the like. In one implementation, a play that is less than 30 seconds long may be classified as partial play, while a play that is longer than or equal to 30 seconds may be classified as full play. In other

implementations, the critical play length may be a number different from 30 seconds, or may even be a percentage of the track length (e.g., a track play that is at least 30% of the track length may be considered a full play).

[0084] In some implementations, the collected data may also include personally identifiable information (PII), user ID, and/or the like. In one implementation, PII may include any information (i) that may identify or may be used to identify, contact, or locate the person to whom such information pertains; and (ii) from which identification or contact information of an individual person is derived. In some implementations, PII may include, but is not limited to: name, address, phone number, fax number, email address, financial profiles, medical profile, social security number, credit card information, and/or the like. Additionally, in some other implementations information such as a personal profile, unique identifier, biometric information, IP address, and/or the like associated with PII may be considered PII. In yet other implementations, PII may not include information that is aggregated or collected anonymously (i.e., without identification of the individual user) or demographic information not connected to an identified individual. In some implementations, PII may include third party PII. In some implementations, user ID may be a totally anonymous number series or alphanumeric characters.

[0085] Using the collected data, the recommendation engine may in some implementations, aggregate tracks, artists, albums, Gurus, playlists that are consistently favored or banned by the user. The recommendation engine may also keep track of user ratings (e.g., thumbs up, thumbs down) for content items. In a further implementation, the aggregated tracks may be periodically refreshed to ensure that the recommendation

source content items are currently of interest to the user. These recommendation source content items may also be a part of the user profile in some implementations. Table 1 below shows example fields of data collected and maintained by the recommendation engine.

FIELD	*DATA TYPE*
most_played_artist	char
most_played_album	char
most_played_playlist	char
most_played_genre	char
most_played_track	char
artists_filtered_out_as_thumbs_down	char
playlists_filtered_out_as_thumbs_down	char
albums_filtered_out_as_thumbs_down	char
tracks_filtered_out_as_thumbs_down	char
guru_filtered_out_as_thumbs_down	char
artists_flagged_as_thumbs_up	char
playlists_flagged_as_thumbs_up	char
albums_flagged_as_thumbs_up	char
tracks_flagged_as_thumbs_up	char
guru_flagged_as_thumbs_up	char
tracks_bookmarked	char
most_shared_track	char
most_popular_track_in_interest_graph	char

[0086] In some implementations, the recommendation engine may consider one or more of the listed fields of collected data to identify seed content items for recommendation. For example, the recommendation engine may consider the tracks identified by the fields: most_played_tracks, tracks_filtered_out_as_thumbs_up, most_shared_track and most_popular_track_in_interest_graph. The recommendation engine may then compute a fingerprint for each recommendation seed using a fingerprinting technology. The fingerprinting technology may use digital signal processing algorithms to process actual audio signal of a recording to compute the fingerprint.

[0087] In some implementations, the recommendation engine may package the recommendation seeds and/or other identifying information in an XML format and send to a third-party service such as Gracenote MusicID Service via an application programming interface (API) for identifying related content. In yet other implementations, recommendations may be generated using crowd sourcing methods such as that of Pandora or collaborative filtering approach of Amazon (e.g., others who bought x, also bought y).

[0088] FIGURE 4f is a logic flow diagram illustrating smart caching component in another embodiment of the CDDP. At the start 491a, the user may request download of a new multimedia file at 492. Using the attributes of the multi-media file and/or other play detail information, at 493, the user's preference profile is updated. At 494, as soon as an engageable portion of the multimedia file is obtained, it is ready for playback if requested by the user. At 495, the SC component may identify content items for smart caching. The SC component may utilize the recommendation engine to identify the

content items for smart caching. At 496a, the SC component may determine whether there is an existing intelligent download list/queue. If there is an intelligent download list, the SC component may update the list with the identified content items at 496b. If there is no intelligent download list, one may be created at 496c using the identified content items. At 497, the SC component may determine if the user has enough bandwidth to determine the number of concurrent downloads. If the bandwidth is high enough to download at least one file, the SC component may instruct the CDDP cache manager to identify and delete local multimedia in the cache to make space for the new files at 498b. If the user bandwidth does not have enough bandwidth at 498a, the SC component may hold caching until user bandwidth is ideal at 498c. Once the bandwidth is ideal, the SC component may provide the additional multimedia content to local client device according to the intelligent download list at 499. This may conclude the SC component caching at 491b.

Stagelight/ Spotlight Search

[0089] FIGURE 5 shows a logic flow diagram illustrating stagelight/spotlight search in some embodiments of the CDDP. In one implementation, the stagelight search may begin at 502 with a user selection of a content item for stagelight search at 504. For example, a user may select a track, artist, album, etc., and initiate a stagelight search. The selected content item may be received by the server at 506. The server may then initiate user selection tracking. User selections and the sequence in which such selections are made may be employed to generate a search path history.

[0090] At 508, the selected content item may be identified as an artist, track, album, playlist and/or the like. Using the identified content item, other related content

items may be searched and identified at 510. In some implementation, related content items may include albums, tracks, artists, Gurus, playlists, and/or the like. The related content item data may then be sent to the user's client device at 512. The sent content item data may be utilized to render an updated client interface at 514. At this time, the user may continue interacting with content items to discover related content items. For example, the user may select a related content item, which may lead to discovery of additional related content items. If the user wishes to stagelight a related content item displayed on the user interface, the user may select the content item and may click on stagelight option or icon at 504.

[0091] In another implementation, the stagelight interface may feature a drag and drop interface, where the user may stagelight a content item by dragging and dropping the content item to a stagelight object. At 516, the user may decide to not stagelight any of the related content items, at which point the user may exercise the option to view the search path traversed so far. At 518, the user may request to view the search path traversed, and in response, the server may retrieve the stored user selections including indications of the sequence in which they were selected and may send them to the client device at 522. At 514, the client device may receive the search path data and may render the graphical interface to display the search path taken by the user as the user traversed through related content items. The process may end at 520 when the user exits the stagelight search interface within the CDDP client.

Shared Discovery Component

[0092] FIGURE 6a shows an example shared discovery in some embodiments of the CDDP. In one implementation, the CDDP facilitates graphical discovery of shared

content items through the network of users of the CDDP and/or the network of users of other social networking sites such as FACEBOOK, MYSPACE, LINKEDIN, etc. For example, using the CDDP GUI 600, a user may see a list of all other users who are sharing their content (e.g., library, playlists, etc.). The user may navigate further by selecting options such as "home," "people," "names," "content," "type," "content list" and/or the like. When the user selects "home," a list of options 610 may appear under the "home" column for further selection. In one implementation, the "home" option 610 may include an option to select people, music, books, video, apps, and/or the like. As shown in FIGURE 6a, the user may select "people" from the column 610. The selection may then populate the "people" column 612 for further selection options. These options may include Gurus, social, friends, favorites, and/or the like. In one implementation, the user may select "Gurus" from the column 612. The selection of "Gurus" may in turn populate the next column 614 with Guru names for further selection. In one implementation, the user may select a Guru name (e.g., Steve Mori) from the names column 614. The selected user (i.e., Steve Mori) may have configured for sharing one or more content items such as albums, genre, artists, purchased, tempo, mood all content, playlist, and/or the like as shown in the content column 616. Further granularity in terms of content type 618 and content list 620 may also be available for selection in some implementations. As shown in FIGURE 6a, the user may be provided an option to select "albums" from the content column 616, which in turn may provide a drilled down view of content type 618 for selection. Examples of content type may include most recently played, most highly rated, purchased, all, and/or the like. Any selection of the content type items from the content type column 618 may lead to a display of content list in column 620. As shown, the content list may display a list of tracks under any of

the selected content type (e.g., most recently played). In one implementation, the user may select any of the displayed tracks for playing, downloading or creating magic playlist. In another implementation, the user may generate a playlist including all or selected tracks from Steve Mori's shared library. For example, the user may create a playlist including the most recently played tracks, most highly rated tracks or all tracks.

[0093] In one embodiment, users who wish to share their content with other users may be able to individually configure their social privacy settings to define what items they would like to share and what items they would like to keep private. FIGURE 6b shows an example shared discovery settings configuration in some embodiments of the CDDP. In one implementation, a user may select profile settings option from the menu to view the profile settings interface. An example profile settings interface may include options to configure social settings, device settings, publishing settings, and/or the like. In one implementation, the user may select social settings to reveal an interface including options for social privacy settings. In a further implementation, the social privacy settings interface may include options to select who can view what type of contents from the user's library contents. Example options for selecting who can view may include friends, friends of friends, social network members, network members, anyone, and/or the like and any combination thereof. Example options for selecting what can be viewed may include see everything, see playlists, see most recently played, see only selected, and/or the like and any combination thereof. As shown in FIGURE 6b, a user may select to let his friends see everything. In an alternate implementation, there may be options to configure social privacy settings on a group basis. For example, the user may configure to let his friends see everything, friends of friends see most recently played, anyone see his playlists, and/or the like.

[0094] In some implementations, the privacy settings may include options to specify the people, music, books, video, apps, and/or the like listed in column 610 in FIGURE 6a. For example, the user may configure people who are gurus named Jenna J., JJ Abrams or Guettafan access to albums, purchased and playlist content that are most recently played. In this way, only the specified gurus may be given access to specified content type.

[0095] FIGURE 7a shows a logic flow diagram illustrating shared discovery in some embodiments of the CDDP. In one implementation, the process may begin at 200 with a user using his or her client device to request access to a member's content data at 702. The request may involve, for example, selection of the member's name or alias. The request may be received by the server at 704. The server may then retrieve the member's privacy settings at 706. In one implementation, the relationship between the member and the requesting user may be determined for applying the member's privacy settings. For example, the member's privacy settings may permit sharing with friends, and the relationship between the member and the requesting user may be determined in order to facilitate the user's request. At 708, a determination may be made whether the requesting user should be granted access to the member's content data. Based on the privacy settings and/or the member-user relationship, if the user is not granted access to the member's shared content data, a notification message indicating denied access may be generated and sent to the user at 710. Such a notification message may be received and rendered on the client interface at 712. At this time at 714, the user may select another member and request access to the selected member's shared content, or may end the process at 716.

[0096] If the user is granted access to the member's shared content, the server may retrieve and send to the user's client device permitted content selections at 718. Permitted content selections may include the contents selected by the member for sharing with users of certain designations such as friends, friends of friends, network members, etc. The permitted content selections may be received by the user's client device for rendering on the client interface at 720.

Shared Content Management (SCM) Component

[0097] The shared media content management component of the CDDP may, in some embodiments, allow multiple users to collaboratively manage a shared media content collection such as a media library, a portion of a media library, a playlist, a specific collection (e.g., "my jazz collection" or "Smith family library"). Collaborative management may take various forms depending on the type of users involved. For example, a family may seek to create and maintain a single "family library" which can be modified by one or more family members using their individual LDs such that each LD having access to the "family library" may be automatically synchronized to display the most recently modified "family library." As another example, two friends, each having their own LD, may seek to manage a shared "jazz collection." The shared "jazz collection" would then be commonly owned by the two friends and any change one makes to the collection would be immediately reflected in the collection displayed to the other friend if the friend is connected to the internet, or upon connection to the internet.

[0098] In some implementations, LDs in the vicinity of each other may establish communication with each other via blue tooth, infra-red or other near field communication methods when such communication methods are enabled by the

respective users. A handshake protocol, where a LD that is offline is authenticated through via another LD that is offline, may be carried out. After successful completion of the handshake protocol, the offline LD may receive content shared by the online LD, including updates to any shared collection commonly owned by the online LD and offline LD.

[0099] FIGURE 7b shows a logic flow diagram illustrating SCM component set up in an embodiment of the shared discovery of the CDDP. The set up may start at 734, where a server may receive a request from a client device of first user ("sharing user") to share a target content collection with a second user ("shared user") at 736. The target content collection may include a library, a portion of a library, playlist, and/or the like. The share request may include information relating to client details such as client IP address, device type and model, operating system, and/or the like. The request may also include identifying information relating to the sharing user and the shared user. User identifying information may include, but is not limited to, an email address, user name, alias or nick name, address, phone number, and/or the like. The request may also identify the content collection being shared, such as the content collection name (e.g., library name, collection name, playlist name, etc.), and in some implementations, the track identifiers (e.g., Track ID) of the tracks in the specified content collection. The share request, in one non-limiting example, may be in XML format substantially in the following form:

```
<XML>
     <ClientDetails>
          <ClientIP>192.168.22.111</ClientIP>
          <ClientType>smartphone</ClientType>
          <ClientModel>HTC Hero</ClientModel>
          <OS>Android 2.2</OS>
      </ClientDetails>
     <UserDetails>
```

```
            <UserName>JaneSmith@gmail.com</UserName>
            <SharedUser1>JoeKline@gmail.com</SharedUser1>
            <SharedUser2>BillMadd@hotmail.com</SharedUser2>
        </UserDetails>
        <SharedContentDetails>
            <SharedLibraryName>Jane's Jazz Collection</SharedLibraryName>
            <Track1ID>238348</Track1ID>
            <Track2ID>338458</Track2ID>
            .
            .
            .
            <Track50ID>245788</Track50ID>
        </SharedContentDetails>
</XML>
```

[00100] At 738, after receiving the share request from the sharing user, an instance of the specified content collection may be created. Content items may be populated in the instantiated shared content collection file according user specified constraints. At 740, the SCM component may identify content items in the target content collection. In one implementation, the identification may include extracting Track IDs of content items in the target content collection from the XML share request. At 742, the SCM component may any retrieve restrictions on the target content collection. These restrictions may be restrictions on who can view and/or share, when the contents may be viewed and/or shared, where the contents may be viewed and/or shared, and/or the like. In some implementations, these restrictions may be specified by the sharing user. For example, a sharing user may want to make the shared collection a private collection between himself or herself and the shared user. In other implementations, these restrictions may be related to license rights. For example, certain tracks in the sharing user's target collection may be licensed for Japan. The tracks licensed for Japan would be decrypted by the sharing user's LD when the sharing user is in Japan. However, when the sharing user shares such tracks licensed only for Japan with a shared user in the United States, the SCM component may detect the licensing restrictions, and apply such restrictions to the appropriate tracks in the target collection to ensure that shared user

may view and/or share only those tracks that are licensed for his or her own territory, in this example, the United States.

[00101] At 744, the SCM component may query one or more media content databases and/or tables for the non-restricted target content collection items, i.e., the target content collection items from which restricted content collection items have been removed. At 746, the SCM component may then retrieve any modification restrictions to be imposed on the target content collection. The modification restrictions may be specified by the sharing user, and may include rights to modify the shared target content collection. Modifications may include adding, deleting or renaming content items or collection, and/or the like. For example, in some implementations, a sharing user may allow adding content items to the shared target content collection, but restrict the sharing user from deleting any items from the target content collection. Selective restrictions may also be possible. For example, a sharing user may allow deletion of any artists other than, for example, "Norah Jones." These modifications may be displayed in the form of options for users to select. The user may also be allowed to craft and apply one or more restriction rules. For example, when a parent is sharing a content collection with a child, the parent may set up rules that, for example, do not allow any tracks having explicit lyrical content or other parental advisories to be added to the content collection.

[00102] At 748, the SCM component may then populate the shared content collection file with the results of the query and apply the retrieved modification restrictions. At 750, the SCM component may time stamp the shared content collection file and store the file in one or more shared content database and/or tables. Time

stamping not only ensures that the most recently updated instance of the content collection file is retrieved when requested, but also allows a user to go back in time to retrieve prior versions of the shared content collection. At 752, the SCM component may invite the shared user to access the shared content collection. For example, an invitation email or message within the CDDP (e.g., "Jon wants to have a shared rock collection with you. Do you accept?") may be sent to obtain the shared user's acceptance. If the shared user accepts at 754, the SCM component may confirm with the shared user if he or she would like to merge the shared content collection with her or her own content collection. If the user agrees to merge at 756, the SCM component may obtain the list of content items in the shared user's collection at 758. The SCM component may then compare the shared user's content collection with the shared content collection to identify non-duplicate content items. The identified non-duplicate content items may be added to the shared content collection file at 760. Allowing the option to merge would require that there are no restrictions to add content items. Other view/share restrictions and modification restrictions may be applicable in some implementations. The shared content collection file may then be time stamped and stored in the shared content database at 762. At 764, the most recent shared content collection would be displayed to all shared users.

[00103] At 756, in one implementation, the shared user may not agree with the merger, or may be restricted from exercising the merger (e.g., adding to the shared content collection). In this case, the shared user may be provided an option to replace his or her content collection at 772. If the shared user agrees, the SCM component may then replace his or her content collection with the shared content collection at 774, concluding the set up process at 766. However, if the shared user does not agree to the

replacement, the shared content collection will be saved as a separate collection in the shared user's CDDP account at 776. The shared content collection may then be displayed on the user interface of the CDDP application as a separate shared content collection.

[00104] At 754, the shared user may not accept the sharing user's invitation to access the shared content collection. In this case, the SCM component may notify the requesting user i.e., the sharing user at 768. At 770, the sharing user may be given an option to select another user to share the target content collection. If the sharing user decides to select another user, the set up process may move to 752. On the other hand, if the sharing user does not want to select another user for sharing, the set up process concludes at 766.

[00105] FIGURE 7c shows a logic flow diagram illustrating SCM component update in an embodiment of the shared discovery of the CDDP. Once a shared content collection has been established, the SCM component may maintain and update the shared content collection as necessary. The update process may start at 778. At 780, a user of the shared content collection may request to modify the shared content collection. The request may be initiated when a user attempts to modify the shared content collection. In one implementation, the CDDP application interface may include an icon or button for requesting modification. The modification request may include an identifier for the shared content collection (e.g., SC768765, name of collection, etc.), user identifier, modification type (e.g., add, delete, rename, etc.), content items to be modified, and other relevant information. At 782, the SCM component may check the attributes of the shared content collection for any restrictions, including view/share restrictions and modification restrictions. If the requested modification by the user is

not allowed, the requesting user may be notified at 794. The requesting user may also be provided an option to try again at 796 (e.g., try a different modification or try a different shared content collection). If the requested modification by the user is allowed at 784, the SCM component may make the modification, and then time stamp the modified version of the file before saving it on the shared content database at 786. The determination of whether a modification request by a user is allowed or not may involve examining the attributes for restrictions from 782. Specifically, in some implementations, the SCM component may verify whether the user has the right to modify the content collection and/or whether the modification is acceptable under the restrictions in 782. At 788, the SCM component may check to determine if any of the users of the shared content collection are online (i.e., connected to the CDDP). At 788, when no users of the shared content collection are online, the SCM component update process may end at 798. However, if at 788, one or more users of the shared content collection are online, the SCM component may push the updates to the users' client devices to display the most recently modified shared content collection at 790. In some implementations, the users may be notified of the availability of updates and may be requested to provide approval for pushing the update. At 792, the SCM component may entertain any additional modification requests available.

Guru Program Component

[00106] In some embodiments, the Guru program component helps identify and recognize and/or reward users for the value, whether intrinsic or extrinsic, they deliver. In some implementations, value may be derived directly or indirectly from the activities of Gurus. Examples of value for the CDDP include driving new and/or repeat license sales, enhancing the experience for other users by influencing their music plays, driving

promotions sponsored by partners such as artists, labels, publishers, and/or the like. In some other implementations of the Guru program, driving new and repeat license sales may be deemed a function of enhancing the experience for other users by influencing their music plays. As such, in some implementations, influence may directly correlate with plays.

[00107] In one implementation, influence may be any activity carried on by or caused by a user that is responsible for content items played by another user. For example, when a user publishes a playlist, the user's activity may be an influencing activity if another user plays songs from the published playlist or publish notification, follows the playlist and play songs in it, navigate to the user's profile and play songs from the playlist directly from the profile, and/or the like. Similarly, an influencing activity may also include a user sharing a content item such as an artist, album, song, and/or the like, with which another user may end up interacting. Non-limiting examples of such interaction may include a user playing songs from the share notification, clicking through the share and playing songs from the artist or album page, adding the artist, album or song to his or her personal collection (e.g., "My Collection") and playing songs from there. Other examples of an influencing activity may include a user playing a song, and another user navigating to the user's profile and playing songs from designated collections such as "Top Artist," "Most Recently Played," "Most Frequently Played," "Top Songs," and/or the like directly from the user's profile. The another user may also navigate to the user's profile and add songs from the designated collections to his or her own collection ("My Collection") and play songs from the collection.

[00108] While there are many examples of influence within a social graph, an interest graph or the wider community of user of the CDDP, not all activities of a user that leads to song play by another user may be considered influencing activities. Table 2 below shows some non-limiting examples of non-influencing activities:

ACTIVITY	*EXPLANATION*
Copying	If User B copies the songs in User A's published playlist into one of his or her own playlists and plays songs from there, User A may not get points for plays from the copied playlist.
Searching	If User B learns about an artist/album/song/playlist from User A, searches for it, and then plays it or adds it to My Collection and plays it from there, User A may not get points for plays from the search.
Multi-User	If User A influences User B who influences User C, User A may not get points for User C plays
Related Content Plays	If User A influences User B who plays a song related to the influence, User A may not get points for related plays

[00109] In other alternate implementations, the non-influencing activities from table 2 may be considered influencing activities.

[00110] Other activities that may lead to rewards and/or recognition include, without limitation, sharing libraries, playlists and/or knowledge, posting to other users', friends', and followers' comment streams, recruiting new followers and/or friends, suggesting and/or recommending music to friends and/or followers, sharing playlists for followers, friends and/or other, increasing music consumption, reviewing contents (artists, albums, playlists) and posting to content comment streams, and/or the like.

[00111] In one embodiment of the Guru program these and other influencing activities may be tracked to recognize and reward users for their advocacy and effort.

Table 3 below list some non-limiting examples of use cases and exemplary data tracked in some embodiments of the Guru program.

USE CASES	*EXPLANATION*	*TRACKED DATA*
Track plays	Evaluate if and/or how Gurus impact other customers' behavior (e.g., usage volume, range of choice, and/or the like), before and after they begin following; Form an informed profile of Gurus.	Source, track type, access method, track ID, date & time, and/or the like
Playlist	Determine if a Guru delivers value to a follower	Playlist creation and/or publishing, following, and unfollowing history, playback frequency, copying of playlists (i.e., becoming an owner), editing, reviews and/or comments, ratings, and/or the like.
Sharing	Determine if a Guru is proactively sharing content	Sharing channel, consumer response to the sharing, and/or the like.
Purchase	Identify who to attribute a sale of a LD, a CDDP license and/or subscription to.	Purchase history of CDDP licenses, buying process, funnel conversion, and/or the like.
Opt-in	Guru accepts invitation to participate in the Guru program and agrees to share data publicly	Opt-in preference.
Followers	Evaluate relationship between Gurus and their followers.	Personally identifiable information (PII), user ID, following status, and/or the like.

[00112] As shown in Table 3 above, behavioral, product use, account management, registration, and other information relating to Gurus and/or followers may be tracked. In some implementations, data relating to track plays may be obtained for evaluating if and/or how Gurus impact other users' behavior, before and after they began following one or more Gurus. For example, a Guru shares a track via TWITTER and a non-CDDP

user clicks on a link within the tweet. The link takes the user to the CDDP hosted landing page where he or she buys a license and plays the track. In this case, the Guru who shared the track via TWITTER gets a credit for play, free trial and/or paid accounts. Various user behavior data including usage volume, range of choices, etc., and whether such behavior occurrences are increasing and/or expanding may be tracked for rewarding Gurus, to get more information on product usage, to create and maintain an informed Guru profile, for music intelligence, customer profiling, product feature evaluation, dashboard reporting, marketing response, fraud monitoring, partner reporting and/or the like.

[00113] As listed in Table 3, track play detail data for Gurus and/or followers may include, but are not limited to, source, track type, access method, track ID, date and time, and/or the like. A source may include the CDDP library, imported content, shared content (e.g., via email, FACEBOOK, TWITTER, links, etc.), and/or the like and details relating to the sharing user. Track type may include information relating to whether a track is downloaded by the user, downloaded in the smart cache, streamed from the cloud, imported, and/or the like. Similarly, access method may include information relating to how and/or from where the track was accessed. For example, access method may indicate where in the user interface (e.g., library, discovery or community) or from which artist, album, track, playlist, published playlist, chart, offline view, bookmarks, etc., a track was accessed from. Further, track ID may include the track number, associated meta data and/or the like. These data may be collected from the client and/or website.

[00114] In some implementations, Guru playlist related data may be collected for determining if a Guru delivers value to one or more followers. Examples of playlist related data collected may include playlist creation and/or publishing, following and/or unfollowing history, playback frequency, copying of playlist (becoming an owner), editing, reviews and comments, ratings, and/or the like. For example, unfollowing may suggest that the follower did not find any value in a Guru's playlist, while interaction with a playlist may suggest value. Similarly, playlist contributions of followers may be a function of Guru influence. These data, in addition to providing an insight into user behavior and/or product use, may also be useful for music intelligence, customer profiling, product feature evaluation, dashboard reporting, marketing response, fraud monitoring, partner reporting and/or the like.

[00115] In some implementations, sharing data may be collected to determine if a Guru is proactively sharing music. In particular, 1:1 sharing where messages make a single loop may be useful in evaluating how recipients are responding to shared content items. The sharing data may also be utilized to assess if a Guru is stimulating more listening, what channels are being used for sharing, which channel is most effective, and/or the like. Examples of tracked sharing data may include sharing channel, consumer response to the sharing, and/or the like. Sharing channel may include sharing via channels such as email, FACEBOOK, TWITTER, within the CDDP, hyperlink on website or other digital channels, and/or the like. Consumer response may include response of users to the sharing in the form of track plays, track downloads, purchase of tracks, licenses, LDs, and/or the like. In addition to behavior and product use information, these data may also have other uses in customer profiling, product feature

evaluation, dashboard reporting, marketing response, partner reporting, and/or the like. These data may be collected from the client and/or websites.

[00116] In some implementations, purchases may also be tracked to identify who to attribute a sale of a LD, a CDDP license and/or subscription. They may also facilitate in determining whether a follower buys more licenses, whether a user buys a LD when his or her old device dies, whether license sales is attributable to a Guru activity, whether a Guru is driving new business, and/or the like. The outcome from these determinations may feed into the Gurus' points and rewards discussed in further detail below. Non-limiting examples of tracked data may include purchase history of CDDP licenses, buying process, funnel conversion, and/or the like. Purchase history may include information including type of license, price, device type, and/or the like. Buying process may include channels and source of traffic such as email, FACEBOOK, TWITTER, within the CDDP, hyperlink on website or other digital channels, and/or the like, as well as funnel conversion. These data may uses in customer profiling, product feature evaluation, dashboard reporting, marketing response, partner reporting, and/or the like. Purchase data may be collected from website registration page(s), account management portals, or from any appropriate locations from the client and websites.

[00117] In some implementations, opt-in preference data may be collected from users who accept invitation to participate in the Guru program. The opt-in data may be used for publicly recognizing and rewarding users in the Guru program. In a further implementation, opting in may require the user to agree to share his or her data publicly. Opt-in preference may be collected from the account management portal or relevant web page from where the user may opt in. In one implementation, the default

opt-in value may be "off" and Guru participation may require a user to opt-in in order to change the value to "on."

[00118] In some implementations of the Guru program, data on followers may be collected for evaluating relationship between Gurus and their followers. Such data may include, in one non-limiting example, Personally Identifiable Information (PII), user ID, following status and/or the like. Following status in some implementations may include information that may identify whether a user is following another or is being followed by another. In some implementations, Guru and follower user IDs and/or other information may be attached to play events, sale events, or other events. In some implementations, there may be an option to create an alias or nickname that is public facing. These data may be collected from website registration page and account management portal among others. In addition to the Guru program, these data may be used for music intelligence, customer profiling, product feature evaluation, dashboard reporting, marketing response, partner reporting, and/or the like.

[00119] In some embodiments, the Guru program may be leveraged by the discovery and social aspects of the CDDP. The point-based system for rewarding users may, in some embodiments, sustain user engagement with the facilities of the CDDP and encourage users to actively listen, share and manage music. In some implementations, "Guru" may be the designation bestowed to those users who may have opted in to the Guru program and are eligible to receive rewards and/or recognition. In other implementations of the Guru component of the CDDP, a user opt-in to the Guru program to earn influence points may be optional. As discussed above, influence points may be earned when one user plays a song due to influence from another user. Each

play by the influenced user may earn the influencing user one or more points or a fraction thereof. In one implementation, when the influencing user earns his or her first point, it triggers a 12 month timer. In some implementations, a time period other than the 12 months may be selected. During the 12 month period, the influencing user may earn points for all plays by the influenced user according to a schedule. An example schedule may, for example, reward the influencing user 1 point for each play by an influenced user during the first month. The example schedule may further stipulate that for the next 2-3 months, each play by an influenced user may earn the influencing user 0.75 points. Similarly, for the next 4-6, the points earned may be 0.5 points, and for the following 7-12 months, 0.25 points. After the 12 month time period, any play by the influenced user would not earn any points for the influencing user. In one implementation, each user that the influencing user influences to play a given song or other content may initiate a separate timer such that the influencing user may perpetually earn points for a given song or other content as long as new users continue to play it. While one specific example of an earning schedule is discussed herein, other variations in the earning schedule are within the scope of the various embodiments of the CDDP.

[00120] The Guru program, in some embodiments, may comprise of several levels, each of which corresponds to the number of influence points earned by a user. For example, in one implementation, the Guru program may include a base level and levels 1-5. In some implementations, any user may achieve the base level, but in order to ascend to levels 1-5, a user may need to enroll or opt in to the Guru program. The base level may, in one implementation, be achieved by acquiring a follower, and may be maintained, without opting in to the Guru program, so long as the user has at least one

follower. User who has opted in to the Guru program, on the other hand, may earn influence points and be eligible for levels 1-5. In one implementation, a Guru program user's current level may be determined based on the total influence points earned during the previous 30 day period. In a further implementation, the current level may be calculated periodically, or in a daily basis. As such, a user's influence level may fluctuate periodically, or daily, depending on the total influenced points amassed. Further, when a user stops earning influence points, his or her influence level may steadily decline until the base level is reached. A user may also revert back to the base level, provided there is at least one follower, when he or she opts out of the Guru program. In some implementations of the Guru program, a user's influence points may not be lost or may not expire so long as the user is a member of the CDDP. In a further implementation, this may be true even for those users who opt out of the Guru program, but remain a member of the CDDP service. An exemplary level and point correspondence is illustrated below in Table 4. Depending on the distribution of users, the influence point ranges may be adjusted to achieve a desired distribution (e.g., a normal distribution, as opposed to a skewed distribution).

LEVEL	*INFLUENCE POINTS*	*PREMIUM STATUS*
1	10-39	None
2	40-89	Gem
3	90-159	Silver
4	160-249	Gold
5	250-449	Platinum
6	450+	Executive Platinum

[00121] As discussed above, a user's current influence level may be based on the total influence points earned during the previous 30-day period. In one implementation, the Guru program may also track the user's lifetime influence points. In such an implementation, a user with 10,000 lifetime influence points may be a level 1 Guru if he

or she has influenced only between 10-39 plays during the preceding 30-day period. In other implementation, a combination of points earned over a lifetime and over a preceding number of days may be utilized to determine the current influence level of a user. In a further implementation, Gurus may be accorded a premium status based on the accrued influenced points. For example, Gurus may be accorded platinum, gold and silver status based on the accrued influence points.

[00122] As discussed above, Gurus contribute towards a more social environment, generate value, and generally uplift the CDDP experience. In return, Gurus enjoy benefits, recognition and/or rewards. All Gurus in the CDDP community may be recognized by the level they have achieved on their profile page and with a level-based icon on their image. Further, a user, by opting into the Guru program and agreeing to allow CDDP to feature himself or herself as music influencers throughout the CDDP experience, may become eligible to be featured in one or more product areas such as the "Music Trends" page, "Music Genre" page, "Music Artist" page, "Music Album" page and/or the like. In a further implementation, the higher the Guru status, the more likely it may be for the Gurus to be featured in relational search results, which may in turn lead to acquiring more friends, followers and influence. Being featured in various product pages, searches and/or interfaces of the CDDP may further reinforce the user's status as a Guru and music influencer. It may also increase opportunities for the Guru to influence other users' plays and earn influence points.

[00123] Gurus may also be eligible to earn badges for their influential activities. The badging may be tiered such that it may become progressively more difficult to complete activities and earn badges as a user rises through the tiers. Example badges

may include level badges (e.g., level 1 badge, level 2 badge, etc.), follower badges (e.g., 10 followers, 100 followers, 1000 followers, etc.), influenced play badges (e.g., 10 influenced plays, 100 influenced plays, etc.), and/or the like.

[00124] In some implementations, Gurus may receive perks and incentives for their social influence. Through relationships with music labels and other rights holders, Gurus may have opportunities to earn external rewards and recognition related to the content they most heavily influence. Some non-limiting example of rewards include, merchandise, concert tickets, autographed memorabilia, artist meet and greets, and/or the like. Other examples of rewards include invitation to Guru-only offline and online events, such as concerts by artists they support, incentives provided by partners to further promote plays of their repertoires in earning more royalties, monetary incentives such as commissions on a play count basis, and/or the like. Furthermore, in some implementations, the premium status Gurus may be more highly targeted by partners for promotions of artists and songs than others.

[00125] FIGURE 8 shows a logic flow diagram illustrating the Gurus rewarding component in some embodiments of the CDDP. In one implementation, for example, the process may begin at 802, with the tracking of user engagement in various activities relating to social, usage, influence, and/or the like at 804. Example activities include posting to other users', friends', and followers' comment streams, recruiting new followers and/or friends, suggesting, referring and/or recommending music to friends and/or followers, sharing playlists for followers, friends and/or other, increasing music consumption, reviewing contents (artists, albums, playlists) and posting to content comment streams, using micro-blog "beats" about their music and related interests,

including providing referrals, recommendations for new music to friends and/or the community. These posts or beats may be limited to 140 characters and may include a bit of text and a link. Comments about content (e.g., artist, album, track, etc.) found in the universal music library may automatically hyperlink to contextual information about that product and ways to further explore that subject.

[00126] At 806, a determination as to whether a subject user is enrolled in the Guru program may be made. If the user is not enrolled or has not opted in the Guru program, the user may be reminded at 808 to enroll in the Guru program for rewards and/or status benefits and may conclude the process at 810. However, if the user is enrolled in the Guru program, a determination may be made at 812 whether the user is also engaged in activity whether social, usage and/or influence. In one implementation, each activity may have a corresponding value in status points. At 816, type of activity that the user may be engaged in may be identified and the number of status points associated with the activity type may be determined. For example, a user engaged in recommending playlists that are eventually downloaded and/or played by another user may obtain 2 status points.

[00127] In one implementation of the Guru rewards program, the CDDP may increment the user's status points by the determined value at 820. A determination may then be made, based on the incremented status points, whether the user is eligible for a status upgrade at 822. For example, the user may have accumulated 24 status points before acquiring 2 more status points in this instance, causing the total status points to exceed, for example, a cut-off of 25 for silver status. In one implementation, if the user is eligible for a status upgrade, the user's status may be upgraded to the next level at 830

and the user's profile may be updated to reflect the change in status at 824. On the other hand, if the user is determined to be ineligible for a status upgrade, the user profile may be updated at 824, without any status upgrades. The user profile may include published user profile and/or profile in one or more user databases at the backend that is not published.

[00128] In another implementation of the Guru rewards program, the CDDP may implement a rewards program that encourages users to engage in a variety of activities, and not merely the kind of activities that have previously had some success. For example, at 826, the CDDP may determine whether the points accumulated for the identified activity exceeds a threshold N. If the threshold is not exceeded, the user's status points may be incremented at 820. However, if the threshold has exceeded, the determined status points may be adjusted at 1228 before incrementing the user's status points by the value of the adjusted status points. Adjustment may include an adjustment by a factor less than or greater than 1.

CDDP User Interfaces

[00129] FIGURE 9 is a schematic view of the CDDP application interface in one embodiment. A user launching the CDDP application may encounter an interface 900 that provides a quick overview of information. The interface 900 may include 905 player control panel, menus 910, a media explorer panel 915, a media display panel 920, information panel 925, and/or the like. In one embodiment, the menu 910 may include menu items such as file, edit, view, controls, share, help, etc. The player control panel 905 may include various controls such as play controls 905a, logos/artwork 905b, current track information 905c, track position bar 905d, volume control bar 905e,

shuffle button 905f, repeat button 905g, search bar 905h, next track information 905i, and/or the like. The media explorer panel 915 may include various selectable items such as music universe 915a, Guru network 915b and offline music 915c. Selection of the music universe item 915a may facilitate the display of information relating to media in the CDDP catalog. As shown in FIGURE 9, wherein the music universe 915a has been selected, the media display panel 920 shows items such as music trends 920b, playlists 920c, Gurus 920d, decade mixes 920e, genre mixes 920f, and any other links to organized content in the music universe. On the right of the interface 900 is an information panel 925 which displays additional information based on selections of items such as 920b-f in the media display panel 920. The information display panel 925 may include several tabs, for example tabs 925a-e. Information corresponding to the selected tab and the selected item 920b-f may be displayed in the information display panel. For example, when music trends items 920b is selected, the information panel 925 is updated to display artists in one tab 925a, albums in 925b tab, tracks in 925c tab, new releases in 925d tab and just added in 925e tab. Similarly, when the Gurus item 920d is selected, the information panel 925 is updated to display information relating to the Guru network. For example, the selection of the Guru network may include a listing of all or some Gurus having the most followers.

[00130] The media explorer 915 also include the item Guru network (or "community") 915b. When the Guru network 915b is selected, a community (or Guru) display panel 1000 is displayed, as shown in FIGURE 10. The community display panel may include a profile area 1005 that may identifying user information 1005a, profile image 1005b, and a "my profile" button 1005c. The "my profile" button 1005c display the user's profile information and is discussed in further detail in FIGURE 13. The

community display panel may also include Gurus panel 1010 which may include Gurus suggested by the CDDP, Gurus currently followed, and/or the like. The right of the community display panel 1000 may include one or more panels 1015-1025 displaying activity streams. In addition, the community display panel 1020 may also include a search bar 1020 which may be used to search for Gurus.

[00131] FIGURE 11a is a schematic view of the CDDP application interface that is displayed in response to the selection of my profile button 1005c in one embodiment. The profile area 1105 may include buttons 1105a-c to edit profile information, view updates and view suggested Gurus respectively. The profile display panel 1100 may also include shared playlist area 1110 that provides an overview of the playlists that a user has shared with others, or has made available for sharing. Next to each listed shared playlists, the user may click the see tracks button 1110a to explore the tracks in the playlist. Also provided in the profile display panel 1100 is the Guru information area 1120 which may list Gurus that the user follows, as well as other users following the user. On the right side of the profile display panel 1100, an activity stream display panel 1115 may be provided for displaying posts, beats, comments or other messages exchanged between the user and others in the community.

[00132] FIGURE 11b is a schematic view of the CDDP application interface that is displayed in response to the selection of edit profile button 1105a in the profile area of the profile display panel 1100 in one embodiment. The edit profile panel 1125 allows the user to edit and/or update identifying information such as name, location, email address, social networks, etc. The user may also select options to integrate with other social networks such as TWITTER and FACEBOOK. In addition, the user may also set

privacy options of his or her profile. For example, the user may make his or her profile public which would let anyone to find the user (e.g., by search), view his or her profile, post items to his or her comment/activity stream, send messages, and/or the like. The user may also specify whether or not to use an approval process to let other users follow him or her. These facilities may no longer apply if the profile is set to be private. Additionally, the interface may also include facilities to set preferences for the activity stream 1125. Examples of such preference settings may include options to select information displayed in the activity stream 1125 in FIGURE 11a to those involving friends having a specified degree of separation, Gurus, followers, and/or the like.

[00133] FIGURE 12a is a schematic view of one embodiment of the CDDP application interface. As shown in FIGURE 12a, the media display panel 1205 displays information relating to a selected item (e.g., artist Pink Floyd). The media display panel 1205 may display identifying information 1210, and a listing of tracks 1225 pertaining to the selected item 1210. The user may have the option to create a magic playlist based on the selected item 1210 by clicking on the magic playlist icon 1215. In addition, the user may also share the tracks 1225 with other users by clicking on the share icon 1220.

[00134] Next to each track in the listing 1225, is provided a track location indicator 1230. The indicator 1230 may specify using color or other indicia whether or not the track is available in the local/offline library. As shown in the figure, each of the tracks in the listing 1225 may be made available offline by clicking on the make all available offline button 1235. The CDDP, in response to the request to make all tracks available offline, may identify the tracks that are not present in the local or offline library and download them to the user device. Instead of downloading all of the tracks listed at

1225, the user may also individually select one or more tracks for downloaded. Of course, the user may also play, pause or skip these tracks, regardless of whether they reside in the local library or on the cloud.

[00135] FIGURE 12b is a schematic view of one embodiment of the CDDP application interface. When the magic playlist icon 1215 shown in FIGURE 12a is clicked, the media display panel 1280 is displayed. Here, the display panel may show the magic playlist 1250 that was created in response to the request. The playlist may identify the creator at 1255 and include options to create another magic playlist or share the playlist with other users. At the media explorer bar 1245, the listing of playlists may be updated to include the newly generated magic playlist. Similar to FIGURE 12a, the media display panel may also list the tracks included in the magic playlist at 1260. In addition, on the right side of the interface, in the information panel 1265, information such as people following the playlist, people who have downloaded the playlist, those who have shared the playlist with others, and/or the like may be displayed.

[00136] FIGURE 13 is a schematic view of one embodiment of the CDDP application interface. Here, an artist has been selected as shown in the media display panel 1305. A list of selected tracks (e.g., by popularity) or all tracks related to the artist may be listed in the track listing area 1310. Further, the listing area may also identify the tracks that are located in the local library, and their total number using the location indicator 1310b, and the item 1310a. On the right side of the interface, is the information panel 1320, which may provide additional information on the item displayed on the media display panel 1305. For example, as shown in FIGURE 13a, the artist's main releases are shown in the information panel under the albums tab 1320b. Any of these

albums may be made available offline, used for creating a magic playlist, bookmarked or shared using the options in the popup menu 1320a. Information about the artist may also be displayed by selecting the about tab 1320c. FIGURE 13b is a schematic view of one embodiment of the CDDP application interface of FIGURE 13a after the playlists tab 1320d has been selected. The playlist tab 1330 may provide a listing of all or selected playlists 1340 that include or are similar to the selected item (e.g., artist Janelle Monae) 1335 ordered by relevance, popularity, or any other criteria. Similarly, figure 13c is a schematic view of one embodiment of the CDDP application interface of FIGURE 13a after the item 1320f has been selected. As in the previous figures, the media display panel 1345 displays identifying information on the selected item, as well as a track listing. In addition, the information panel 1350 on the right may display playlists that are related to the selected item, and ordered using or one more criteria such as popularity, published date, relevance, and/or the like.

[00137] FIGURE 14 is a schematic view of one embodiment of the CDDP application interface. The interface 1400 shown in figure 14 is rendered in response to the selection of the now playing item 1405a in the media explorer panel 1405. The media display panel 1410 may provide a listing of tracks that are in a play queue. Such a queue may include tracks that were previously played, is currently being played and are in queue for playing next. For example the track 1410a has been selected, and is the track being played as indicated by the indicator 1410b and by the player control panel 1420. Additionally, the information display panel 1415 on the right is updated in response to the selection of track 1410a. The information display panel 1415 may list playlists including the current playing track. Such a listing may be arranged based on one or more criteria such as popularity, preference, recently published, and/or the like.

Discovery User Interfaces

[00138] Referring now to FIGUREs 15a-g, in one embodiment of the CDDP, there is shown a sequence of player interfaces as the user explores and discovers music related to an item. In general, the user may discover related music by selecting a displayed item, for example, the photo of Van Morrison at the bottom middle of FIGURE 15a. The CDDP may then generate recommendations of related items based upon the selected item.

[00139] Referring again to figure 15a, the user may select an artist ("Van Morrison"), an album of the artist ("Astral Works"), and more specifically, a track in the album ("Sweet Thing"). Referring now to figure 15b, an image representing the track selected may be displayed in a stagelight/spotlight window. Referring now to FIGURE 15c, images representing selected items 1515b-e related to item 1515a may be displayed in the stagelight window 1515. The images displayed in the window 1515 may include an image representing a related track 1515b, an image representing an album 1515c, an image representing another user 1515c and an image representing a playlist 1515d that includes tracks 1515a and 1515b. Referring now to FIGURE 15d, the user may select the track 1520a, in response to which, the stagelight window 1520 is presented. The stagelight window 1520 may display additional information about that selected track 1520a and also albums 1520b in which the track may appear. Similarly, items 1520c-f may also be selected to obtain additional information. In addition, selection of one of the items 15e-f may reveal control options to scroll through other images corresponding to other tracks. The user may simply use click through the images.

[00140] Referring now to FIGURE 15e, the stagelight window 1530 is updated to show the user selection of another item ("Speaking in Tongues") image 1530a, causing it

to overlay the item 1520a image of FIGURE 15d. Selection herein may include selecting a stagelight button or icon, double click, single click, right click and select stagelight or drag and drop. The user may now be presented with more information about the selected item 1530a and the images representing tracks, artists, and playlists related to 1520c-e have been replaced with images of an album 1530b ("Kicking Television: Live in Chicago"), an artist 1530c ("Brian Eno") and another user offering playlists 1530d ("Michael") related to item 1530a. In addition item 1530f may show the tracks in the selected item 1530a. Referring now to FIGURE 15f, the user may select the item 1530b ("Kicking Television: Live in Chicago") image from 1530b, causing it to replace the item 1530a image of FIGURE 15e. The user may be presented with more information about the stagelit item 1540a and one or more updated items including 1540b.

[00141] Referring now to FIGURE 15g, the user may be presented with a time line of their exploration/discovery sequence in the stagelight window 1550. The top row 1550a is for tracks and includes the track item 1520a from FIGURE 15d. The track item 1520a was the first selected item in time sequence. The second row 1550b is for albums and includes album item 1530a from FIGURE 15e. The album item 1530a came second in time sequence, after the track item 1520a. Similarly the third item selected in time sequence is the album 1540a from FIGURE 15f. Other rows 1550 c-e (in order from top to bottom) are for "artists", "Gurus" (other users like "Tom" and "Michael" with trusted recommendations) and playlists (like "The Sure Thing"). Thus, FIGUREs 15a-g illustrate an exploration/discovery sequence in which the user is provided facilities, via the CDDP stagelight/spotlight user interface, to discover and play music related to an initial musical selection using recommendations of various sources including related tracks, related albums, related artists and trusted advisors (Gurus).

[00142] FIGUREs 16a-c are schematic views of the discover stream component in some embodiments of the CDDP. As shown in FIGURE 16a, the discover stream user interface includes a display window 1600. The display window further comprises an input text box 1605 where a user may input a content item name such as an artist, album, playlist, track, and/or the like. As shown in the FIGURE, an artist "depeche mode" is input as a content item seed, and an album view 1605d is selected. The display area 1625 displays a stream of albums of artists similar to "depeche mode." Instead of an album view, users may select other views such as artists or tracks. When a content item seed is provided to the discover stream component, the recommendation engine may take the provided content item seed and generate other content items that are related to the seed. The discover stream component may then stream the related content items, i.e., albums 1615 from the left side of the screen to the right side. At any time a user may click or select an album 1630 as shown in FIGURE 16b. The selection may cause the discover stream component to take the selected album 1630 as an input to the recommendation engine to regenerate an album stream related to the selected item 1630. The selected item may stay stationary while related albums may continuously stream from the left to the right. A user may also hover a curser over an album 1625 to display control icons such as play, stop and pause. In one implementation, the discover stream component may allow the user to play a representative track which may include, without limitation, a track selected at random, the most popular track, a track determined to be most likely of interest to the user by the recommendation engine, the most frequently played track, the most highly recommended track, and/or the like.

[00143] In one implementation, the discover stream interface may also keep track of and display all selections made by a user. The bread crumb panel shown in FIGURE

16b shows an icon 1635 of the selected album. Further, FIGURE 16c shows a bread crumb panel 1640 that includes six album selections made by the user. The bread crumb panel establishes a sequential history of the selections made by the user. In one implementation, the user may select any of the album icons and may perform a variety of operations including, but not limited to: play a track, download the album, create a magic playlist, share the album, download the album to a cache memory, download the album to your local client library, and/or the like.

[00144] FIGUREs 17a-f are schematic views of the discover lens component in some embodiments of the CDDP. As in the discover stream component of FIGUREs 16a-c, a user may enter a content item seed as an input (for e.g., "depeche mode"). When a track view is selected, the recommendation engine may generate tracks (e.g., track 1710) that are similar to the track 1715 by the artist depeche mode. As shown in FIGURE 17a, the related tracks including track 1710 may be rendered around the seed track 1715. In one implementation, a user may select the seed track 1715 to play the track or add the track in a playlist, download to the client, share with other users, and/or the like. In some implementations, the seed track may be selected based on the user-provided track input. In other implementations, the seed track may be derived from the user provided content seed such as an artist name, album name or a playlist name. In a further implementation, a representative track may be selected for the track view. The representative track may be a track selected at random, the most popular track, a track determined to be most likely of interest to the user by the recommendation engine, the most frequently played track, the most highly recommended track, and/or the like.

[00145] When the user selects the track 1710 from FIGURE 17a, the discover lens component interface may be updated to display a collection of tracks as shown in FIGURE 17b. Here the nine tracks from FIGURE 17a are displayed, with track 1715 being displayed in a bounding box. Further, track 1710 is also displayed in a bounding box. In one implementation, a track that was previously selected or is currently selected may be displayed in a bounding box. When track 1710 is selected, the recommendation engine generates related tracks 1710a-e. The user may then continue to select any of the displayed tracks (e.g., track 1710d) and obtain more related tracks. In this way, the discover lens component may facilitate a visual lens like discovery of related content items. Furthermore, as shown in FIGURE 17c, the discovery lens component may also map out the discovery path traversed by the user. For example, from FIGURE 17c, it is clear that the user selected track 1715, track 1710, track 1725 and track 1735 to generate the tracks displayed. In one implementation, the discovery path and the related tracks displayed may provide an indication of how far the user has traveled from his or her initial selection of track 1715 to the last selected track 1735. The distance between track 1715 and track 1735 may visually show the degree of relatedness between the tracks.

[00146] In some implementation, the discovery lens component may support clicking and holding the cursor at a location 1745 in the display window farther away from the center (the seed track 1715), as shown in FIGURE 17d. The action may then result in a cluster of related tracks 1750 shown in FIGURE 17e. The cluster 1750 is not only visually farther out from the origin (the seed track 1715), but also in terms of relatedness with respect to the seed track 1715.

[00147] In one implementation, the discover lens component interface may include facilities for retrieving and displaying a prior search. FIGURE 17f displays a back/forward icon 1755 that may be utilized to go back or forward a pre-defined number of past searches, even when the searches were carried out in separate sessions. In one implementation, these search results may be stored as a series of numbers in a grid based format, such that with the location of the grid and identifier of the track (e.g., track ID), the entire display of related tracks may be accurately regenerated and displayed for the user. In another implementation, these search results may be stored in an array, which could be used for reproducing the lens map 1765. In a further implementation, the discover lens component may include a share icon 1760. Via the share feature, the user may share the lens map 1765 with other users. In one implementation, the lens map 1765 including the display of related tracks may be shared as an image file (e.g., JPEG, PNG, TIFF, BMP, and/or the like), as a reproducible list, in an email among others. In the case of the reproducible list in an email or in comment stream, the recipient may load the file in the discovery lens component interface and obtain the lens map 1765. Various other features such as zoom 1770 and maximize 1775 may also be available for the user to customize his or her viewing preferences.

[00148] FIGUREs 18a-c are schematic views of the discover stacking component in some embodiments of the CDDP. In some implementations, the discover stacking component interface may include a display window 1800, similar to that of the discover streaming and lens components. A user may enter a content item name in the input entry box 1805. In this example, an artist name "depeche mode" is entered. The recommendation engine may then take this input and run its algorithm to identify related albums 1815 (or songs, playlists, artists, etc.). Thumb nails of the identified

related albums 1815 may be displayed on the window. In some implementations, the thumb nails of the album covers may shrink and grow to gain the user's visual attention. In one implementation when a user selects an album 1810 (shown in FIGURE 18a), the selected album may be brought to the forefront and the previously selected album 1825 may be added to the album stack (shown in FIGURE 18b). When the album 1810 is selected, related albums 1820 may be identified and displayed as shown in FIGURE 18b. The user may repeatedly select various albums as he or she is discovering music. As the user continues to select albums, the discover stacking component may continue to provide new recommendations as well as add the last selected album continues to the stack 1840, making the stack 1840 grow as shown in FIGURE 18c. In a further implementation, the discover stacking component may allow the user to peel away albums from the stack 1840 in a manner similar to flipping through a stack of record. In some implementations, facilities for sharing and publishing may be provided to the user.

[00149] FIGUREs 19a-g are schematic views of the molecular discovery component in some embodiments of the CDDP. In some implementations, the molecular discovery component interfaces may facilitate content discovery related to their selection. In FIGUREs 19a-d, the center molecule 1905a-d respectively represents the selection. It is also the user's entry point as well as search subject. Surrounding the center molecule are top related results by category for album 1910a-d, artist 1915a-d, song 1920a-d, Guru 1925a-d, and genre 1930a-d. The user may follow a new path of discovery by dragging any result in the surrounding categories and dropping it to the center, where that center molecule becomes the new subject and is surrounded by top results directly related to the category.

[00150] FIGURE 19b shows the song molecule 1920a of FIGURE 19a dragged and dropped into the center molecule 1905a. As a result of this action, the song molecule 1920a becomes the center molecule 1905c as shown in FIGURE 19c. The molecular discovery component then generates top results for the surrounding categories 1910c, 1915c, 1920c, 1925c and 1930c based on the search subject 1905c. FIGURE 19d shows the resulting display after the song molecule 1920c (from FIGURE 19c) is dragged and dropped into the center molecule 1905c. As shown in FIGURE 19d, the top results for the surrounding categories 1910d, 1915d, 1920d, 1925d and 1930d are also refreshed to reflect the new search subject 1905c.

[00151] In some implementations, the molecular discovery component may include facilities for sharing, adding to playlist, downloading to local client, publishing, creating a magic playlist and/or the like. For example, in FIGURE 19e, several bubbles for share 1940, add to playlist 1950 and download 1945 are shown surround the center molecule 1955. The bubbles may be displayed when the user selects or hovers over the center molecule. The center molecule may then be instantly shared, added to a playlist or downloaded by an action such as drag and drop. FIGURE 19f shows a schematic view where the center molecule 1955 is being dragged and dropped into the bubble for download 1945. As a result of this action, the molecular discovery component may download the item in the center molecule in the user's local client. In some implementations, the center molecule and/or surrounding molecule items that are non-local may be automatically cached in the local client.

[00152] In some implementations, the molecular discovery component may track the search subjects in the center molecule over time and display an interactive historical

crumb trail as shown in FIGURE 19g. The historical crumb trail 1980 may include a scroll bar 1975 which may be scrolled forward or backward to view the search subjects 1960, 1965 and 1970. In a further implementation, the historical crumb trail may not only show the historical path taken by the user, but also a predictive path forward. The predictive forward path may be determined by the music intelligence component based on the user's past listening history, preferences, interest and/or social graph, Gurus, and/or the like.

[00153] In some other implementations, the molecular discovery component may also include an interface for sharing playlists or other content items with other users. An example interface is illustrated in FIGURE 19h. The playlist items 1990 are shown on the left, while a list of the user's friends 1995 are shown on the right. In some implementations, the interface may include an option to select other content items such as artists, albums, songs, libraries, collections, and/or the like. Similarly, in some implementations, there may be granularity in selecting friends (e.g., all friends, n degree of friends, family, co-workers, and/or the like). In the implementation shown here, the user may select a playlist item 1998 and may drag and drop the playlist item 1998 to any friends he or she desired to share his or her playlist with.

Mobile Application User Interfaces

[00154] FIGUREs 20a-n are schematic views of the mobile application user interface in some embodiments of the CDDP. FIGURE 20a shows artist view of the collection interface 2005. The interface 2005 includes a navigation bar 2005, buttons 2005c-d, a display panel 2005e and a tab bar 2010. When the collection icon 2010a is selected along with one of the artist, album or track button, a table view of the selected

artist, album or track is displayed in the display panel 2005d. Referring now to FIGURE 20b, when a user performs a swiping action over an artist item (e.g., Madonna), the artist view may expose functionality such as play/pause 2015a, download 2015b, add to playlist 2015c, share 2015d, and/or the like.

[00155] Referring to FIGUREs 20c, when a search icon 2025a in the tab bar 2025 is selected, the search navigation bar 2020, along with buttons 2020a-d, a search bar 2020e and a table view 2020f may be rendered. As shown in the figure, when the artist button 2020a is selected, and a search item "Boston" is entered in the search bar 2020e, the results 2020f may be displayed in table or other views. As shown in FIGURE 20d, a similar search may be conducted for the album view 2030a. For example, an album name "Elvis Presley" may be entered in the search bar 2030b, and search results 2030c in album view may be displayed in the display pane.

[00156] Referring to FIGURE 20e, when a user selects an artist ("Boston"), the interface 2035 may be rendered. Options for several views including album 2035b, tracks 2035c, biography 2035d and related items 2035e may be provided. As shown in FIGURE 20e, when the album view 2035b is selected, information about the artist may be displayed in area of the display panel 2036. In addition, options to view saved, local and beyond albums may be available. When the saved view 2035f is selected, the display area 2038 displays only those albums that have been saved or bookmarked. When the local view 2035g is selected, the listing in 2038 includes only the albums that are available locally, the albums being stored in the memory of the mobile device. Similarly, when the beyond or cloud view 2035h is selected, the entire list of albums released by

the selected artist ("Boston") and available in the CDDP catalog may be displayed in table view in the display area 2038.

[00157] FIGURE 20f is the schematic view of the interface 2035 from FIGURE 20e after the selection of the related view 2035e. This related artists view 2040 may display in table view or other format, artists that are similar to the selected artist ("Boston") in a display panel portion 2040a. In addition, influences of the selected artist ("Boston") may also be provided in another display portion 2040b.

[00158] Referring to FIGURE 20g, when a user in an album view swipes an album ("Oracular Spectacular"), the interface 2045 is displayed. The user has the option to go back to the last view by tapping on the last view button 2045a (last view was artist view and is labeled by the name of the artist "MGMT"). The user may also be provided with options to select track view 2045b which displays identifying information related to the selected album in a display panel portion 2045h and a control bar 2045d for play/pause, download, add to playlist, share and other functionalities. Additionally, a location status bar 2045e may also be provided, from where the user may select saved, local or beyond/cloud views of the tracks in the selected album. For example, as seen from the status bar 2045e, 3 tracks from the album have been saved or bookmarked, 3 tracks of the album are available locally, and similarly, 10 tracks of the album are available in the cloud catalog. The tracks corresponding to the status bar selections may be displayed in table view in the display portion 2045h. The description view 2045c may display information relating to the album and/or artist. Referring now to FIGURE 20h, the interface 2050 displays an album track list in cloud view similar to FIGURE 20g. Also shown next to track 4 is a caching icon 2050a indicating the track being played/cached.

[00159] Referring now to FIGURE 20i, as indicated by the navigation bar and the selected playlists icon 2055d in the tab bar, a playlists view 2055 is displayed. The interface includes a listing of playlists 2055b ("my playlists") and a listing of magic playlists 2055c. For each playlist, information such as sharing status (public/shared or private) and the number of tracks included may be identified. There may also be an option for the user to add or create playlists using the icon 2055a on the top left corner of the interface.

[00160] Referring now to FIGURE 20j, the user may explore any of the playlists displayed in the playlists view of FIGURE 20i. Here, the playlist "80s Dance" has been selected. In this view, a saved option 2060a, a local option 2060b and a beyond/cloud option 2060c on a location status bar are displayed for selection. In addition, the cloud view of the tracks in the playlist is shown in the display panel portion 2060d.

[00161] FIGURE 20k is a schematic view showing the now playing track in one embodiment. The interface 2065 includes a navigation bar 2065a, with a back button 2065b to go to the last selected item and a playlist icon 2065c which when selected causes the interface shown in FIGURE 20l to be displayed. FIGURE 20l, as discussed, shows the playlist view with the track 2070b that is up next highlighted.

[00162] Referring to FIGUREs 20m-n, some embodiments of the mobile application platform may include settings for configuring the download manager and user settings. Shown in FIGURE 20m is the download manager interface 2075. The download manager interface may include options to enable or disable downloading by sliding or tapping button 2075a. Additionally, the current download status may also be identified at 2075b. Examples of status include downloading, completed, not started,

paused, canceled, error etc. The interface may also display a download queue 2075e that lists the tracks that are in queue for downloading. As shown in FIGURE 20m, the item that is currently being downloaded is identified by the icon 2075f. The download manager interface may also include options to edit the download queue using the edit button 2075c. Editing may including changing the order of the tracks in the queue by simple swiping motions, deleting/canceling selected tracks from the queue, etc. Additionally, the cancel all button 2075d may be used for canceling the download of all the tracks in the queue.

[00163] FIGURE 20n is a schematic view showing the user settings management interface 2080. The settings management interface may be launched from the settings option 2080e on the tab bar. Using this interface, a user may configure his or device to manage synchronization, memory usage, network usage, and/or the like. As shown in FIGURE 20n, the sync now option 2080a may be selected to synchronize playlists between the device and the cloud or another device. For example, the user may create a playlist in his or her mobile device. This playlist may be saved locally in the device memory until the user selects the sync now option. As a result of the syncing, the playlist may be saved in his or her beyond/cloud account. Additionally, the playlist now stored in the beyond/cloud account may be downloaded/ synced with one or more LDs.

[00164] The settings interface may also be utilized to configure cellular data use. Cellular data plans subscribed by users may vary. While some users may have unlimited data plan, others may have a limited monthly plan (e.g., 2 GB/month) and may like to limit the amount of data downloading. In such a situation, the user may set on or off the remote browsing 2080b, remote playback 2080c and track downloads 2080d.

Content Identification Component

[00165] In one embodiment of the CDDP, facilities may exist for incorporating a user's existing collection of music tracks to the CDDP music library ("beyondization"). The user may opt in to the beyondization service to obtain copies of some or all of his or her existing tracks in one or more formats at a variety of bitrates selectable by the user. The user may also choose whether to hold on to their existing files, back them up, or delete them (e.g., to save disk space). Benefits offered by beyondization may include opportunity to replace low quality tracks with higher fidelity versions and/or replace tracks that have missing metadata. In one implementation, tracks that have been beyondized may be shared or duplicated as only LDs may be able to play tracks obtained from the CDDP library. However, in other implementations, when the user chooses to not beyondize, the CDDP may not support sharing, duplicating, playlist creating, etc., activities utilizing the CDDP.

[00166] FIGURE 22a is a data flow diagram of an example content identification component in some embodiments of the CDDP. Content identification may be initiated at the devices 2202 with existing audio or other media files. In one implementation, a request to identify content items from the device 2202 may be sent to the music intelligence component 2206. The request message may packaged as an HTTP(S) POST message and may include information such as acoustical fingerprints and metadata of each file on the client. An example content identification request message 2204 may be in XML format substantially in the following form:

```
POST /beyondization.php HTTP/1.1
Host: www.websitename.com
Content-Type: Application/XML
Content-Length: 1306
<?XML version = "1.0" encoding = "UTF-8"?>
<Beyondization>
```

```
            <Username>dingdong555@gmail.com</Username>
            <Timestamp>20xx-02-22 15:22:43</Timestamp>
            <ClientDetails>
                  <ClientIP>192.168.23.126</ClientIP>
                  <ClientType>smartphone</ClientType>
                  <ClientModel>HTC Hero</ClientModel>
                  <OS>Android 2.2</OS>
                  <AppInstalledFlag>true</AppInstalledFlag>
            </ClientDetails>
            <TrackDetails>
                 <FingerprintID1>ABF6789</FingerprintID1>
                 <FingerprintID2>ASF6H88</FingerprintID2>
            .
            .
            .
                 <FingerprintID78>A7GHK33</FingerprintID78>
            </TrackDetails>
            <MetaData>
               <Track1>
                   <genre>blues</genre>
                   <artist>Blue man</artist>
               </Track1>
            .
            .
            .
               <Track78>
                   <album>Nevermind the Wishkaws</album>
                   <songtitle>smells like</songtitle>
               </Track78>
            </MetaData>
</Beyondization>
```

[00167] In one implementation, the music intelligence component 2206 may perform acoustical analysis on the fingerprints and metadata matching of the obtained files at 2208. At 2212, for each identified file, the music intelligence component may determine the corresponding track ID. In a further implementation, for files that are not recognized, or that are not present in the CDDP catalog, a new track ID may be generated. In a further implementation, one or more metadata database and/or tables may be periodically queried for identifying the unidentified files. In one implementation, the generated track IDs may be sent in a HTTP(S) POST response message 2214 to the client 2202 for play count recording and/or other customer usage recording purposes. An example response message 2214 may be in XML format substantially in the following form:

```
POST /beyondization.php HTTP/1.1
```

```
<XML>
<Beyondization>
          <Username>dingdong555@gmail.com</Username>
          <Timestamp>20xx-02-22 15:22:43</Timestamp>
          <ClientDetails>
                <ClientIP>192.168.23.126</ClientIP>
                <ClientType>smartphone</ClientType>
                <ClientModel>HTC Hero</ClientModel>
                <OS>Android 2.2</OS>
                <AppIinstalledFlag>true</AppInstalledFlag>
          </ClientDetails>
          <TrackInfo>
             <TrackID1>5768689</TrackID1>
             <TrackID2>3457689</TrackID2>
          .
          .
          .
             <TrackID78>6786889</TrackID78>
          <MetaData>
             <Track1>
                <type>audio</type>
                <name>track12.m4a</name>
                <size>64KB</size>
                <genre>blues</genre>
                <album>Taste</album
                <artist>Blue man</artist>
                <length>3 min 22 sec</length>
                <ranking>678</ranking>
                <year>1987</year>
                .
                .
                .
             </Track1>
          .
          .
          .
             <Track78>
                .
                .
                .
             </Track78>
          </MetaData>
</Beyondization>
</XML>
```

[00168] FIGURE 22b is a logic flow diagram illustrating an example content identification in some embodiments of the CDDP. The beyondization may begin at 2205 with the search for media files in a user's client device at 2210. In one implementation, the search may be conducted only after verifying that the user has opted in to the beyondization service. The verification may be performed by requiring the user to confirm beyondization (e.g., click to confirm beyondization) or informing the user of the option to beyondize (e.g., want to beyondize your tracks?). At 2215, the media files may

be analyzed. The analysis may include aggregating the media files, examining the files for information for metadata, bitrates, and/or the like. At 2220, each media file may be identified using information such as filename, ID3 tag or other metadata containers, hash value, acoustic fingerprint, and/or the like. If any media file is unidentified at 2225, the user may be prompted to enter the file information or skip the file at 2230. In one implementation, if a media file is not in the catalog as determined at 2235, the fingerprint and/or other identifying information relating to the file may be logged in one or more user media databases and/or tables at 2240. The media file may then be included in the user's local or offline media library at 2245. At 2250, some media files may also be found in the catalog. Those media files may be analyzed to determine whether the catalog version of the file is of higher fidelity than the local version at 2255. Similarly, if all media files are also in the catalog as determined at 2235, a further determination as to whether the catalog version of the file is of higher fidelity than the local version may be made at 2255. If the catalog version of the file is of higher fidelity, the user may be prompted to confirm the replacement of the local file with the higher fidelity version from the catalog at 2260. If the user confirms the replacement at 2265, the media file may be replaced with the catalog version at 2270 or the local version of the file is determined to be of higher fidelity as determined at 2255, the fingerprint and/or other identifying information relating to the file may be logged in the user media database and/or tables at 2285 for inclusion in the user's offline or local library at 2290. In one implementation, the user may decide to obtain a higher fidelity version of the file while keeping his or her personal copy of the file at 2275. In this case, the higher fidelity file may be downloaded and the user's personal copy may be backed up.

Content License Acquisition Component (CLAC)

[00169] The CDDP in its effort to grow its collection and its user base seeks to improve services and facilities as well as add media that users may want to consume. In one embodiment, the CDDP employs crowd sourcing to automatically detect and initiate acquisition of rights for tracks catering to users' interests.

[00170] FIGURE 23 is a logic flow diagram illustrating an example content license acquisition component (CLAC) in some embodiments of the CDDP. The process may start 2305 at 1402, with the receiving or retrieving of play count data at 2310. The play count data may be initially received from LDs that periodically or in real time report to the servers play data relating to each played tracks. At 2315, the play count data may be analyzed to determine any unlicensed tracks. The analysis may include, for example, examination of the tracks including track ID or other identifying information relating to the track. The analysis may further comprise checking the CDDP media databases and/or tables to determine if corresponding records of the tracks are present. Based on the analysis, a determination may be made as to whether any of the tracks being reported are unlicensed tracks. In one implementation, such tracks may be uniquely resolved within the CDDP collection and may be provided a track ID upon identification. If there are no unlicensed tracks identified at 2315, the process may end at 2345. However, for the identified unlicensed tracks, the CLAC may determine if the unlicensed tracks are popular with users, and if so, may automatically initiate a rights acquisition process. In one implementation the CLAC may obtain aggregate play count data for each unlicensed track over a period of time (e.g., a week, month, etc.). The play count data may be aggregated from one or more users of the CDDP. In a further implementation, the CLAC may also obtain aggregate play count data for all licensed

tracks from one or more users of the CDDP for the same period of time. The CLAC may also retrieve one or more rights acquisition trigger rules to evaluate the obtained aggregate play count data. In one implementation, rights acquisition may be triggered when the aggregate play count for the licensed track exceeds a threshold (e.g., play count greater than 500). In another implementation, any unlicensed tracks with a non-zero play count may trigger rights acquisition. In yet another implementation, rights acquisition may be triggered when the aggregate unlicensed track play count is greater than a predefined percentage of the aggregate play count data for all licensed tracks. At 2320, if the rights acquisition is not triggered, the process may end at 2345. At 2320, if the rights acquisition is triggered, the CLAC may identify the unlicensed track using, for example, fingerprint, ID3 tag, etc., at 2325. Using the obtained information, the CLAC may the query a rights database at 2330 to obtain rates, quotes and/or availability for licensing rights. If there is an opportunity for obtaining rights for the unlicensed tracks at 2335, the CLAC may identify the appropriate rights clearing association such as ESCAP, BMI, SESAC, and/or the like at 2350. At 2355, the identified rights clearing association may be requested to provide rates, quotes and/or authorization to add the track to the CDDP catalog. If the request is approved at 2360, the added track may be added to the online catalog at 2365 and made available to the users of the CDDP. If at 2360, the request is not approved, the CLAC may periodically request rates, quotes, and/or authorization to add the track to the CDDP catalog at 2365. The process may end at 2345.

[00171] At 2335, if there is no licensing opportunity available, the CLAC may periodically query rights database for rate and/or availability at 2340. In one implementation, the rights database may be constantly updated as more tracks are

licensed or are offered for licensing by partners. In one implementation, even if the rights holder cannot be identified, the CLAC may upload the unlicensed tracks to one or more servers. In some implementations, the servers may be selected based on the geographic location where the demand for the track is the highest. For example, if users in the UK are playing an unlicensed track from a music artist, a copy of the track may be uploaded to servers at or near the UK. Royalties and/or license fees for the uploaded but unlicensed track may be collected for payment upon formalization of the licensing arrangement. In this way, licensed tracks may be readily provided to the users of the CDDP, while protecting royalties owed to partners.

License Management Component (LMC)

[00172] The CDDP provides users an unlimited access to a comprehensive catalog of multimedia content to use and share, while protecting the commercial interests of content owners, OEMs and network operators at the same time. This is facilitated by the use of Digital Rights Management (DRM) and other security technologies. The CDDP facilitates protection of the interests of content licensors through secure play count reporting. Through the use of play count reporting, royalties can be calculated and properly attributed to partners. Through DRM, the CDDP ensures that content is only playable in its territory of licensing and protects the interests of OEMs by ensuring that users can only play content on LDs. Within the CDDP ecosystem, the DRM may not inhibit using and sharing content. For example, the DRM may place no limits on duration of a user's music ownership, methods of sharing (including email, portable storage devices, drop box, etc.), the number of licensed devices that a user can own, playback quality, and/or the like.

[00173] In one implementation, the CDDP may leverage DRM technology for supporting a wide range of consumer electronics that can play multimedia content, from minimal "shuffle" type devices all the way up to desktop PCs. In a further implementation, the CDDP DRM may provide portability to a wide variety of operating platforms, including, but not limited to, broadly available OSs (e.g. Windows, Linux, Android) as well as proprietary operating platforms (e.g. Samsung BADA). In some implementation, the CDDP DRM may provide strong support for connected portable devices, to eliminate tethering to PCs through side-loading, enhancing the user experience and making the ecosystem more attractive to mobile operators. In addition, the CDDP DRM may utilize robust, field-recoverable security to eliminate or minimize the impact of hacks or other security concerns.

[00174] In yet another implementation, the CDDP DRM may facilitate flexible domain authentication, so that rights may be configured on groups of devices ranging from all devices owned by a single user up to all devices in a territory of licensing (e.g., country), thereby increasing flexibility of content usage and licensing. In one implementation, CDDP DRM may include DRM technologies developed by third parties (e.g., Marlin DRM). Many modern DRM technologies include a "root of trust" organization that may issue security material such as device certificates and encryption keys. Root-of-trust services also facilitate defining robustness rules for DRM implementations in order to thwart hacks on susceptible devices, and DRM implementers must adhere to these rules as part of their technology licensing agreements. The Marlin Trust Management Organization (MTMO) serves as the root of trust organization for Marlin. Marlin DRM uses a graph theory-based rights model, which consists of links and nodes. Nodes may represent concrete entities such as users,

devices, and servers, or abstract entities such as domains (e.g., groups of users) or subscriptions (e.g., rights to content). Links may represent relationships between nodes. In order for a device to get permission to exercise rights to content (e.g., to play it), the device must connect through links to a node corresponding to the user licensed to access that content on that device. The LMC of the CDDP may leverage user nodes to authenticate content according to territories of license (e.g., countries), device personality nodes, corresponding to LDs, subscription links, referring to time-bounded licenses to all content, and/or the like. In one implementation, the CDDP may use user IDs to bind users to devices, to ensure that only the original person who bought the LD (or otherwise obtained it, e.g., got it as a gift) has access to the universal library. All compliant devices in a given geography may access content licensed for that geography. There is no need to limit the number of devices that a user may use, because each device represents a separate fee structure and royalty stream for content owners. The geographic licensing scheme may further facilitate royalty reporting component to determine which royalty scheme is to be used to calculate payments.

[00175] FIGURES 24a-b are data flow diagrams illustrating example license management components in some embodiments of the CDDP. As shown in FIGURE 24a, at 2418, a client device 2404 may send account information obtained from user registration along with a registration token the API service 2412 of the LMC of the CDDP. The API service 2412 may receive and validate the token and create a user account for the user of the device 2404 at 2412. At 2422, the client may also request and obtain from a key distributor component of LMC (e.g., SeaCert) Network Mobility (NEMO) keys and device personality ("octopus" personality). The client may securely store the NEMO keys and may utilize NEMO protocols for obtaining keys. At 2424, the

client may send device personality ID to the API service 2412. At 2426, the service database 2414 may associate user and device with license and appropriate territories. At 2428, the user, device and license information may be sent to the DRM database 2416. At 2430, the client device may request an action token from the client DRM service 2410. At 2432, the client DRM service 2410 may allocate user node at 2432, may determine subscription node IDs for territories where user and/or device is licensed for at 2434. At 2436, an expiration date for device to user link may be determined. The requested action token may then be generated and returned to the client at 2438. At 2440, the client may then send the action token to the DRM service 2406. The DRM service 2406 may perform secure protocol processing at 2442 At 2444, the DRM backoffice service 2408 may validate any requests for keys to ensure that the requests are consistent with user and/or device license. At 2446, the DRM backoffice may obtain keys for user and subscription nodes and provide them to the DRM service which may create user node, subscription node(s) and links at 2448. The created user node, subscription nodes and links may then be sent to the client at 2448. The client may receive and store the nodes and links obtained from the DRM service. The nodes and links facilitate the client to play content licensed for appropriate territories at 2450.

[00176] FIGURE 24b illustrates example "octopus" graphs 2454 and 2456 for two users Ryuu and Mary respectively. In one implementation, the graph identifies the subscription nodes 2454a, 2456a, the user nodes 2454b, 2456b, the user devices 2454c, 2456c as well as the links 2454d, 2456d between the user and the device. As shown in the figure, each link may be associated with an expiration date and/or time. Each content item 2452 may include a license portion 2452a and a content portion 2452c that is encrypted with content encryption key. In this example, the license portion includes a

content encryption key encrypted with Japan territory's key and Australia territory's key. From graph 2454, the user Ryuu has a subscription node for Japan territory, and as long as the device to user link has not expired, the client on Ryuu's device may retrieve the Japan territory's key, decrypt the content encryption key and decrypt the track. However, the graph 2456 shows that the user Mary has subscription node for the USA. As the content item does not include license for USA territory, the client of Mary's device may not access the keys necessary to decrypt the track. In this way, using the subscription node, user node, device node and user-device link, only contents licensed for a user/device and territory may be decrypted.

[00177] FIGURE 24c is a logic flow diagram illustrating an example license management component in some embodiments of the CDDP. In one implementation, the process may start at 2460. The player interface may be initialized at 2462. At 2464, the client may determine whether the device to user link is expired. If the device to user link is expired, the key necessary for decrypting the content encryption key and decrypt the tracks may be discarded at 2464. The process may conclude at 2466. However, if the device to user link is not expired, the client may request an action token at 2468. Action tokens may be requested periodically by the client to ensure user, device and subscription nodes are valid. If the client does not need to request the action token, the player initialization may be completed at 2470. In one implementation, if the client requests an action token at 2472, the request is received by the DRM server at 2474. The server may then check whether the user to device link is expired at 2476. If the user to device link is expired, a notification may be sent to the client indicating that the request is invalid at 2478. The client may receive the notification at 2480, concluding the process. In one implementation, if the user to device link is not expired, the server may

determine if a play count report has been received since the link was last issued at 2482. If the play count report has not been uploaded to the server, a request may be sent by the server to the client for the latest play count update at 2495. The request may be received by the client at 2496 and the client may provide a response at 2497. If the client fails to provide a valid play count report at 2498, the client may be notified of the invalid request at 2478. However, if the play count response is valid, or if the play count report was received since the issue of the link at 2482, the server may determine a new expiration date for the device to user link at 2484. At 2486, a new action token for the device to user link may be generated and send to the client. The client may receive the action token at 2488 and may send the token to the server at 2490. The server may receive the action token and may validate the request at 2492. The server may then create a user to device link and send the link to the client at 2494. The client may receive and securely store the link and discard the old one at 2493. The client may then retrieve the key necessary to decrypt content.

Encryption- Free Content Purchase Component

[00178] In one embodiment of the CDDP, an encryption-free content purchase component (ECPC) may be provided to facilitate legal purchase of DRM free content items. In one implementation, a user of the CDDP may have the option to select an option to purchase a selected track, album or a playlist from the CDDP player. Using information provided by the user (e.g., a user ID and/or password), and/or user provided payment information, a transaction for the DRM free content purchase may be completed. In one implementation, the purchase price of the content item may be discounted based on social influence. For example, if the user has opted in to a Guru program, and has achieved a threshold number of influence points (e.g., 500), the user

may be offered a discount on the purchase price of the DRM free content. In another example, if the item to be purchased is in a playlist published by the user, the purchase price may be discounted for every x level or degrees of separation of people that subscribe and/or add the song and/or playlist to their library. In yet another example, when a threshold number of plays of the content item is reached, the discount may be offered. In one implementation, the threshold number of plays may be reached by the user alone. In another implementation, the threshold number of plays is an aggregate number of plays from one or more users. In one implementation, discount may be provided to a user when a threshold number of plays of the content item and/or number of people that play or buy the content DRM free after discovery from people discovering the content from the user's playlists or library is reached.

[00179] FIGURE 25 is a data flow diagram illustrating an example usage reporting component in some embodiments of the CDDP. At 2502 various user actions such as play, pause, etc., are recorded by the client. At 2504, the accumulated user action activity and play count activity may be periodically delivered via secure protocols such as HTTP, SOAP, NEMO, etc., to the DRM service. At 2506, secure protocol processing may be performed before sending a play count service request (e.g., HTTP, XML) to a DRM backoffice service at 2508. The DRM backoffice service may update last play count delivery time for device in the DRM database at 2510. The obtained activity report from the client may also be placed on a play count reporting queue 2520 at 2512. An acknowledgement of successful receipt of the play count report may be sent to the client at 2512. A play count queue processor may then identify various processing components and send reporting data for further processing (e.g., 2516 in music intelligence processor and 2518 in royalty processor).

[00180] FIGURES 26a-b are logic flow diagrams illustrating example play count reporting components in some embodiments of the CDDP. As shown in FIGURE 26a, the client side play count reporting may start at 2602. At 2604, a session may be launched (e.g., the client may be launched). In one implementation, a log may be created to initiate set up. Set up may include passing identifying information such as username or email address to the server. At 2606, if an event (e.g., song started, song paused, song resumed, etc.) is detected, the event may be recorded in a log at 2608. Each event record may be associated with identifying information such as username, track ID, time stamp, etc., at 2610. At 2612, the user's profile settings may be retrieved to determine whether event data should be saved to the profile. In one implementation, if the user opted to forego saving event data in his or her profile, the event data may be anonymized at 2618 such that event data may not be used to identify the user. At 2614, a determination may be made whether threshold event capture has been triggered. Examples of threshold event capture triggers include reaching a threshold size limit of the log, number of play counts, time since last event capture, type of event, and/or the like. If the threshold event capture is triggered, the log in the client device may be synced with the log in the server device by sending event and/or other data to the server at 2616. If on the other hand, connection to the server is not available, the event data may continue to be logged if there is another occurrence of an event at 2620. If there are no events (e.g., application is closed), the log file may be closed and the session may end at 2622.

[00181] As shown in FIGURE 26b, the server-side play count reporting may start at 2650 by receiving event data at 2650. The event data may include information such as track ID, time at which a song started, ended, was paused or resumed, username,

and/or the like. At 2654, information such as event type, track ID, time stamp, etc., may be extracted from the received event data. Using the extracted information and one or more business rules, play count for each track ID in the event data may be determined. An example business rule may include, for example, a rule which classifies a track that was played for at least x seconds (e.g., 30 seconds, 45 seconds, etc.) as a "play event." Using the time stamp for each event (e.g., song started, song paused, song resumed or song finished) and the business rule, play count for each track may be determined at 2656. In one implementation, the event data may be anonymized with references to any identifying user information removed. If the event data is anonymized as determined at 2658, the reporting database is updated with determined play count data at 2664. On the other hand, if the event data is not anonymized, user identifying information such as username, user ID, social graph, interest graph, etc., may be extracted, obtained and/or derived at 2660. At 2662, the user profile may be obtained and updated with play count and track data at 2662. As in the case of anonymized data, the reporting database may be updated with play count data at 2664. In one implementation, a category of activity for each event may be determined at 2666. Example categories may include point generating activity, royalty activity, recommendation engine activity, and/or the like. At 2668, the event data may be added to one or more databases and/or tables corresponding to the determined activity. At 2670, if there is another event in the queue, the processing for the event may begin at 2654. If there are no other events in the queue, the process may end at 2672.

Usage Payment Collection and Apportionment Component (UPCAC)

[00182] FIGURE 27 is a logic flow diagram illustrating an example usage payment collection and apportionment component (UPCAC) in some embodiments of the CDDP.

The process may start at 1702 by receiving a royalty report request at 2704. In one implementation, the report request may include reporting criteria and/or categories. Examples of reporting criteria and/or categories may include, for example, a statement for a selected period of time (e.g., weekly, monthly, from/to, etc.), report by track, by artist, by song, by album, by territory, partner name, activity category, etc. Yet other examples of reporting criteria may include, but are not limited to: total number of end users, number of end users by device type (e.g., users with more than one device may count more than once), number of new end users, number of new end users by device type, number of active users (e.g., users who have one or more plays or downloads during a period of time), number of active users by device type, number of active downloaders (e.g., users who have at least one download during a period of time), number of active downloaders by device type, market share of downloads by device type for a partner, total downloads of all label content by device type, total digital downloads by device type for a partner (e.g., SME, EMI, WMG, etc.), total number of active listeners, market share of plays by device type for a partner, total plays for all label content, total number of playlists created, usage code (e.g., streaming, interactive radio, tethered plays, juke box, portable, etc.) and/or the like.

[00183] At 2706, if no reporting criteria and/or categories are provided, default criteria may be selected at 2720. An example default criteria may be last statement available. However, if reporting criteria and/or categories are provided, for each provided criteria and/or category, the UPCAC may, at 2708, query a reporting database using the provided criteria and/or category to obtain matching tracks. In one implementation, no tracks matching the reporting criteria and/or categories may be obtained from the query at 2710. In this case, at 2722, the UPCAC may notify the

requestor that no royalties are due for the specified criteria and the logic flow may conclude at 2724. In an alternate implementation, one or more tracks matching the provided criteria/categories may be obtained at 2710. At 2712, the play count data for each of the identified tracks may be retrieved. At 2714, a royalty database may be queried to obtain rates associated with tracks and/or partners. At 2716, royalty payments may be calculated based on the play count data and the obtained rates. Further at 2718, the requested royalty report may be generated and provided. The report may include, in one implementation, a listing of tracks matching the provided or default criteria and/or categories as well as the royalty amounts due per track. In one implementation, the play count data may be segmented according to territory, and royalty rates for each territory may be retrieved to determine the total royalties owed.

CDDP Controller

[00184] FIGURE 28 shows a block diagram illustrating embodiments of a CDDP controller. In this embodiment, the CDDP controller 2801 may serve to aggregate, process, store, search, serve, identify, instruct, generate, match, and/or facilitate interactions with a computer through various technologies, and/or other related data.

[00185] Typically, users, which may be people and/or other systems, may engage information technology systems (e.g., computers) to facilitate information processing. In turn, computers employ processors to process information; such processors 2803 may be referred to as central processing units (CPU). One form of processor is referred to as a microprocessor. CPUs use communicative circuits to pass binary encoded signals acting as instructions to enable various operations. These instructions may be operational and/or data instructions containing and/or referencing other instructions

and data in various processor accessible and operable areas of memory 2829 (e.g., registers, cache memory, random access memory, etc.). Such communicative instructions may be stored and/or transmitted in batches (e.g., batches of instructions) as programs and/or data components to facilitate desired operations. These stored instruction codes, e.g., programs, may engage the CPU circuit components and other motherboard and/or system components to perform desired operations. One type of program is a computer operating system, which, may be executed by CPU on a computer; the operating system enables and facilitates users to access and operate computer information technology and resources. Some resources that may be employed in information technology systems include: input and output mechanisms through which data may pass into and out of a computer; memory storage into which data may be saved; and processors by which information may be processed. These information technology systems may be used to collect data for later retrieval, analysis, and manipulation, which may be facilitated through a database program. These information technology systems provide interfaces that allow users to access and operate various system components.

[00186] In one embodiment, the CDDP controller 2801 may be connected to and/or communicate with entities such as, but not limited to: one or more users from user input devices 2811; peripheral devices 2812; an optional cryptographic processor device 2828; and/or a communications network 2813.

[00187] Networks are commonly thought to comprise the interconnection and interoperation of clients, servers, and intermediary nodes in a graph topology. It should be noted that the term "server" as used throughout this application refers generally to a

computer, other device, program, or combination thereof that processes and responds to the requests of remote users across a communications network. Servers serve their information to requesting "clients." The term "client" as used herein refers generally to a computer, program, other device, user and/or combination thereof that is capable of processing and making requests and obtaining and processing any responses from servers across a communications network. A computer, other device, program, or combination thereof that facilitates, processes information and requests, and/or furthers the passage of information from a source user to a destination user is commonly referred to as a "node." Networks are generally thought to facilitate the transfer of information from source points to destinations. A node specifically tasked with furthering the passage of information from a source to a destination is commonly called a "router." There are many forms of networks such as Local Area Networks (LANs), Pico networks, Wide Area Networks (WANs), Wireless Networks (WLANs), etc. For example, the Internet is generally accepted as being an interconnection of a multitude of networks whereby remote clients and servers may access and interoperate with one another.

[00188] The CDDP controller 2801 may be based on computer systems that may comprise, but are not limited to, components such as: a computer systemization 2802 connected to memory 2829.

Computer Systemization

[00189] A computer systemization 2802 may comprise a clock 2830, central processing unit ("CPU(s)" and/or "processor(s)" (these terms are used interchangeable throughout the disclosure unless noted to the contrary)) 2803, a memory 2829 (e.g., a

read only memory (ROM) 2806, a random access memory (RAM) 2805, etc.), and/or an interface bus 2807, and most frequently, although not necessarily, are all interconnected and/or communicating through a system bus 2804 on one or more (mother)board(s) 2802 having conductive and/or otherwise transportive circuit pathways through which instructions (e.g., binary encoded signals) may travel to effectuate communications, operations, storage, etc. The computer systemization may be connected to a power source 2886; e.g., optionally the power source may be internal. Optionally, a cryptographic processor 2826 and/or transceivers (e.g., ICs) 2874 may be connected to the system bus. In another embodiment, the cryptographic processor and/or transceivers may be connected as either internal and/or external peripheral devices 2812 via the interface bus I/O. In turn, the transceivers may be connected to antenna(s) 2875, thereby effectuating wireless transmission and reception of various communication and/or sensor protocols; for example the antenna(s) may connect to: a Texas Instruments WiLink WL1283 transceiver chip (e.g., providing 802.11n, Bluetooth 3.0, FM, global positioning system (GPS) (thereby allowing CDDP controller to determine its location)); Broadcom BCM4329FKUBG transceiver chip (e.g., providing 802.11n, Bluetooth 2.1 + EDR, FM, etc.); a Broadcom BCM4750IUB8 receiver chip (e.g., GPS); an Infineon Technologies X-Gold 618-PMB9800 (e.g., providing 2G/3G HSDPA/HSUPA communications); and/or the like. The system clock typically has a crystal oscillator and generates a base signal through the computer systemization's circuit pathways. The clock is typically coupled to the system bus and various clock multipliers that will increase or decrease the base operating frequency for other components interconnected in the computer systemization. The clock and various components in a computer systemization drive signals embodying information

throughout the system. Such transmission and reception of instructions embodying information throughout a computer systemization may be commonly referred to as communications. These communicative instructions may further be transmitted, received, and the cause of return and/or reply communications beyond the instant computer systemization to: communications networks, input devices, other computer systemizations, peripheral devices, and/or the like. It should be understood that in alternative embodiments, any of the above components may be connected directly to one another, connected to the CPU, and/or organized in numerous variations employed as exemplified by various computer systems.

[00190] The CPU comprises at least one high-speed data processor adequate to execute program components for executing user and/or system-generated requests. Often, the processors themselves will incorporate various specialized processing units, such as, but not limited to: integrated system (bus) controllers, memory management control units, floating point units, and even specialized processing sub-units like graphics processing units, digital signal processing units, and/or the like. Additionally, processors may include internal fast access addressable memory, and be capable of mapping and addressing memory 2829 beyond the processor itself; internal memory may include, but is not limited to: fast registers, various levels of cache memory (e.g., level 1, 2, 3, etc.), RAM, etc. The processor may access this memory through the use of a memory address space that is accessible via instruction address, which the processor can construct and decode allowing it to access a circuit path to a specific memory address space having a memory state. The CPU may be a microprocessor such as: AMD's Athlon, Duron and/or Opteron; ARM's application, embedded and secure processors; IBM and/or Motorola's DragonBall and PowerPC; IBM's and Sony's Cell

processor; Intel's Celeron, Core (2) Duo, Itanium, Pentium, Xeon, and/or XScale; and/or the like processor(s). The CPU interacts with memory through instruction passing through conductive and/or transportive conduits (e.g., (printed) electronic and/or optic circuits) to execute stored instructions (i.e., program code) according to conventional data processing techniques. Such instruction passing facilitates communication within the CDDP controller and beyond through various interfaces. Should processing requirements dictate a greater amount speed and/or capacity, distributed processors (e.g., Distributed CDDP), mainframe, multi-core, parallel, and/or super-computer architectures may similarly be employed.Alternatively, should deployment requirements dictate greater portability, smaller Personal Digital Assistants (PDAs) may be employed.

[00191] Depending on the particular implementation, features of the CDDP may be achieved by implementing a microcontroller such as CAST's R8051XC2 microcontroller; Intel's MCS 51 (i.e., 8051 microcontroller); and/or the like. Also, to implement certain features of the CDDP, some feature implementations may rely on embedded components, such as: Application-Specific Integrated Circuit ("ASIC"), Digital Signal Processing ("DSP"), Field Programmable Gate Array ("FPGA"), and/or the like embedded technology. For example, any of the CDDP component collection (distributed or otherwise) and/or features may be implemented via the microprocessor and/or via embedded components; e.g., via ASIC, coprocessor, DSP, FPGA, and/or the like. Alternately, some implementations of the CDDP may be implemented with embedded components that are configured and used to achieve a variety of features or signal processing.

[00192] Depending on the particular implementation, the embedded components may include software solutions, hardware solutions, and/or some combination of both hardware/software solutions. For example, CDDP features discussed herein may be achieved through implementing FPGAs, which are a semiconductor devices containing programmable logic components called "logic blocks", and programmable interconnects, such as the high performance FPGA Virtex series and/or the low cost Spartan series manufactured by Xilinx. Logic blocks and interconnects can be programmed by the customer or designer, after the FPGA is manufactured, to implement any of the CDDP features. A hierarchy of programmable interconnects allow logic blocks to be interconnected as needed by the CDDP system designer/administrator, somewhat like a one-chip programmable breadboard. An FPGA's logic blocks can be programmed to perform the operation of basic logic gates such as AND, and XOR, or more complex combinational operators such as decoders or mathematical operations. In most FPGAs, the logic blocks also include memory elements, which may be circuit flip-flops or more complete blocks of memory. In some circumstances, the CDDP may be developed on regular FPGAs and then migrated into a fixed version that more resembles ASIC implementations. Alternate or coordinating implementations may migrate CDDP controller features to a final ASIC instead of or in addition to FPGAs. Depending on the implementation all of the aforementioned embedded components and microprocessors may be considered the “CPU” and/or “processor” for the CDDP.

Power Source

[00193] The power source 2886 may be of any standard form for powering small electronic circuit board devices such as the following power cells: alkaline, lithium hydride, lithium ion, lithium polymer, nickel cadmium, solar cells, and/or the like. Other types of AC or DC power sources may be used as well. In the case of solar cells, in one embodiment, the case provides an aperture through which the solar cell may capture photonic energy. The power cell 2886 is connected to at least one of the interconnected subsequent components of the CDDP thereby providing an electric current to all subsequent components. In one example, the power source 2886 is connected to the system bus component 2804. In an alternative embodiment, an outside power source 2886 is provided through a connection across the I/O 2808 interface. For example, a USB and/or IEEE 1394 connection carries both data and power across the connection and is therefore a suitable source of power.

Interface Adapters

[00194] Interface bus(ses) 2807 may accept, connect, and/or communicate to a number of interface adapters, conventionally although not necessarily in the form of adapter cards, such as but not limited to: input output interfaces (I/O) 2808, storage interfaces 2809, network interfaces 2810, and/or the like. Optionally, cryptographic processor interfaces 2827 similarly may be connected to the interface bus. The interface bus provides for the communications of interface adapters with one another as well as with other components of the computer systemization. Interface adapters are adapted for a compatible interface bus. Interface adapters conventionally connect to the interface bus via a slot architecture. Conventional slot architectures may be employed,

such as, but not limited to: Accelerated Graphics Port (AGP), Card Bus, (Extended) Industry Standard Architecture ((E)ISA), Micro Channel Architecture (MCA), NuBus, Peripheral Component Interconnect (Extended) (PCI(X)), PCI Express, Personal Computer Memory Card International Association (PCMCIA), and/or the like.

[00195] Storage interfaces 2809 may accept, communicate, and/or connect to a number of storage devices such as, but not limited to: storage devices 2814, removable disc devices, and/or the like. Storage interfaces may employ connection protocols such as, but not limited to: (Ultra) (Serial) Advanced Technology Attachment (Packet Interface) ((Ultra) (Serial) ATA(PI)), (Enhanced) Integrated Drive Electronics ((E)IDE), Institute of Electrical and Electronics Engineers (IEEE) 1394, fiber channel, Small Computer Systems Interface (SCSI), Universal Serial Bus (USB), and/or the like.

[00196] Network interfaces 2810 may accept, communicate, and/or connect to a communications network 2813. Through a communications network 2813, the CDDP controller is accessible through remote clients 2833b (e.g., computers with web browsers) by users 2833a. Network interfaces may employ connection protocols such as, but not limited to: direct connect, Ethernet (thick, thin, twisted pair 10/100/1000 Base T, and/or the like), Token Ring, wireless connection such as IEEE 802.11a-x, and/or the like. Should processing requirements dictate a greater amount speed and/or capacity, distributed network controllers (e.g., Distributed CDDP), architectures may similarly be employed to pool, load balance, and/or otherwise increase the communicative bandwidth required by the CDDP controller. A communications network may be any one and/or the combination of the following: a direct interconnection; the Internet; a Local Area Network (LAN); a Metropolitan Area Network (MAN); an Operating

Missions as Nodes on the Internet (OMNI); a secured custom connection; a Wide Area Network (WAN); a wireless network (e.g., employing protocols such as, but not limited to a Wireless Application Protocol (WAP), I-mode, and/or the like); and/or the like. A network interface may be regarded as a specialized form of an input output interface. Further, multiple network interfaces 2810 may be used to engage with various communications network types 2813. For example, multiple network interfaces may be employed to allow for the communication over broadcast, multicast, and/or unicast networks.

[00197] Input Output interfaces (I/O) 2808 may accept, communicate, and/or connect to user input devices 2811, peripheral devices 2812, cryptographic processor devices 2828, and/or the like. I/O may employ connection protocols such as, but not limited to: audio: analog, digital, monaural, RCA, stereo, and/or the like; data: Apple Desktop Bus (ADB), IEEE 1394a-b, serial, universal serial bus (USB); infrared; joystick; keyboard; midi; optical; PC AT; PS/2; parallel; radio; video interface: Apple Desktop Connector (ADC), BNC, coaxial, component, composite, digital, Digital Visual Interface (DVI), high-definition multimedia interface (HDMI), RCA, RF antennae, S-Video, VGA, and/or the like; wireless transceivers: 802.11a/b/g/n/x; Bluetooth; cellular (e.g., code division multiple access (CDMA), high speed packet access (HSPA(+)), high-speed downlink packet access (HSDPA), global system for mobile communications (GSM), long term evolution (LTE), WiMax, etc.); and/or the like. One typical output device may include a video display, which typically comprises a Cathode Ray Tube (CRT) or Liquid Crystal Display (LCD) based monitor with an interface (e.g., DVI circuitry and cable) that accepts signals from a video interface, may be used. The video interface composites information generated by a computer systemization and generates video signals based

on the composited information in a video memory frame. Another output device is a television set, which accepts signals from a video interface. Typically, the video interface provides the composited video information through a video connection interface that accepts a video display interface (e.g., an RCA composite video connector accepting an RCA composite video cable; a DVI connector accepting a DVI display cable, etc.).

[00198] User input devices 2811 often are a type of peripheral device 512 (see below) and may include: card readers, dongles, finger print readers, gloves, graphics tablets, joysticks, keyboards, microphones, mouse (mice), remote controls, retina readers, touch screens (e.g., capacitive, resistive, etc.), trackballs, trackpads, sensors (e.g., accelerometers, ambient light, GPS, gyroscopes, proximity, etc.), styluses, and/or the like.

[00199] Peripheral devices 2812 may be connected and/or communicate to I/O and/or other facilities of the like such as network interfaces, storage interfaces, directly to the interface bus, system bus, the CPU, and/or the like. Peripheral devices may be external, internal and/or part of the CDDP controller. Peripheral devices may include: antenna, audio devices (e.g., line-in, line-out, microphone input, speakers, etc.), cameras (e.g., still, video, webcam, etc.), dongles (e.g., for copy protection, ensuring secure transactions with a digital signature, and/or the like), external processors (for added capabilities; e.g., crypto devices 528), force-feedback devices (e.g., vibrating motors), network interfaces, printers, scanners, storage devices, transceivers (e.g., cellular, GPS, etc.), video devices (e.g., goggles, monitors, etc.), video sources, visors, and/or the like. Peripheral devices often include types of input devices (e.g., cameras).

[00200] It should be noted that although user input devices and peripheral devices may be employed, the CDDP controller may be embodied as an embedded, dedicated, and/or monitor-less (i.e., headless) device, wherein access would be provided over a network interface connection.

[00201] Cryptographic units such as, but not limited to, microcontrollers, processors 2826, interfaces 2827, and/or devices 2828 may be attached, and/or communicate with the CDDP controller. A MC68HC16 microcontroller, manufactured by Motorola Inc., may be used for and/or within cryptographic units. The MC68HC16 microcontroller utilizes a 16-bit multiply-and-accumulate instruction in the 16 MHz configuration and requires less than one second to perform a 512-bit RSA private key operation. Cryptographic units support the authentication of communications from interacting agents, as well as allowing for anonymous transactions. Cryptographic units may also be configured as part of the CPU. Equivalent microcontrollers and/or processors may also be used. Other commercially available specialized cryptographic processors include: Broadcom's CryptoNetX and other Security Processors; nCipher's nShield; SafeNet's Luna PCI (e.g., 7100) series; Semaphore Communications' 40 MHz Roadrunner 184; Sun's Cryptographic Accelerators (e.g., Accelerator 6000 PCIe Board, Accelerator 500 Daughtercard); Via Nano Processor (e.g., L2100, L2200, U2400) line, which is capable of performing 500+ MB/s of cryptographic instructions; VLSI Technology's 33 MHz 6868; and/or the like.

Memory

[00202] Generally, any mechanization and/or embodiment allowing a processor to affect the storage and/or retrieval of information is regarded as memory 2829.

However, memory is a fungible technology and resource, thus, any number of memory embodiments may be employed in lieu of or in concert with one another. It is to be understood that the CDDP controller and/or a computer systemization may employ various forms of memory 2829. For example, a computer systemization may be configured wherein the operation of on-chip CPU memory (e.g., registers), RAM, ROM, and any other storage devices are provided by a paper punch tape or paper punch card mechanism; however, such an embodiment would result in an extremely slow rate of operation. In a typical configuration, memory 2829 will include ROM 2806, RAM 2805, and a storage device 2814. A storage device 2814 may be any conventional computer system storage. Storage devices may include a drum; a (fixed and/or removable) magnetic disk drive; a magneto-optical drive; an optical drive (i.e., Blueray, CD ROM/RAM/Recordable (R)/ReWritable (RW), DVD R/RW, HD DVD R/RW etc.); an array of devices (e.g., Redundant Array of Independent Disks (RAID)); solid state memory devices (USB memory, solid state drives (SSD), etc.); other processor-readable storage mediums; and/or other devices of the like. Thus, a computer systemization generally requires and makes use of memory.

Component Collection

[00203] The memory 2829 may contain a collection of program and/or database components and/or data such as, but not limited to: operating system component(s) 2815 (operating system); information server component(s) 2816 (information server); user interface component(s) 2817 (user interface); Web browser component(s) 2818 (Web browser); database(s) 2819; mail server component(s) 2821; mail client component(s) 2822; cryptographic server component(s) 2820 (cryptographic server);

the CDDP component(s) 2835; and/or the like (i.e., collectively a component collection). These components may be stored and accessed from the storage devices and/or from storage devices accessible through an interface bus. Although non-conventional program components such as those in the component collection, typically, are stored in a local storage device 2814, they may also be loaded and/or stored in memory such as: peripheral devices, RAM, remote storage facilities through a communications network, ROM, various forms of memory, and/or the like.

Operating System

[00204] The operating system component 2815 is an executable program component facilitating the operation of the CDDP controller. Typically, the operating system facilitates access of I/O, network interfaces, peripheral devices, storage devices, and/or the like. The operating system may be a highly fault tolerant, scalable, and secure system such as: Apple Macintosh OS X (Server); AT&T Plan 9; Be OS; Unix and Unix-like system distributions (such as AT&T's UNIX; Berkley Software Distribution (BSD) variations such as FreeBSD, NetBSD, OpenBSD, and/or the like; Linux distributions such as Red Hat, Ubuntu, and/or the like); and/or the like operating systems. However, more limited and/or less secure operating systems also may be employed such as Apple Macintosh OS, IBM OS/2, Microsoft DOS, Microsoft Windows 2000/2003/3.1/95/98/CE/Millenium/NT/Vista/XP (Server), Palm OS, and/or the like. An operating system may communicate to and/or with other components in a component collection, including itself, and/or the like. Most frequently, the operating system communicates with other program components, user interfaces, and/or the like. For example, the operating system may contain, communicate, generate, obtain, and/or

provide program component, system, user, and/or data communications, requests, and/or responses. The operating system, once executed by the CPU, may enable the interaction with communications networks, data, I/O, peripheral devices, program components, memory, user input devices, and/or the like. The operating system may provide communications protocols that allow the CDDP controller to communicate with other entities through a communications network 2813. Various communication protocols may be used by the CDDP controller as a subcarrier transport mechanism for interaction, such as, but not limited to: multicast, TCP/IP, UDP, unicast, and/or the like.

Information Server

[00205] An information server component 2816 is a stored program component that is executed by a CPU. The information server may be a conventional Internet information server such as, but not limited to Apache Software Foundation's Apache, Microsoft's Internet Information Server, and/or the like. The information server may allow for the execution of program components through facilities such as Active Server Page (ASP), ActiveX, (ANSI) (Objective-) C (++), C# and/or .NET, Common Gateway Interface (CGI) scripts, dynamic (D) hypertext markup language (HTML), FLASH, Java, JavaScript, Practical Extraction Report Language (PERL), Hypertext Pre-Processor (PHP), pipes, Python, wireless application protocol (WAP), WebObjects, and/or the like. The information server may support secure communications protocols such as, but not limited to, File Transfer Protocol (FTP); HyperText Transfer Protocol (HTTP); Secure Hypertext Transfer Protocol (HTTPS), Secure Socket Layer (SSL), messaging protocols (e.g., America Online (AOL) Instant Messenger (AIM), Application Exchange (APEX),

ICQ, Internet Relay Chat (IRC), Microsoft Network (MSN) Messenger Service, Presence and Instant Messaging Protocol (PRIM), Internet Engineering Task Force's (IETF's) Session Initiation Protocol (SIP), SIP for Instant Messaging and Presence Leveraging Extensions (SIMPLE), open XML-based Extensible Messaging and Presence Protocol (XMPP) (i.e., Jabber or Open Mobile Alliance's (OMA's) Instant Messaging and Presence Service (IMPS)), Yahoo! Instant Messenger Service, and/or the like. The information server provides results in the form of Web pages to Web browsers, and allows for the manipulated generation of the Web pages through interaction with other program components. After a Domain Name System (DNS) resolution portion of an HTTP request is resolved to a particular information server, the information server resolves requests for information at specified locations on the CDDP controller based on the remainder of the HTTP request. For example, a request such as http://123.124.125.126/myInformation.html might have the IP portion of the request "123.124.125.126" resolved by a DNS server to an information server at that IP address; that information server might in turn further parse the http request for the "/myInformation.html" portion of the request and resolve it to a location in memory containing the information "myInformation.html." Additionally, other information serving protocols may be employed across various ports, e.g., FTP communications across port 21, and/or the like. An information server may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the information server communicates with the CDDP database 2819, operating systems, other program components, user interfaces, Web browsers, and/or the like.

[00206] Access to the CDDP database may be achieved through a number of database bridge mechanisms such as through scripting languages as enumerated below (e.g., CGI) and through inter-application communication channels as enumerated below (e.g., CORBA, WebObjects, etc.). Any data requests through a Web browser are parsed through the bridge mechanism into appropriate grammars as required by the CDDP. In one embodiment, the information server would provide a Web form accessible by a Web browser. Entries made into supplied fields in the Web form are tagged as having been entered into the particular fields, and parsed as such. The entered terms are then passed along with the field tags, which act to instruct the parser to generate queries directed to appropriate tables and/or fields. In one embodiment, the parser may generate queries in standard SQL by instantiating a search string with the proper join/select commands based on the tagged text entries, wherein the resulting command is provided over the bridge mechanism to the CDDP as a query. Upon generating query results from the query, the results are passed over the bridge mechanism, and may be parsed for formatting and generation of a new results Web page by the bridge mechanism. Such a new results Web page is then provided to the information server, which may supply it to the requesting Web browser.

[00207] Also, an information server may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses.

User Interface

[00208] Computer interfaces in some respects are similar to automobile operation interfaces. Automobile operation interface elements such as steering wheels, gearshifts,

and speedometers facilitate the access, operation, and display of automobile resources, and status. Computer interaction interface elements such as check boxes, cursors, menus, scrollers, and windows (collectively and commonly referred to as widgets) similarly facilitate the access, capabilities, operation, and display of data and computer hardware and operating system resources, and status. Operation interfaces are commonly called user interfaces. Graphical user interfaces (GUIs) such as the Apple Macintosh Operating System's Aqua, IBM's OS/2, Microsoft's Windows 2000/2003/3.1/95/98/CE/Millenium/NT/XP/Vista/7 (i.e., Aero), Unix's X-Windows (e.g., which may include additional Unix graphic interface libraries and layers such as K Desktop Environment (KDE), mythTV and GNU Network Object Model Environment (GNOME)), web interface libraries (e.g., ActiveX, AJAX, (D)HTML, FLASH, Java, JavaScript, etc. interface libraries such as, but not limited to, Dojo, jQuery(UI), MooTools, Prototype, script.aculo.us, SWFObject, Yahoo! User Interface, any of which may be used and) provide a baseline and means of accessing and displaying information graphically to users.

[00209] A user interface component 2817 is a stored program component that is executed by a CPU. The user interface may be a conventional graphic user interface as provided by, with, and/or atop operating systems and/or operating environments such as already discussed. The user interface may allow for the display, execution, interaction, manipulation, and/or operation of program components and/or system facilities through textual and/or graphical facilities. The user interface provides a facility through which users may affect, interact, and/or operate a computer system. A user interface may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the user

interface communicates with operating systems, other program components, and/or the like. The user interface may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses.

Web Browser

[00210] A Web browser component 2818 is a stored program component that is executed by a CPU. The Web browser may be a conventional hypertext viewing application such as Microsoft Internet Explorer or Netscape Navigator. Secure Web browsing may be supplied with 128bit (or greater) encryption by way of HTTPS, SSL, and/or the like. Web browsers allowing for the execution of program components through facilities such as ActiveX, AJAX, (D)HTML, FLASH, Java, JavaScript, web browser plug-in APIs (e.g., FireFox, Safari Plug-in, and/or the like APIs), and/or the like. Web browsers and like information access tools may be integrated into PDAs, cellular telephones, and/or other mobile devices. A Web browser may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the Web browser communicates with information servers, operating systems, integrated program components (e.g., plug-ins), and/or the like; e.g., it may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses. Also, in place of a Web browser and information server, a combined application may be developed to perform similar operations of both. The combined application would similarly affect the obtaining and the provision of information to users, user agents,

and/or the like from the CDDP enabled nodes. The combined application may be nugatory on systems employing standard Web browsers.

Mail Server

[00211] A mail server component 2821 is a stored program component that is executed by a CPU 2803. The mail server may be a conventional Internet mail server such as, but not limited to sendmail, Microsoft Exchange, and/or the like. The mail server may allow for the execution of program components through facilities such as ASP, ActiveX, (ANSI) (Objective-) C (++), C# and/or .NET, CGI scripts, Java, JavaScript, PERL, PHP, pipes, Python, WebObjects, and/or the like. The mail server may support communications protocols such as, but not limited to: Internet message access protocol (IMAP), Messaging Application Programming Interface (MAPI)/Microsoft Exchange, post office protocol (POP3), simple mail transfer protocol (SMTP), and/or the like. The mail server can route, forward, and process incoming and outgoing mail messages that have been sent, relayed and/or otherwise traversing through and/or to the CDDP.

[00212] Access to the CDDP mail may be achieved through a number of APIs offered by the individual Web server components and/or the operating system.

[00213] Also, a mail server may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, information, and/or responses.

Mail Client

[00214] A mail client component 2822 is a stored program component that is executed by a CPU 2803. The mail client may be a conventional mail viewing application such as Apple Mail, Microsoft Entourage, Microsoft Outlook, Microsoft Outlook Express, Mozilla, Thunderbird, and/or the like. Mail clients may support a number of transfer protocols, such as: IMAP, Microsoft Exchange, POP3, SMTP, and/or the like. A mail client may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the mail client communicates with mail servers, operating systems, other mail clients, and/or the like; e.g., it may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, information, and/or responses. Generally, the mail client provides a facility to compose and transmit electronic mail messages.

Cryptographic Server

[00215] A cryptographic server component 2820 is a stored program component that is executed by a CPU 2803, cryptographic processor 2826, cryptographic processor interface 2827, cryptographic processor device 2828, and/or the like. Cryptographic processor interfaces will allow for expedition of encryption and/or decryption requests by the cryptographic component; however, the cryptographic component, alternatively, may run on a conventional CPU. The cryptographic component allows for the encryption and/or decryption of provided data. The cryptographic component allows for both symmetric and asymmetric (e.g., Pretty Good Protection (PGP)) encryption and/or decryption. The cryptographic component may employ cryptographic techniques such

as, but not limited to: digital certificates (e.g., X.509 authentication framework), digital signatures, dual signatures, enveloping, password access protection, public key management, and/or the like. The cryptographic component will facilitate numerous (encryption and/or decryption) security protocols such as, but not limited to: checksum, Data Encryption Standard (DES), Elliptical Curve Encryption (ECC), International Data Encryption Algorithm (IDEA), Message Digest 5 (MD5, which is a one way hash operation), passwords, Rivest Cipher (RC5), Rijndael, RSA (which is an Internet encryption and authentication system that uses an algorithm developed in 1977 by Ron Rivest, Adi Shamir, and Leonard Adleman), Secure Hash Algorithm (SHA), Secure Socket Layer (SSL), Secure Hypertext Transfer Protocol (HTTPS), and/or the like. Employing such encryption security protocols, the CDDP may encrypt all incoming and/or outgoing communications and may serve as node within a virtual private network (VPN) with a wider communications network. The cryptographic component facilitates the process of "security authorization" whereby access to a resource is inhibited by a security protocol wherein the cryptographic component effects authorized access to the secured resource. In addition, the cryptographic component may provide unique identifiers of content, e.g., employing and MD5 hash to obtain a unique signature for an digital audio file. A cryptographic component may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. The cryptographic component supports encryption schemes allowing for the secure transmission of information across a communications network to enable the CDDP component to engage in secure transactions if so desired. The cryptographic component facilitates the secure accessing of resources on the CDDP and facilitates the access of secured resources on remote systems; i.e., it may act as a client

and/or server of secured resources. Most frequently, the cryptographic component communicates with information servers, operating systems, other program components, and/or the like. The cryptographic component may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses.

The CDDP Database

[00216] The CDDP database component 2819 may be embodied in a database and its stored data. The database is a stored program component, which is executed by the CPU; the stored program component portion configuring the CPU to process the stored data. The database may be a conventional, fault tolerant, relational, scalable, secure database such as Oracle or Sybase. Relational databases are an extension of a flat file. Relational databases consist of a series of related tables. The tables are interconnected via a key field. Use of the key field allows the combination of the tables by indexing against the key field; i.e., the key fields act as dimensional pivot points for combining information from various tables. Relationships generally identify links maintained between tables by matching primary keys. Primary keys represent fields that uniquely identify the rows of a table in a relational database. More precisely, they uniquely identify rows of a table on the "one" side of a one-to-many relationship.

[00217] Alternatively, the CDDP database may be implemented using various standard data-structures, such as an array, hash, (linked) list, struct, structured text file (e.g., XML), table, and/or the like. Such data-structures may be stored in memory and/or in (structured) files. In another alternative, an object-oriented database may be used, such as Frontier, ObjectStore, Poet, Zope, and/or the like. Object databases can

include a number of object collections that are grouped and/or linked together by common attributes; they may be related to other object collections by some common attributes. Object-oriented databases perform similarly to relational databases with the exception that objects are not just pieces of data but may have other types of capabilities encapsulated within a given object. If the CDDP database is implemented as a data-structure, the use of the CDDP database 2819 may be integrated into another component such as the CDDP component 2835. Also, the database may be implemented as a mix of data structures, objects, and relational structures. Databases may be consolidated and/or distributed in countless variations through standard data processing techniques. Portions of databases, e.g., tables, may be exported and/or imported and thus decentralized and/or integrated.

[00218] In one embodiment, the database component 2819 includes several tables 2819a-k. A User Accounts table 2219a may include fields such as, but not limited to: user_ID, user_password, user_device, user_IP, user_entity, user_media, user_search, user_socialConnections, user_following, user_followed, and/or the like. The User table may support and/or track multiple entity accounts on a CDDP. A metadata table 2219b may include fields such as, but not limited to: track_ID, media_type, media_name, media_size, media_genre, media_album, media_artist, media_user, media_length, media_ranking, media_year, and/or the like. A search table 2219c may include fields such as, but not limited to: search_ID, search_userID, search_content, search_time, search_socialConnection, search_result, and/or the like. A social table 2219d may include fields such as, but not limited to: social_ID, social_name, social_connection, social_searchHistory, social_medialData, and/or the like. A media table 2219e may include fields such as, but not limited to: user_ID, track_ID, media_type, and/or the

like. A reporting table 2219f may include fields such as, but not limited to: track_ID, track_playcount, track_royalty, track_added_date, statement_ID, and/or the like. A playlist table 2219g may include fields such as, but not limited to: user_ID, track_ID, playlist_pubdate, playlist_share, and/or the like. The core may include additional databases and/or tables. A log table 2219h may include fields such as, but not limited to: log_ID, log_user_ID, log_deviceID, log_date, log_type, and/or the like. A system model layout table 2219i may include fields such as, but not limited to: layout_ID, bandwidth, and/or the like. A service table 2219j may include fields such as, but not limited to: notification_rule, threshold, log source, resource requirements, priority, and/or the like. A Client Account table 2219k may include fields such as, but not limited to: client_ID, client_account, client_name, client_password, client_permissions, and/or the like.

[00219] In one embodiment, the CDDP database may interact with other database systems. For example, employing a distributed database system, queries and data access by search CDDP component may treat the combination of the CDDP database, an integrated data security layer database as a single database entity.

[00220] In one embodiment, user programs may contain various user interface primitives, which may serve to update the CDDP. Also, various accounts may require custom database tables depending upon the environments and the types of clients the CDDP may need to serve. It should be noted that any unique fields may be designated as a key field throughout. In an alternative embodiment, these tables have been decentralized into their own databases and their respective database controllers (i.e., individual database controllers for each of the above tables). Employing standard data

processing techniques, one may further distribute the databases over several computer systemizations and/or storage devices. Similarly, configurations of the decentralized database controllers may be varied by consolidating and/or distributing the various database components 2819a-k. The CDDP may be configured to keep track of various settings, inputs, and parameters via database controllers.

[00221] The CDDP database may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the CDDP database communicates with the CDDP component, other program components, and/or the like. The database may contain, retain, and provide information regarding other nodes and data.

The CDDPs

[00222] The CDDP component 2835 is a stored program component that is executed by a CPU. In one embodiment, the CDDP component incorporates any and/or all combinations of the aspects of the CDDP that was discussed in the previous figures. As such, the CDDP affects accessing, obtaining and the provision of information, services, transactions, and/or the like across various communications networks.

[00223] The CDDP may transform inputs via CDDP components into outputs and/or the like and use of the CDDP. In one embodiment, the CDDP component 2235 takes inputs (e.g., content seed, play count data, event data, triggers, and/or the like) etc., and transforms the inputs via various components (e.g., discovery component, play count reporting component, license verification component, and/or the like), into outputs (e.g., search results, royalties, license verification, and/or the like).

[00224] The CDDP component enabling access of information between nodes may be developed by employing standard development tools and languages such as, but not limited to: Apache components, Assembly, ActiveX, binary executables, (ANSI) (Objective-) C (++), C# and/or .NET, database adapters, CGI scripts, Java, JavaScript, mapping tools, procedural and object oriented development tools, PERL, PHP, Python, shell scripts, SQL commands, web application server extensions, web development environments and libraries (e.g., Microsoft's ActiveX; Adobe AIR, FLEX & FLASH; AJAX; (D)HTML; Dojo, Java; JavaScript; jQuery(UI); MooTools; Prototype; script.aculo.us; Simple Object Access Protocol (SOAP); SWFObject; Yahoo! User Interface; and/or the like), WebObjects, and/or the like. In one embodiment, the CDDP server employs a cryptographic server to encrypt and decrypt communications. The CDDP component may communicate to and/or with other components in a component collection, including itself, and/or facilities of the like. Most frequently, the CDDP component communicates with the CDDP database, operating systems, other program components, and/or the like. The CDDP may contain, communicate, generate, obtain, and/or provide program component, system, user, and/or data communications, requests, and/or responses.

Distributed CDDPs

[00225] The structure and/or operation of any of the CDDP node controller components may be combined, consolidated, and/or distributed in any number of ways to facilitate development and/or deployment. Similarly, the component collection may be combined in any number of ways to facilitate deployment and/or development. To

accomplish this, one may integrate the components into a common code base or in a facility that can dynamically load the components on demand in an integrated fashion.

[00226] The component collection may be consolidated and/or distributed in countless variations through standard data processing and/or development techniques. Multiple instances of any one of the program components in the program component collection may be instantiated on a single node, and/or across numerous nodes to improve performance through load-balancing and/or data-processing techniques. Furthermore, single instances may also be distributed across multiple controllers and/or storage devices; e.g., databases. All program component instances and controllers working in concert may do so through standard data processing communication techniques.

[00227] The configuration of the CDDP controller will depend on the context of system deployment. Factors such as, but not limited to, the budget, capacity, location, and/or use of the underlying hardware resources may affect deployment requirements and configuration. Regardless of if the configuration results in more consolidated and/or integrated program components, results in a more distributed series of program components, and/or results in some combination between a consolidated and distributed configuration, data may be communicated, obtained, and/or provided. Instances of components consolidated into a common code base from the program component collection may communicate, obtain, and/or provide data. This may be accomplished through intra-application data processing communication techniques such as, but not limited to: data referencing (e.g., pointers), internal messaging, object

instance variable communication, shared memory space, variable passing, and/or the like.

[00228] If component collection components are discrete, separate, and/or external to one another, then communicating, obtaining, and/or providing data with and/or to other component components may be accomplished through inter-application data processing communication techniques such as, but not limited to: Application Program Interfaces (API) information passage; (distributed) Component Object Model ((D)COM), (Distributed) Object Linking and Embedding ((D)OLE), and/or the like), Common Object Request Broker Architecture (CORBA), Jini local and remote application program interfaces, JavaScript Object Notation (JSON), Remote Method Invocation (RMI), SOAP, process pipes, shared files, and/or the like. Messages sent between discrete component components for inter-application communication or within memory spaces of a singular component for intra-application communication may be facilitated through the creation and parsing of a grammar. A grammar may be developed by using development tools such as lex, yacc, XML, and/or the like, which allow for grammar generation and parsing capabilities, which in turn may form the basis of communication messages within and between components.

[00229] For example, a grammar may be arranged to recognize the tokens of an HTTP post command, e.g.:

```
w3c -post http://... Value1
```

[00230] where Value1 is discerned as being a parameter because "http://" is part of the grammar syntax, and what follows is considered part of the post value. Similarly, with such a grammar, a variable "Value1" may be inserted into an "http://" post

command and then sent. The grammar syntax itself may be presented as structured data that is interpreted and/or otherwise used to generate the parsing mechanism (e.g., a syntax description text file as processed by lex, yacc, etc.). Also, once the parsing mechanism is generated and/or instantiated, it itself may process and/or parse structured data such as, but not limited to: character (e.g., tab) delineated text, HTML, structured text streams, XML, and/or the like structured data. In another embodiment, inter-application data processing protocols themselves may have integrated and/or readily available parsers (e.g., JSON, SOAP, and/or like parsers) that may be employed to parse (e.g., communications) data. Further, the parsing grammar may be used beyond message parsing, but may also be used to parse: databases, data collections, data stores, structured data, and/or the like. Again, the desired configuration will depend upon the context, environment, and requirements of system deployment.

[00231] For example, in some implementations, the CDDP controller may be executing a PHP script implementing a Secure Sockets Layer ("SSL") socket server via the information sherver, which listens to incoming communications on a server port to which a client may send data, e.g., data encoded in JSON format. Upon identifying an incoming communication, the PHP script may read the incoming message from the client device, parse the received JSON-encoded text data to extract information from the JSON-encoded text data into PHP script variables, and store the data (e.g., client identifying information, etc.) and/or extracted information in a relational database accessible using the Structured Query Language ("SQL"). An exemplary listing, written substantially in the form of PHP/SQL commands, to accept JSON-encoded input data from a client device via a SSL connection, parse the data to extract variables, and store the data to a database, is provided below:

```
<?PHP
header('Content-Type: text/plain');

// set ip address and port to listen to for incoming data
$address = '192.168.0.100';
$port = 255;

// create a server-side SSL socket, listen for/accept incoming communication
$sock = socket_create(AF_INET, SOCK_STREAM, 0);
socket_bind($sock, $address, $port) or die('Could not bind to address');
socket_listen($sock);
$client = socket_accept($sock);

// read input data from client device in 1024 byte blocks until end of message
do {
          $input = "";
          $input = socket_read($client, 1024);
          $data .= $input;
} while($input != "");

// parse data to extract variables
$obj = json_decode($data, true);

// store input data in a database
mysql_connect("201.408.185.132",$DBserver,$password); // access database server
mysql_select("CLIENT_DB.SQL"); // select database to append
mysql_query("INSERT INTO UserTable (transmission)
VALUES ($data)"); // add data to UserTable table in  a CLIENT database
mysql_close("CLIENT_DB.SQL"); // close connection to database
?>
```

[00232] Also, the following resources may be used to provide example embodiments regarding SOAP parser implementation:

http://www.xav.com/perl/site/lib/SOAP/Parser.html
http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.IBMDI.doc/referenceguide295.htm

[00233] and other parser implementations:

http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/index.jsp?topic=/com.ibm.IBMDI.doc/referenceguide259.htm

[00234] all of which are hereby expressly incorporated by reference.

[00235] In order to address various issues and advance the art, the entirety of this application for CONTENT DISCOVERY AND DELIVERY PLATFORM APPARATUSES, METHODS AND SYSTEMS (including the Cover Page, Title, Headings, Field, Background, Summary, Brief Description of the Drawings, Detailed Description, Claims,

Abstract, FIGUREs, Appendices, and otherwise) shows, by way of illustration, various embodiments in which the claimed innovations may be practiced. The advantages and features of the application are of a representative sample of embodiments only, and are not exhaustive and/or exclusive. They are presented only to assist in understanding and teach the claimed principles. It should be understood that they are not representative of all claimed innovations. As such, certain aspects of the disclosure have not been discussed herein. That alternate embodiments may not have been presented for a specific portion of the innovations or that further undescribed alternate embodiments may be available for a portion is not to be considered a disclaimer of those alternate embodiments. It will be appreciated that many of those undescribed embodiments incorporate the same principles of the innovations and others are equivalent. Thus, it is to be understood that other embodiments may be utilized and functional, logical, operational, organizational, structural and/or topological modifications may be made without departing from the scope and/or spirit of the disclosure. As such, all examples and/or embodiments are deemed to be non-limiting throughout this disclosure. Also, no inference should be drawn regarding those embodiments discussed herein relative to those not discussed herein other than it is as such for purposes of reducing space and repetition. For instance, it is to be understood that the logical and/or topological structure of any combination of any program components (a component collection), other components and/or any present feature sets as described in the figures and/or throughout are not limited to a fixed operating order and/or arrangement, but rather, any disclosed order is exemplary and all equivalents, regardless of order, are contemplated by the disclosure. Furthermore, it is to be understood that such features are not limited to serial execution, but rather, any number of threads, processes,

services, servers, and/or the like that may execute asynchronously, concurrently, in parallel, simultaneously, synchronously, and/or the like are contemplated by the disclosure. As such, some of these features may be mutually contradictory, in that they cannot be simultaneously present in a single embodiment. Similarly, some features are applicable to one aspect of the innovations, and inapplicable to others. In addition, the disclosure includes other innovations not presently claimed. Applicant reserves all rights in those presently unclaimed innovations including the right to claim such innovations, file additional applications, continuations, continuations in part, divisions, and/or the like thereof. As such, it should be understood that advantages, embodiments, examples, functional, features, logical, operational, organizational, structural, topological, and/or other aspects of the disclosure are not to be considered limitations on the disclosure as defined by the claims or limitations on equivalents to the claims. It is to be understood that, depending on the particular needs and/or characteristics of a CDDP individual and/or enterprise user, database configuration and/or relational model, data type, data transmission and/or network framework, syntax structure, and/or the like, various embodiments of the CDDP, may be implemented that enable a great deal of flexibility and customization. For example, aspects of the CDDP may be adapted for p2p music discovery and delivery platform. While various embodiments and discussions of the CDDP have been directed to multimedia applications, however, it is to be understood that the embodiments described herein may be readily configured and/or customized for a wide variety of other applications and/or implementations.

CLAIMS

What is claimed is:

1. A non-local content caching processor-implemented method, comprising:

obtaining a universally resolvable list of content items on a local client;

identifying a non-local item from the universally resolvable list of content items that is absent on the local client;

generating a local cache request for the identified non-local item having an associated universally resolvable content identifier;

transmitting the generated local cache request to a universally resolvable content server;

receiving, in response to the transmitted request, a universally resolvable content item corresponding to the local cache request; and

marking the requested item as temporary and locally available upon receiving the content item.

2. The method of claim 1, wherein the server queries a universally resolvable content database to retrieve the universally resolvable content item.

3. The method of claim 1, wherein identifying the non-local item includes conducting a search for the non-local item on the local client.

4. The method of claim 1, wherein the locally available content item is engageable as it is partially downloaded.

5. The method of claim 1, wherein the locally available content item is engageable as it is fully downloaded.

6. The method of claim 1, wherein the universally resolvable content identifier is a track identifier (ID).

7. The method of claim 6, wherein identifying the non-local item includes comparing track identifiers associated local items in the local client to the obtained list of track identifiers.

8. The method of claim 1, wherein the local cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

9. The method of claim 1, further comprising:

storing the received universally resolvable content item corresponding to the local cache request in a cache in the local client.

10. The method of claim 1, further comprising:

deleting one or more content items in the cache local client prior to the storing.

11. The method of claim 10, wherein the content items are deleted based on last hit time.

12. The method of claim 10, wherein the content items are deleted based on content item size.

13. The method of claim 10, wherein the content items are deleted based on priority.

14. The method of claim 13, wherein the priority is determined based on user preference.

15. The method of claim 10, wherein the content items are deleted based on at least one of play count and creation time.

16. The method of claim 1, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

17. The method of claim 1, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

18. A non-local content item caching system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain a universally resolvable list of content items on a local client;

identify a non-local item from the universally resolvable list of content items that is absent on the local client;

generate a local cache request for the identified non-local item having an associated universally resolvable content identifier;

transmit the generated local cache request to a universally resolvable content server;

receive, in response to the transmitted request, a universally resolvable content item corresponding to the local cache request; and

mark the requested item as temporary and locally available upon receiving the content item.

19. The system of claim 18, wherein the server queries a universally resolvable content database to retrieve the universally resolvable content item.

20. The system of claim 18, wherein identifying the non-local item includes conducting a search for the non-local item on the local client.

21. The system of claim 18, wherein the locally available content item is engageable as it is partially downloaded.

22. The system of claim 18, wherein the locally available content item is engageable as it is fully downloaded.

23. The system of claim 18, wherein the universally resolvable content identifier is a track identifier (ID).

24. The system of claim 23, wherein identifying the non-local item includes comparing track identifiers associated local items in the local client to the obtained list of track identifiers.

25. The system of claim 18, wherein the local cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

26. The system of claim 18, wherein the processor issues further instructions to:

store the received universally resolvable content item corresponding to the local cache request in a cache in the local client.

27. The system of claim 18, wherein the processor issues further instructions to:

delete one or more content items in the cache local client prior to the storing.

28. The system of claim 27, wherein the content items are deleted based on last hit time.

29. The system of claim 27, wherein the content items are deleted based on content item size.

30. The system of claim 27, wherein the content items are deleted based on priority.

31. The system of claim 27, wherein the priority is determined based on user preference.

32. The system of claim 27 wherein the content items are deleted based on at least one of play count and creation time.

33. The system of claim 18, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

34. The system of claim 18, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

35. A non-local content caching processor-readable medium storing processor-issuable instructions, comprising:

obtain a universally resolvable list of content items on a local client;

identify a non-local item from the universally resolvable list of content items that is absent on the local client;

generate a local cache request for the identified non-local item having an associated universally resolvable content identifier;

transmit the generated local cache request to a universally resolvable content server;

receive, in response to the transmitted request, a universally resolvable content item corresponding to the local cache request; and

mark the requested item as temporary and locally available upon receiving the content item.

36. The medium of claim 35, wherein the server queries a universally resolvable content database to retrieve the universally resolvable content item.

37. The medium of claim 35, wherein identifying the non-local item includes conducting a search for the non-local item on the local client.

38. The medium of claim 35, wherein the locally available content item is engageable as it is partially downloaded.

39. The medium of claim 35, wherein the locally available content item is engageable as it is fully downloaded.

40. The medium of claim 35, wherein the universally resolvable content identifier is a track identifier (ID).

41. The medium of claim 35, wherein identifying the non-local item includes comparing track identifiers associated local items in the local client to the obtained list of track identifiers.

42. The medium of claim 35, wherein the local cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

43. The medium of claim 35, wherein the processor issues further instructions to:

store the received universally resolvable content item corresponding to the local cache request in a cache in the local client.

44. The medium of claim 35, wherein the processor issues further instructions to:

delete one or more content items in the cache local client prior to the storing.

45. The medium of claim 44, wherein the content items are deleted based on last hit time.

46. The medium of claim 44, wherein the content items are deleted based on content item size.

47. The medium of claim 44, wherein the content items are deleted based on priority.

48. The medium of claim 47, wherein the priority is determined based on user preference.

49. The medium of claim 44 wherein the content items are deleted based on at least one of play count and creation time.

50. The medium of claim 35, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

51. The medium of claim 35, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

52. A non-local content item caching apparatus, comprising:

a memory:

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain a universally resolvable list of content items on a local client;

identify a non-local item from the universally resolvable list of content items that is absent on the local client;

generate a local cache request for the identified non-local item having an associated universally resolvable content identifier;

transmit the generated local cache request to a universally resolvable content server;

receive, in response to the transmitted request, a universally resolvable content item corresponding to the local cache request; and

mark the requested item as temporary and locally available upon receiving the content item.

53. The apparatus of claim 52, wherein the server queries a universally resolvable content database to retrieve the universally resolvable content item.

54. The apparatus of claim 52, wherein identifying the non-local item includes conducting a search for the non-local item on the local client.

55. The apparatus of claim 52, wherein the locally available content item is engageable as it is partially downloaded.

56. The apparatus of claim 52, wherein the locally available content item is engageable as it is fully downloaded.

57. The apparatus of claim 52, wherein the universally resolvable content identifier is a track identifier (ID).

58. The apparatus of claim 52, wherein identifying the non-local item includes comparing track identifiers associated local items in the local client to the obtained list of track identifiers.

59. The apparatus of claim 52, wherein the local cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

60. The apparatus of claim 52, wherein the processor issues further instructions to:

store the received universally resolvable content item corresponding to the local cache request in a cache in the local client.

61. The apparatus of claim 52, wherein the processor issues further instructions to:

delete one or more content items in the cache local client prior to the storing.

62. The apparatus of claim 61, wherein the content items are deleted based on last hit time.

63. The apparatus of claim 61, wherein the content items are deleted based on content item size.

64. The apparatus of claim 61, wherein the content items are deleted based on priority.

65. The apparatus of claim 64, wherein the priority is determined based on user preference.

66. The apparatus of claim 61 wherein the content items are deleted based on at least one of play count and creation time.

67. The system of claim 52, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

68. The system of claim 52, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

69. A non-local content caching processor-implemented method, comprising:

providing a universally resolvable list of content items to a client;

obtaining an identification of a non-local item from the universally resolvable list of content items that is absent from the client;

obtaining a cache request for the identified non-local item having an associated universally resolvable content identifier;

providing, in response to the obtained request, a universally resolvable content item corresponding to the cache request; and

updating the requested item as temporary and locally available.

70. The method of claim 69, further comprising querying a universally resolvable content database to retrieve the universally resolvable content item.

71. The method of claim 69, wherein obtaining the identification of the non-local item includes conducting a search for the non-local item on the local client.

72. The method of claim 69, wherein the locally available content item is engageable as it is partially downloaded.

73. The method of claim 69, wherein the locally available content item is engageable as it is fully downloaded.

74. The method of claim 69, wherein the universally resolvable content identifier is a track identifier (ID).

75. The method of claim 74, wherein obtaining the identification of the non-local item includes comparing track identifiers associated local items in the local client to the obtained list of track identifiers.

76. The method of claim 69, wherein the cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

77. The method of claim 69, further comprising:

providing the universally resolvable content item corresponding to the cache request for storage in a cache in the client.

78. The method of claim 77, further comprising:

obtaining an indication of deletion of one or more content items in the cache of the client prior to providing the content item for storage.

79. The method of claim 78 wherein the content items are deleted based on last hit time.

80. The method of claim 78, wherein the content items are deleted based on content item size.

81. The method of claim 78, wherein the content items are deleted based on priority.

82. The method of claim 81, wherein the priority is determined based on user preference.

83. The method of claim 78, wherein the content items are deleted based on at least one of play count and creation time.

84. The method of claim 69, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

85. The method of claim 69, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

86. A non-local content item caching system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide a universally resolvable list of content items to a client;

obtain an identification of a non-local item from the universally resolvable list of content items that is absent from the client;

obtain a cache request for the identified non-local item having an associated universally resolvable content identifier;

provide, in response to the obtained request, a universally resolvable content item corresponding to the cache request; and

update the requested item as temporary and locally available.

87. The system of claim 86, wherein the processor issues further instructions to query a universally resolvable content database to retrieve the universally resolvable content item.

88. The system of claim 86, wherein the processor issues further instructions to obtain the identification of the non-local item includes conducting a search for the non-local item on the local client.

89. The system of claim 86, wherein the locally available content item is engageable as it is partially downloaded.

90. The system of claim 86, wherein the locally available content item is engageable as it is fully downloaded.

91. The system of claim 86, wherein the universally resolvable content identifier is a track identifier (ID).

92. The system of claim 91, wherein the instructions to obtain the identification of the non-local item includes instructions to compare track identifiers associated local items in the local client to the obtained list of track identifiers.

93. The system of claim 86, wherein the cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

94. The system of claim 86, wherein the processor issues further instructions to:

provide the universally resolvable content item corresponding to the cache request for storage in a cache in the client.

95. The system of claim 94, wherein the processor issues further instructions to:

obtaining an indication of deletion of one or more content items in the cache of the client prior to providing the content item for storage.

96. The system of claim 95 wherein the content items are deleted based on last hit time.

97. The system of claim 95, wherein the content items are deleted based on content item size.

98. The system of claim 95, wherein the content items are deleted based on priority.

99. The system of claim 81, wherein the priority is determined based on user preference.

100. The system of claim 95, wherein the content items are deleted based on at least one of play count and creation time.

101. The system of claim 86, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

102. The system of claim 86, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

103. A non-local content caching processor-readable medium storing processor-issuable instructions, comprising:

provide a universally resolvable list of content items to a client;

obtain an identification of a non-local item from the universally resolvable list of content items that is absent from the client;

obtain a cache request for the identified non-local item having an associated universally resolvable content identifier;

provide, in response to the obtained request, a universally resolvable content item corresponding to the cache request; and

update the requested item as temporary and locally available.

104. The medium of claim 103, wherein the processor issues further instructions to query a universally resolvable content database to retrieve the universally resolvable content item.

105. The medium of claim 103, wherein the processor issues further instructions to obtain the identification of the non-local item includes conducting a search for the non-local item on the local client.

106. The medium of claim 103, wherein the locally available content item is engageable as it is partially downloaded.

107. The medium of claim 103, wherein the locally available content item is engageable as it is fully downloaded.

108. The medium of claim 103, wherein the universally resolvable content identifier is a track identifier (ID).

109. The medium of claim 108, wherein the instructions to obtain the identification of the non-local item includes instructions to compare track identifiers associated local items in the local client to the obtained list of track identifiers.

110. The medium of claim 103, wherein the cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

111. The medium of claim 103, wherein the processor issues further instructions to:

provide the universally resolvable content item corresponding to the cache request for storage in a cache in the client.

112. The medium of claim 111, wherein the processor issues further instructions to:

obtaining an indication of deletion of one or more content items in the cache of the client prior to providing the content item for storage.

113. The medium of claim 112 wherein the content items are deleted based on last hit time.

114. The medium of claim 112, wherein the content items are deleted based on content item size.

115. The medium of claim 112, wherein the content items are deleted based on priority.

116. The medium of claim 115, wherein the priority is determined based on user preference.

117. The medium of claim 112, wherein the content items are deleted based on at least one of play count and creation time.

118. The medium of claim 103, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

119. The medium of claim 103, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

120. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide a universally resolvable list of content items to a client;

obtain an identification of a non-local item from the universally resolvable list of content items that is absent from the client;

obtain a cache request for the identified non-local item having an associated universally resolvable content identifier;

provide, in response to the obtained request, a universally resolvable content item corresponding to the cache request; and

update the requested item as temporary and locally available.

121. The apparatus of claim 120, wherein the processor issues further instructions to query a universally resolvable content database to retrieve the universally resolvable content item.

122. The apparatus of claim 120, wherein the processor issues further instructions to obtain the identification of the non-local item includes conducting a search for the non-local item on the local client.

123. The apparatus of claim 120, wherein the locally available content item is engageable as it is partially downloaded.

124. The apparatus of claim 120, wherein the locally available content item is engageable as it is fully downloaded.

125. The apparatus of claim 120, wherein the universally resolvable content identifier is a track identifier (ID).

126. The apparatus of claim 125, wherein the instructions to obtain the identification of the non-local item includes instructions to compare track identifiers associated local items in the local client to the obtained list of track identifiers.

127. The apparatus of claim 120, wherein the cache request includes at least a universally resolvable content service user identifier and a universally resolvable content identifier associated with the identified non-local item.

128. The apparatus of claim 120, wherein the processor issues further instructions to:

provide the universally resolvable content item corresponding to the cache request for storage in a cache in the client.

129. The apparatus of claim 128, wherein the processor issues further instructions to:

obtain an indication of deletion of one or more content items in the cache of the client prior to providing the content item for storage.

130. The apparatus of claim 129 wherein the content items are deleted based on last hit time.

131. The apparatus of claim 129, wherein the content items are deleted based on content item size.

132. The apparatus of claim 129, wherein the content items are deleted based on priority.

133. The apparatus of claim 132, wherein the priority is determined based on user preference.

134. The apparatus of claim 129, wherein the content items are deleted based on at least one of play count and creation time.

135. The apparatus of claim 120, wherein the universally resolvable list of content items includes at least one of: (i) a magic playlist, (ii) a dynamically created interest list, (iii) a shared playlist, (iv) a smart cache list, and (v) a shared library.

136. The apparatus of claim 120, wherein the content items include at least one of music, books, videos, applications, user's media and user's media denoted by gurus, social, friends or favorites.

137. An apportionment heuristics based caching processor-implemented method, comprising:

obtaining content discovery supportive information for a universally resolvable user;

determining apportionment heuristics among the obtained information for the user;

identifying a first set of universally resolvable content items based on the determined apportionment heuristics;

creating a caching queue that includes the identified first set of universally resolvable content items; and

providing the first set of universally resolvable content items in the caching queue to the user.

138. The method of claim 137, wherein providing the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

139. The method of claim 137, wherein providing the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

140. The method of claim 137, wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

141. The method of claim 137, wherein the apportionment heuristics includes the user's entity graph.

142. The method of claim 141, wherein the user's entity graph includes at least one of a social graph and an interest graph.

143. The method of claim 137, wherein the apportionment heuristics includes user-specific usage.

144. The method of claim 137, wherein the apportionment heuristics includes aggregate usage.

145. The method of claim 137, wherein the apportionment heuristics includes preference profile.

146. The method of claim 145, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

147. The method of claim 137, wherein the apportionment heuristics includes social recommendation.

148. The method of claim 137, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

149. The method of claim 148, further comprising:

obtaining the updated content discovery supportive information for the universally resolvable content user;

determining updated apportionment heuristics among the obtained updated information for the user;

identifying a second set of universally resolvable content items based on the determined updated apportionment heuristics;

updating the caching queue that includes the identified second set of universally resolvable content items; and

providing the second set of universally resolvable content items in the updated caching queue to the user.

150. The method of claim 149, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

151. The method of claim 137, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

152. An apportionment heuristics based caching system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain content discovery supportive information for a universally resolvable user;

determine apportionment heuristics among the obtained information for the user;

identify a first set of universally resolvable content items based on the determined apportionment heuristics;

create a caching queue that includes the identified first set of universally resolvable content items; and

provide the first set of universally resolvable content items in the caching queue to the user.

153. The system of claim 152, wherein providing the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

154. The system of claim 152, wherein the instructions to provide the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

155. The system of claim 152, wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

156. The system of claim 152, wherein the apportionment heuristics includes the user's entity graph.

157. The system of claim 156, wherein the user's entity graph includes at least one of a social graph and an interest graph.

158. The system of claim 152, wherein the apportionment heuristics includes user-specific usage.

159. The system of claim 152, wherein the apportionment heuristics includes aggregate usage.

160. The system of claim 152, wherein the apportionment heuristics includes preference profile.

161. The system of claim 160, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

162. The system of claim 152, wherein the apportionment heuristics includes social recommendation.

163. The system of claim 152, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

164. The system of claim 163, wherein the processor issues further instructions to:

obtain the updated content discovery supportive information for the universally resolvable content user;

determine updated apportionment heuristics among the obtained updated information for the user;

identify a second set of universally resolvable content items based on the determined updated apportionment heuristics;

update the caching queue that includes the identified second set of universally resolvable content items; and

provide the second set of universally resolvable content items in the updated caching queue to the user.

165. The system of claim 164, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

166. The system of claim 152, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

167. An apportionment heuristics based caching processor-readable medium storing processor-issuable instructions, comprising:

obtain content discovery supportive information for a universally resolvable user;

determine apportionment heuristics among the obtained information for the user;

identify a first set of universally resolvable content items based on the determined apportionment heuristics;

create a caching queue that includes the identified first set of universally resolvable content items; and

provide the first set of universally resolvable content items in the caching queue to the user.

168. The medium of claim 167, wherein providing the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

169. The medium of claim 167, wherein the instructions to provide the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

170. The medium of claim 167 wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

171. The medium of claim 167, wherein the apportionment heuristics includes the user's entity graph.

172. The medium of claim 171, wherein the user's entity graph includes at least one of a social graph and an interest graph.

173. The medium of claim 167, wherein the apportionment heuristics includes user-specific usage.

174. The medium of claim 167, wherein the apportionment heuristics includes aggregate usage.

175. The medium of claim 167, wherein the apportionment heuristics includes preference profile.

176. The medium of claim 175, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

177. The medium of claim 167, wherein the apportionment heuristics includes social recommendation.

178. The medium of claim 167, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

179. The medium of claim 178, wherein the processor issues further instructions to:

obtain the updated content discovery supportive information for the universally resolvable content user;

determine updated apportionment heuristics among the obtained updated information for the user;

identify a second set of universally resolvable content items based on the determined updated apportionment heuristics;

update the caching queue that includes the identified second set of universally resolvable content items; and

provide the second set of universally resolvable content items in the updated caching queue to the user.

180. The medium of claim 179, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

181. The medium of claim 167, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

182. An apportionment heuristics based caching apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain content discovery supportive information for a universally resolvable user;

determine apportionment heuristics among the obtained information for the user;

identify a first set of universally resolvable content items based on the determined apportionment heuristics;

create a caching queue that includes the identified first set of universally resolvable content items; and

provide the first set of universally resolvable content items in the caching queue to the user.

183. The apparatus of claim 182, wherein providing the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

184. The apparatus of claim 182, wherein the instructions to provide the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

185. The apparatus of claim 182, wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

186. The apparatus of claim 182, wherein the apportionment heuristics includes the user's entity graph.

187. The apparatus of claim 186, wherein the user's entity graph includes at least one of a social graph and an interest graph.

188. The apparatus of claim 182, wherein the apportionment heuristics includes user-specific usage.

189. The apparatus of claim 182, wherein the apportionment heuristics includes aggregate usage.

190. The apparatus of claim 182, wherein the apportionment heuristics includes preference profile.

191. The apparatus of claim 160, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

192. The apparatus of claim 182, wherein the apportionment heuristics includes social recommendation.

193. The apparatus of claim 182, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

194. The apparatus of claim 193, wherein the processor issues further instructions to:

obtain the updated content discovery supportive information for the universally resolvable content user;

determine updated apportionment heuristics among the obtained updated information for the user;

identify a second set of universally resolvable content items based on the determined updated apportionment heuristics;

update the caching queue that includes the identified second set of universally resolvable content items; and

provide the second set of universally resolvable content items in the updated caching queue to the user.

195. The apparatus of claim 194, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

196. The apparatus of claim 182, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

197. An apportionment heuristics based caching processor-implemented method, comprising:

providing content discovery supportive information for a universally resolvable user;

providing an indication of apportionment heuristics among the obtained information for the user;

obtaining an identification of a first set of universally resolvable content items based on the determined apportionment heuristics;

obtaining an indication of creation of a caching queue that includes the identified first set of universally resolvable content items; and

obtaining the first set of universally resolvable content items in the caching queue to the user.

198. The method of claim 197, wherein obtaining the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

199. The method of claim 197, wherein obtaining the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

200. The method of claim 197, wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

201. The method of claim 197, wherein the apportionment heuristics includes the user's entity graph.

202. The method of claim 201, wherein the user's entity graph includes at least one of a social graph and an interest graph.

203. The method of claim 197, wherein the apportionment heuristics includes user-specific usage.

204. The method of claim 197, wherein the apportionment heuristics includes aggregate usage.

205. The method of claim 197, wherein the apportionment heuristics includes preference profile.

206. The method of claim 205, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

207. The method of claim 197, wherein the apportionment heuristics includes social recommendation.

208. The method of claim 197, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

209. The method of claim 208, further comprising:

providing the updated content discovery supportive information for the universally resolvable content user;

obtaining an indication of determination of updated apportionment heuristics among the obtained updated information for the user;

obtaining an indication of identification of a second set of universally resolvable content items based on the determined updated apportionment heuristics;

obtaining the caching queue that includes the identified second set of universally resolvable content items; and

obtaining the second set of universally resolvable content items in the updated caching queue to the user.

210. The method of claim 209, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

211. The method of claim 197, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

212. An apportionment heuristics based caching system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide content discovery supportive information for a universally resolvable user;

obtain an indication of determination of apportionment heuristics among the obtained information for the user;

obtain an indication of identification of a first set of universally resolvable content items based on the determined apportionment heuristics;

obtain a caching queue that includes the identified first set of universally resolvable content items; and

obtain the first set of universally resolvable content items in the caching queue to the user.

213. The system of claim 212, wherein obtaining the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

214. The system of claim 212, wherein the instructions to obtain the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

215. The system of claim 212, wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

216. The system of claim 212, wherein the apportionment heuristics includes the user's entity graph.

217. The system of claim 216, wherein the user's entity graph includes at least one of a social graph and an interest graph.

218. The system of claim 212, wherein the apportionment heuristics includes user-specific usage.

219. The system of claim 212, wherein the apportionment heuristics includes aggregate usage.

220. The system of claim 212, wherein the apportionment heuristics includes preference profile.

221. The system of claim 220, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

222. The system of claim 212, wherein the apportionment heuristics includes social recommendation.

223. The system of claim 212, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

224. The system of claim 223, wherein the processor issues further instructions to:

provide the updated content discovery supportive information for the universally resolvable content user;

obtain an indication of determination of updated apportionment heuristics among the obtained updated information for the user;

obtain an indication of identification of a second set of universally resolvable content items based on the determined updated apportionment heuristics;

obtaining an indication of update of the caching queue that includes the identified second set of universally resolvable content items; and

obtaining the second set of universally resolvable content items in the updated caching queue to the user.

225. The system of claim 224, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

226. The system of claim 212, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

227. An apportionment heuristics based caching processor-readable medium storing processor-issuable instructions, comprising:

provide content discovery supportive information for a universally resolvable user;

obtain apportionment heuristics among the obtained information for the user;

obtain a first set of universally resolvable content items based on the determined apportionment heuristics;

obtain a caching queue that includes the identified first set of universally resolvable content items; and

obtain the first set of universally resolvable content items in the caching queue to the user.

228. The medium of claim 227, wherein the instructions to obtain the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

229. The medium of claim 227, wherein the instructions to provide the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

230. The medium of claim 227 wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

231. The medium of claim 227, wherein the apportionment heuristics includes the user's entity graph.

232. The medium of claim 231, wherein the user's entity graph includes at least one of a social graph and an interest graph.

233. The medium of claim 227, wherein the apportionment heuristics includes user-specific usage.

234. The medium of claim 227, wherein the apportionment heuristics includes aggregate usage.

235. The medium of claim 227, wherein the apportionment heuristics includes preference profile.

236. The medium of claim 235, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

237. The medium of claim 227, wherein the apportionment heuristics includes social recommendation.

238. The medium of claim 227, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

239. The medium of claim 238, wherein the processor issues further instructions to:

provide the updated content discovery supportive information for the universally resolvable content user;

obtain an indication of determination of updated apportionment heuristics among the obtained updated information for the user;

obtain an identification of a second set of universally resolvable content items based on the determined updated apportionment heuristics;

obtain an indication to update the caching queue that includes the identified second set of universally resolvable content items; and

obtain the second set of universally resolvable content items in the updated caching queue to the user.

240. The medium of claim 239, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

241. The medium of claim 227, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

242. An apportionment heuristics based caching apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide content discovery supportive information for a universally resolvable user;

obtain an indication of determination of apportionment heuristics among the obtained information for the user;

obtain an indication of identification of a first set of universally resolvable content items based on the determined apportionment heuristics;

obtain a caching queue that includes the identified first set of universally resolvable content items; and

obtain the first set of universally resolvable content items in the caching queue to the user.

243. The apparatus of claim 242, wherein providing the first set of universally resolvable content items is in response to a request for transmission that is triggered when a client device bandwidth usage is below a pre-determined threshold.

244. The apparatus of claim 242, wherein the instructions to provide the first set of universally resolvable content items is in response to a request for transmission that is triggered in accordance with user specified caching criteria.

245. The apparatus of claim 242, wherein the first set of universally resolvable content items are arranged in a predefined download order in the caching queue.

246. The apparatus of claim 242, wherein the apportionment heuristics includes the user's entity graph.

247. The apparatus of claim 246, wherein the user's entity graph includes at least one of a social graph and an interest graph.

248. The apparatus of claim 242, wherein the apportionment heuristics includes user-specific usage.

249. The apparatus of claim 242, wherein the apportionment heuristics includes aggregate usage.

250. The apparatus of claim 242, wherein the apportionment heuristics includes preference profile.

251. The apparatus of claim 250, wherein the preference profile is associated with at least one of a user or a group of users, and indicative of preference for at least one of: (i) genres, (ii) artists, (iii) albums, (iv) tracks, (v) music attributes, (vi) location based preferences, and (vii) time based preferences.

252. The apparatus of claim 242, wherein the apportionment heuristics includes social recommendation.

253. The apparatus of claim 242, wherein the content discovery supportive information is updated based on an activity associated with one or more users.

254. The apparatus of claim 253, wherein the processor issues further instructions to:

provide the updated content discovery supportive information for the universally resolvable content user;

obtain an indication of determination of updated apportionment heuristics among the obtained updated information for the user;

obtain an indication of identification of a second set of universally resolvable content items based on the determined updated apportionment heuristics;

obtain an indication of update of the caching queue that includes the identified second set of universally resolvable content items; and

obtain the second set of universally resolvable content items in the updated caching queue to the user.

255. The apparatus of claim 254, wherein the second set of universally resolvable content items includes at least one content item from the first set of universally resolvable content items.

256. The apparatus of claim 242, wherein the content discovery supportive information includes at least one of: most frequently played content item, content item rated high, content item rated low, content item shared and content item bookmarked.

257. A processor-implemented method for providing shared access to a media content collection, comprising:

obtaining from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

obtaining from the first user a selection of at least one second universally resolvable user;

configuring the first user's media content collection with restricted shared access controls for the second user; and

providing the second user restricted shared access to the shared media content collection based on the configured restricted shared access controls.

258. The method of claim 257, further comprising:

receiving from one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

performing said action on the shared media content collection to obtain a modified shared media content collection; and

providing the plurality of shared users access to the modified shared media content collection.

259. The method of claim 257, further comprising:

downloading non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

260. The method of claim 259, wherein the non-local content items are downloaded in the cache.

261. The method of claim 257, wherein the shared media collection is stored in a universally resolvable content database in a server.

262. The method of claim 258, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

263. The method of claim 257, wherein prior to receiving from the first user the request to share the first user's media content collection:

receiving from the first user a request to create the media content collection; and

receiving from the first user at least one content item for including in the created media content collection.

264. The method of claim 257, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

265. The method of claim 257, further comprising:

configuring access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

266. The method of claim 265, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

267. The method of claim 257, further comprising:

receiving a request from the second user to perform an action on the shared media content collection; and

obtaining from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

268. The method of claim 267, wherein when said acceptance is obtained,

performing said action on the shared media content collection to obtain a modified shared media content collection; and

providing the modified shared media content collection to the first user and the second user; and

when said denial is obtained,

providing the second user a request declined message.

269. The method of claim 257, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

270. The method of claim 257, wherein said configuring includes obtaining the first user specified content parameters and access control parameters for the content.

271. The method of claim 257, further comprising:

determining a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

272. A system for providing shared access to a media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

obtain from the first user a selection of at least one second universally resolvable user;

configure the first user's media content collection for shared access with the second user; and

provide the second user access to the shared media content collection.

273. The system of claim 272, wherein the processor issues further instructions to:

receive from one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

perform said action on the shared media content collection to obtain a modified shared media content collection; and

provide the plurality of shared users access to the modified shared media content collection.

274. The system of claim 273, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

275. The system of claim 272, wherein the processor issues further instructions to:

download non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

276. The system of claim 275, wherein the non-local content items are downloaded in the cache.

277. The system of claim 272, wherein the shared media collection is stored in a universally resolvable content database in a server.

278. The system of claim 272, wherein prior to issuing instructions to receive from the first user the request to share the first user's media content collection, the processor issues instruction to;

receive from the first user a request to create the media content collection; and

receive from the first user at least one content item for including in the created media content collection.

279. The system of claim 272, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

280. The system of claim 272, wherein the processor issues further instructions to:

configure access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

281. The system of claim 280, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

282. The system of claim 272, wherein the processor issues further instructions to:

receive a request from the second user to perform an action on the shared media content collection; and

obtain from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

283. The system of claim 282, wherein when said acceptance is obtained, the processor issues instructions to:

perform said action on the shared media content collection to obtain a modified shared media content collection; and

provide the modified shared media content collection to the first user and the second user; and

when said denial is obtained, the processor issues instructions to:

provide the second user a request declined message.

284. The system of claim 272, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

285. The system of claim 272, wherein said instructions to configure includes instructions to obtain the first user specified content parameters and access control parameters for the content.

286. The system of claim 272, wherein said processor issues further instructions to:

determine a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

287. A processor-readable medium storing processor-issuable instructions for providing shared access to a media content collection, wherein the processor issues instructions to:

obtain from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

obtain from the first user a selection of at least one second universally resolvable user;

configure the first user's media content collection for shared access with the second user; and

provide the second user access to the shared media content collection.

288. The medium of claim 287, wherein the processor issues further instructions to:

receive from one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

perform said action on the shared media content collection to obtain a modified shared media content collection; and

provide the plurality of shared users access to the modified shared media content collection.

289. The medium tem of claim 288, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

290. The medium of claim 287, wherein the processor issues further instructions to:

download non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

291. The medium of claim 290, wherein the non-local content items are downloaded in the cache.

292. The medium of claim 287, wherein the shared media collection is stored in a universally resolvable content database in a server.

293. The medium of claim 287, wherein prior to issuing instructions to receive from the first user the request to share the first user's media content collection, the processor issues instruction to;

receive from the first user a request to create the media content collection; and

receive from the first user at least one content item for including in the created media content collection.

294. The medium of claim 287, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

295. The medium of claim 287, wherein the processor issues further instructions to:

configure access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

296. The medium of claim 295, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

297. The medium of claim 287, wherein the processor issues further instructions to:

receive a request from the second user to perform an action on the shared media content collection; and

obtain from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

298. The medium of claim 297, wherein when said acceptance is obtained, the processor issues instructions to:

perform said action on the shared media content collection to obtain a modified shared media content collection; and

provide the modified shared media content collection to the first user and the second user; and

when said denial is obtained, the processor issues instructions to:

provide the second user a request declined message.

299. The medium of claim 287, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

300. The medium of claim 287, wherein said instructions to configure includes instructions to obtain the first user specified content parameters and access control parameters for the content.

301. The medium of claim 287, wherein said processor issues further instructions to:

determine a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

302. An apparatus for providing shared access to a media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

obtain from the first user a selection of at least one second universally resolvable user;

configure the first user's media content collection for shared access with the second user; and

provide the second user access to the shared media content collection.

303. The apparatus of claim 302, wherein the processor issues further instructions to:

receive from one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

perform said action on the shared media content collection to obtain a modified shared media content collection; and

provide the plurality of shared users access to the modified shared media content collection.

304. The apparatus of claim 303, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

305. The apparatus of claim 302, wherein the processor issues further instructions to:

download non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

306. The apparatus of claim 305, wherein the non-local content items are downloaded in the cache.

307. The apparatus of claim 302, wherein the shared media collection is stored in a universally resolvable content database in a server.

308. The apparatus of claim 302, wherein prior to issuing instructions to receive from the first user the request to share the first user's media content collection, the processor issues instruction to;

receive from the first user a request to create the media content collection; and

receive from the first user at least one content item for including in the created media content collection.

309. The apparatus of claim 302, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

310. The apparatus of claim 302, wherein the processor issues further instructions to:

configure access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

311. The apparatus of claim 310, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

312. The apparatus of claim 302, wherein the processor issues further instructions to:

receive a request from the second user to perform an action on the shared media content collection; and

obtain from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

313. The apparatus of claim 282, wherein when said acceptance is obtained, the processor issues instructions to:

perform said action on the shared media content collection to obtain a modified shared media content collection; and

provide the modified shared media content collection to the first user and the second user; and

when said denial is obtained, the processor issues instructions to:

provide the second user a request declined message.

314. The apparatus of claim 302, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

315. The apparatus of claim 302, wherein said instructions to configure includes instructions to obtain the first user specified content parameters and access control parameters for the content.

316. The apparatus of claim 302, wherein said processor issues further instructions to:

determine a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

317. A processor-implemented method, comprising:

providing from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

providing from the first user a selection of at least one second universally resolvable user;

providing authorization to configuring the first user's media content collection with restricted shared access controls for the second user; and

providing authorization to provide the second user restricted shared access to the shared media content collection based on the configured restricted shared access controls.

318. The method of claim 317, further comprising:

providing to one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

providing authorization to perform said action on the shared media content collection to obtain a modified shared media content collection; and

obtaining for the plurality of shared users access to the modified shared media content collection.

319. The method of claim 317, further comprising:

providing authorization to download non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

320. The method of claim 319, wherein the non-local content items are downloaded in the cache.

321. The method of claim 317, wherein the shared media collection is stored in a universally resolvable content database in a server.

322. The method of claim 318, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

323. The method of claim 317, wherein prior to providing from the first user the request to share the first user's media content collection:

providing from the first user a request to create the media content collection; and

providing from the first user at least one content item for including in the created media content collection.

324. The method of claim 317, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

325. The method of claim 317, further comprising:

providing authorization to configure access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

326. The method of claim 325, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

327. The method of claim 317, further comprising:

providing a request from the second user to perform an action on the shared media content collection; and

providing from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

328. The method of claim 327, wherein when said acceptance is obtained,

providing authorization to perform said action on the shared media content collection to obtain a modified shared media content collection; and

obtaining the modified shared media content collection to the first user and the second user; and

when said denial is obtained,

obtaining the second user a request declined message.

329. The method of claim 317, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

330. The method of claim 317, wherein said configuring includes obtaining the first user specified content parameters and access control parameters for the content.

331. The method of claim 317, further comprising:

obtaining an indication of determination of a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

332. A system for providing shared access to a media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

provide from the first user a selection of at least one second universally resolvable user;

provide authorization to configure the first user's media content collection for shared access with the second user; and

provide authorization to the second user access to the shared media content collection.

333. The system of claim 332, wherein the processor issues further instructions to:

provide from one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

provide authorization to perform said action on the shared media content collection to obtain a modified shared media content collection; and

obtain the plurality of shared users access to the modified shared media content collection.

334. The system of claim 333, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

335. The system of claim 332, wherein the processor issues further instructions to:

provide authorization to download non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

336. The system of claim 335, wherein the non-local content items are downloaded in the cache.

337. The system of claim 332, wherein the shared media collection is stored in a universally resolvable content database in a server.

338. The system of claim 332, wherein prior to issuing instructions to receive from the first user the request to share the first user's media content collection, the processor issues instruction to;

receive from the first user a request to create the media content collection; and

receive from the first user at least one content item for including in the created media content collection.

339. The system of claim 332, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

340. The system of claim 332, wherein the processor issues further instructions to:

configure access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

341. The system of claim 330, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

342. The system of claim 332, wherein the processor issues further instructions to:

receive a request from the second user to perform an action on the shared media content collection; and

obtain from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

343. The system of claim 342, wherein when said acceptance is obtained, the processor issues instructions to:

perform said action on the shared media content collection to obtain a modified shared media content collection; and

provide the modified shared media content collection to the first user and the second user; and

when said denial is obtained, the processor issues instructions to:

provide the second user a request declined message.

344. The system of claim 332, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

345. The system of claim 332, wherein said instructions to configure includes instructions to obtain the first user specified content parameters and access control parameters for the content.

346. The system of claim 332, wherein said processor issues further instructions to:

determine a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

347. A processor-readable medium storing processor-issuable instructions for providing shared access to a media content collection, wherein the processor issues instructions to:

provide from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

provide from the first user a selection of at least one second universally resolvable user;

provide authorization to configure the first user's media content collection for shared access with the second user; and

provide authorization to provide the second user access to the shared media content collection.

348. The medium of claim 347, wherein the processor issues further instructions to:

provide from one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

provide authorization to perform said action on the shared media content collection to obtain a modified shared media content collection; and

obtain the plurality of shared users access to the modified shared media content collection.

349. The medium of claim 348, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

350. The medium of claim 347, wherein the processor issues further instructions to:

provide authorization to download non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

351. The medium of claim 350, wherein the non-local content items are downloaded in the cache.

352. The medium of claim 347, wherein the shared media collection is stored in a universally resolvable content database in a server.

353. The medium of claim 347, wherein prior to issuing instructions to receive from the first user the request to share the first user's media content collection, the processor issues instruction to;

provide from the first user a request to create the media content collection; and

provide from the first user at least one content item for including in the created media content collection.

354. The medium of claim 347, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

355. The medium of claim 347, wherein the processor issues further instructions to:

provide authorization to configure access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

356. The medium of claim 355, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

357. The medium of claim 347, wherein the processor issues further instructions to:

provide a request from the second user to perform an action on the shared media content collection; and

provide from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

358. The medium of claim 357, wherein when said acceptance is obtained, the processor issues instructions to:

provide authorization to perform said action on the shared media content collection to obtain a modified shared media content collection; and

obtain the modified shared media content collection to the first user and the second user; and

when said denial is obtained, the processor issues instructions to:

provide authorization to provide the second user a request declined message.

359. The medium of claim 347, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

360. The medium of claim 347, wherein said instructions to configure includes instructions to obtain the first user specified content parameters and access control parameters for the content.

361. The medium of claim 347, wherein said processor issues further instructions to:

provide authorization to determine a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

362. An apparatus for providing shared access to a media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide from a first universally resolvable media content service user a request to share the user's universally resolvable media content collection;

provide from the first user a selection of at least one second universally resolvable user;

provide authorization to configure the first user's media content collection for shared access with the second user; and

provide authorization to provide the second user access to the shared media content collection.

363. The apparatus of claim 362, wherein the processor issues further instructions to:

obtain from one of a plurality of shared users having access to the shared media content collection a request to perform an action on the shared media content collection;

provide authorization to perform said action on the shared media content collection to obtain a modified shared media content collection; and

obtain the plurality of shared users access to the modified shared media content collection.

364. The apparatus of claim 363, wherein said action is selected from any of: (i) add a content item, (ii) remove a content item, (iii) re-order content items, (iv) modify privacy settings, (v) share with another universally resolvable user, (vi) delete the shared media collection, (vii) create a playlist, (viii) add an entity graph member, (ix) publish media collection, and (x) change meta data for a content item.

365. The apparatus of claim 362, wherein the processor issues further instructions to:

provide authorization to download non-local content items of the shared media content collection to client devices of a plurality of shared users having access to the shared media content collection, wherein the plurality of shared users includes at least the first user and the second user.

366. The apparatus of claim 365, wherein the non-local content items are downloaded in the cache.

367. The apparatus of claim 362, wherein the shared media collection is stored in a universally resolvable content database in a server.

368. The apparatus of claim 362, wherein prior to issuing instructions to receive from the first user the request to share the first user's media content collection, the processor issues instruction to;

provide from the first user a request to create the media content collection; and

provide from the first user at least one content item for including in the created media content collection.

369. The apparatus of claim 362, wherein the media collection any one of: (i) a universally resolvable media content service user created media content collection, and (ii) a system generated media content collection.

370. The apparatus of claim 362, wherein the processor issues further instructions to:

provide authorization to configure access by other universally resolvable media content service users to the shared media collection based on the first user selected access constraints.

371. The apparatus of claim 370, wherein the access constraints define read only access to the shared media content collection to any one of: (i) friends having a predetermined degree of separation, (ii) Gurus, (iii) social network members having a predetermined degree of separation, (iv) relationship categories, and (v) everyone.

372. The apparatus of claim 362, wherein the processor issues further instructions to:

provide a request from the second user to perform an action on the shared media content collection; and

provide from the first user an acceptance or a denial to the received request to perform the action on the shared media content collection.

373. The apparatus of claim 372, wherein when said acceptance is obtained, the processor issues instructions to:

provide authorization to perform said action on the shared media content collection to obtain a modified shared media content collection; and

obtain the modified shared media content collection to the first user and the second user; and

when said denial is obtained, the processor issues instructions to:

obtain the second user a request declined message.

374. The apparatus of claim 362, wherein the media content collection includes: (i) a playlist, (ii) at least one content item, (iii) a media library in the cloud, and (iv) a media library in a local client.

375. The apparatus of claim 362, wherein said instructions to configure includes instructions to obtain the first user specified content parameters and access control parameters for the content.

376. The apparatus of claim 362, wherein said processor issues further instructions to:

provide authorization to determine a subset of the first user's media content collection that is restricted by the first user's access control parameters for access by the second user.

377. A processor-implemented method for providing access to a portion of a media library, comprising:

receiving from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieving the second user specified privacy controls;

applying the second user specified privacy controls to determine a portion of the media library permitted for shared access by the first user; and

allowing the first user access to the determined portion of the media library.

378. The method of claim 377, further comprising:

determining a degree of separation between the first user and the second user; and

applying the degree of separation as an access constraint to the media library of the second user.

379. The method of claim 377, further comprising:

receiving a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the received request to download the at least one content item, providing the at least one content item in the first user's media library.

380. The method of claim 377, wherein access by the first user includes modification of the second user's media library.

381. The method of claim 380, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

382. The method of claim 381, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

383. The method of claim 380, wherein the playlist is a shared playlist modifiable by the first user and the second user.

384. The method of claim 377, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

385. A system for providing access to a portion of a media library, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

receive from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieve the second user specified privacy controls;

apply the second user specified privacy controls to determine a portion of the media library permitted for access by the first user; and

allow the first user access to the determined portion of the media library.

386. The system of claim 385, wherein the processor issues further instructions to:

determine a degree of separation between the first user and the second user; and

apply the degree of separation as an access constraint to the media library of the second user.

387. The system of claim 385, wherein the processor issues further instructions to:

receive a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the received request to download the at least one content item, provide the at least one content item in the first user's media library.

388. The system of claim 385, wherein access by the first user includes modification of the second user's media library.

389. The system of claim 388, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

390. The system of claim 389, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

391. The system of claim 390, wherein the playlist is a shared playlist modifiable by the first user and the second user.

392. The system of claim 385, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

393. A processor-readable medium storing processor-issuable instructions for providing access to a portion of a media library wherein the processor issues instructions to:

receive from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieve the second user specified privacy controls;

apply the second user specified privacy controls to determine a portion of the media library permitted for access by the first user; and

allow the first user access to the determined portion of the media library.

394. The medium of claim 393, wherein the processor issues further instructions to:

determine a degree of separation between the first user and the second user; and

apply the degree of separation as an access constraint to the media library of the second user.

395. The medium of claim 393, wherein the processor issues further instructions to:

receive a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the received request to download the at least one content item, provide the at least one content item in the first user's media library.

396. The medium of claim 393, wherein access by the first user includes modification of the second user's media library.

397. The medium of claim 396, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

398. The medium of claim 397, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

399. The medium of claim 398, wherein the playlist is a shared playlist modifiable by the first user and the second user.

400. The medium of claim 393, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

401. An apparatus for providing access to a portion of a media library wherein the processor issues instructions to:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

receive from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieve the second user specified privacy controls;

apply the second user specified privacy controls to determine a portion of the media library permitted for access by the first user; and

allow the first user access to the determined portion of the media library.

402. The apparatus of claim 401, wherein the processor issues further instructions to:

determine a degree of separation between the first user and the second user; and

apply the degree of separation as an access constraint to the media library of the second user.

403. The apparatus of claim 401, wherein the processor issues further instructions to:

receive a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the received request to download the at least one content item, provide the at least one content item in the first user's media library.

404. The apparatus of claim 401, wherein access by the first user includes modification of the second user's media library.

405. The apparatus of claim 404, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

406. The apparatus of claim 405, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

407. The apparatus of claim 404, wherein the playlist is a shared playlist modifiable by the first user and the second user.

408. The apparatus of claim 401, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

409. A processor-implemented method for sharing a universally resolvable media content collection, comprising:

obtaining privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a selection of a universally resolvable media content collection; and

a selection of at least one universally resolvable user authorized to access the universally resolvable media content collection;

generating and transmitting a sharing request including the privacy settings;

receiving a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

410. The method of claim 409, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

411. The method of claim 409, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

412. The method of claim 409, further comprising:

receiving a request from a universally resolvable user to access a universally resolvable content collection.

413. The method of claim 412, further comprising:

in response to the request, allowing the universally resolvable user access the universally resolvable content collection.

414. The method of claim 412, further comprising:

in response to the request, denying the universally resolvable user access the at least one universally resolvable content collection.

415. A system for sharing a universally resolvable media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a select of a universally resolvable media content collection; and

a select of at least one universally resolvable user authorized to access the universally resolvable media content collection;

generate and transmit a sharing request including the privacy settings;

receive a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

416. The system of claim 415, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

417. The system of claim 415, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

418. The system of claim 415, wherein the processor issues further instructions to:

receive a request from a universally resolvable user to access a universally resolvable content collection.

419. The system of claim 418, wherein in response to the request, the processor issues further instructions to allow the universally resolvable user access the universally resolvable content collection.

420. The system of claim 418, wherein in response to the request, the processor issues further instructions to deny the universally resolvable user access the at least one universally resolvable content collection.

421. A processor-readable medium storing processor-issuable instructions for providing access to a portion of a media library wherein the processor issues instructions to:

obtain privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a select of a universally resolvable media content collection; and

a select of at least one universally resolvable user authorized to access the universally resolvable media content collection;

generate and transmit a sharing request including the privacy settings;

receive a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

422. The medium of claim 421, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

423. The medium of claim 421, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

424. The medium of claim 421, wherein the processor issues further instructions to:

receive a request from a universally resolvable user to access a universally resolvable content collection.

425. The medium of claim 424, wherein in response to the request, the processor issues further instructions to allow the universally resolvable user access the universally resolvable content collection.

426. The medium of claim 424, wherein in response to the request, the processor issues further instructions to deny the universally resolvable user access the at least one universally resolvable content collection.

427. An apparatus for sharing a universally resolvable media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a select of a universally resolvable media content collection; and

a select of at least one universally resolvable user authorized to access the universally resolvable media content collection;

generate and transmit a sharing request including the privacy settings;

receive a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

428. The apparatus of claim 427, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

429. The apparatus of claim 427, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

430. The apparatus of claim 427, wherein the processor issues further instructions to:

receive a request from a universally resolvable user to access a universally resolvable content collection.

431. The apparatus of claim 430, wherein in response to the request, the processor issues further instructions to allow the universally resolvable user access the universally resolvable content collection.

432. The apparatus of claim 430, wherein in response to the request, the processor issues further instructions to deny the universally resolvable user access the at least one universally resolvable content collection.

433. A processor-implemented method, comprising:

generating from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieving the second user specified privacy controls;

supplying the second user specified privacy controls to determine a portion of the media library permitted for shared access by the first user; and

providing authorization to allow the first user access to the determined portion of the media library.

434. The method of claim 433, further comprising:

obtaining indication of determination of a degree of separation between the first user and the second user; and

providing authorization to apply the degree of separation as an access constraint to the media library of the second user.

435. The method of claim 433, further comprising:

providing a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the provided request to download the at least one content item, obtaining the at least one content item in the first user's media library.

436. The method of claim 433, wherein access by the first user includes modification of the second user's media library.

437. The method of claim 436, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

438. The method of claim 437, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

439. The method of claim 436, wherein the playlist is a shared playlist modifiable by the first user and the second user.

440. The method of claim 433, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

441. A system for providing access to a portion of a media library, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

generate from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieve the second user specified privacy controls;

supply the second user specified privacy controls to determine a portion of the media library permitted for access by the first user; and

provide authorization to the first user access to the determined portion of the media library.

442. The system of claim 441, wherein the processor issues further instructions to:

obtain indication of determination of a degree of separation between the first user and the second user; and

supply the degree of separation as an access constraint to the media library of the second user.

443. The system of claim 441, wherein the processor issues further instructions to:

provide a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the request to download the at least one content item, obtain the at least one content item in the first user's media library.

444. The system of claim 441, wherein access by the first user includes modification of the second user's media library.

445. The system of claim 444, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

446. The system of claim 445, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

447. The system of claim 446, wherein the playlist is a shared playlist modifiable by the first user and the second user.

448. The system of claim 441, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

449. A processor-readable medium storing processor-issuable instructions for providing access to a portion of a media library wherein the processor issues instructions to:

generate from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieve the second user specified privacy controls;

aupply the second user specified privacy controls to determine a portion of the media library permitted for access by the first user; and

providing authorization to the first user access to the determined portion of the media library.

450. The medium of claim 449, wherein the processor issues further instructions to:

obtain indication of determination of a degree of separation between the first user and the second user; and

apply the degree of separation as an access constraint to the media library of the second user.

451. The medium of claim 449, wherein the processor issues further instructions to:

provide a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the request to download the at least one content item, provide the at least one content item in the first user's media library.

452. The medium of claim 449, wherein access by the first user includes modification of the second user's media library.

453. The medium of claim 452, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

454. The medium of claim 453, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

455. The medium of claim 454, wherein the playlist is a shared playlist modifiable by the first user and the second user.

456. The medium of claim 449, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

457. An apparatus for providing access to a portion of a media library wherein the processor issues instructions to:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide from a first universally resolvable user a request to access a media library of a second universally resolvable user;

retrieve the second user specified privacy controls;

supply the second user specified privacy controls to determine a portion of the media library permitted for access by the first user; and

provide authorization to the first user access to the determined portion of the media library.

458. The apparatus of claim 457, wherein the processor issues further instructions to:

obtain an indication of determination of a degree of separation between the first user and the second user; and

supply the degree of separation as an access constraint to the media library of the second user.

459. The apparatus of claim 457, wherein the processor issues further instructions to:

provide a request from the first user to download at least one content item located in the determined portion of the media library; and

in response to the request to download the at least one content item, obtain the at least one content item in the first user's media library.

460. The apparatus of claim 457, wherein access by the first user includes modification of the second user's media library.

461. The apparatus of claim 460, wherein the modification of the second user's media library includes at least one of: (i) adding a local content item, (ii) removing a content item, (iii) adding a social graph member, and (iv) creating a playlist.

462. The apparatus of claim 461, wherein the content item includes: (i) a playlist, (ii) entity graph, (iii) music, (iv) movie, (v) book, and (vi) video.

463. The apparatus of claim 460, wherein the playlist is a shared playlist modifiable by the first user and the second user.

464. The apparatus of claim 457, wherein the portion of the media library permitted for access by the first user includes at least one of: (i) albums, (ii) genre, (iii) artists, (iv) purchased, (v) playlist, and (vii) all content.

465. A processor-implemented method for sharing a universally resolvable media content collection, comprising:

providing privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a selection of a universally resolvable media content collection; and

a selection of at least one universally resolvable user authorized to access the universally resolvable media content collection;

providing authorization to generate and transmit a sharing request including the privacy settings;

providing a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

466. The method of claim 465, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

467. The method of claim 465, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

468. The method of claim 465, further comprising:

providing a request from a universally resolvable user to access a universally resolvable content collection.

469. The method of claim 468, further comprising:

in response to the request, providing authorization to allow the universally resolvable user access the universally resolvable content collection.

470. The method of claim 468, further comprising:

in response to the request, providing authorization to deny the universally resolvable user access the at least one universally resolvable content collection.

471. A system for sharing a universally resolvable media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a selection of a universally resolvable media content collection; and

a selection of at least one universally resolvable user authorized to access the universally resolvable media content collection;

providing authorization to generate and transmit a sharing request including the privacy settings;

provide a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

472. The system of claim 471, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

473. The system of claim 471, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

474. The system of claim 471, wherein the processor issues further instructions to:

provide a request from a universally resolvable user to access a universally resolvable content collection.

475. The system of claim 474, wherein in response to the request, the processor issues further instructions to provide authorization to allow the universally resolvable user access the universally resolvable content collection.

476. The system of claim 474, wherein in response to the request, the processor issues further instructions to provide authorization to deny the universally resolvable user access the at least one universally resolvable content collection.

477. A processor-readable medium storing processor-issuable instructions for providing access to a portion of a media library wherein the processor issues instructions to:

provide privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a selection of a universally resolvable media content collection; and

a selection of at least one universally resolvable user authorized to access the universally resolvable media content collection;

provide authorization to generate and transmit a sharing request including the privacy settings;

provide a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

478. The medium of claim 477, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

479. The medium of claim 477, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

480. The medium of claim 477, wherein the processor issues further instructions to:

receive a request from a universally resolvable user to access a universally resolvable content collection.

481. The medium of claim 480, wherein in response to the request, the processor issues further instructions to allow the universally resolvable user access the universally resolvable content collection.

482. The medium of claim 480, wherein in response to the request, the processor issues further instructions to deny the universally resolvable user access the at least one universally resolvable content collection.

483. An apparatus for sharing a universally resolvable media content collection, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide privacy settings for sharing a universally resolvable media content collection, said privacy settings identifying:

a selection of a universally resolvable media content collection; and

a selection of at least one universally resolvable user authorized to access the universally resolvable media content collection;

provide authorization to generate and transmit a sharing request including the privacy settings;

provide a confirmation that the universally resolvable media content collection is configured for sharing with the at least one universally resolvable user.

484. The apparatus of claim 483, wherein the at least one universally resolvable user includes at least one of: (i) a friend having a specified degree of separation; (ii) a social network member having a specified degree of separation; (iii) a friend; (iv) a family; (v) an acquaintance; and (vi) a work friend.

485. The apparatus of claim 483, wherein the at least one universally resolvable content collection includes at least one of: (i) all content items in the collection; (ii) most recently played; (iii) playlists; (iv) selected; (v) highest rated; (vi) purchased; and (vii) most frequently played.

486. The apparatus of claim 483, wherein the processor issues further instructions to:

provide a request from a universally resolvable user to access a universally resolvable content collection.

487. The apparatus of claim 486, wherein in response to the request, the processor issues further instructions to provide authorization to allow the universally resolvable user access the universally resolvable content collection.

488. The apparatus of claim 486, wherein in response to the request, the processor issues further instructions to provide authorization to deny the universally resolvable user access the at least one universally resolvable content collection.

489. A graphical user interface, comprising:

a media display view, said media display view including a plurality of universally resolvable attribute rows, wherein each attribute row is configured to display universally resolvable attribute row items including social graph, wherein the media display view is configured to recursively:

obtain a selected content attribute row item;

display the selected content attribute row item in a corresponding attribute row of a first selection column;

identify related content attribute row items; and

provide the identified related content attribute row items for selection; and

display the selected related content attribute row item in a corresponding attribute row of a subsequent selection column.

490. The graphical user interface of claim 489, wherein the selection column establishes the sequence of selection of the content attribute row items.

491. The graphical user interface of claim 489, further comprising a media selection view displaying a designated spotlight area that is configured to receive the selected content attribute row item.

492. The graphical user interface of claim 491, wherein the selection of the content attribute row item is made by a user via one of (i) a single action, or (ii) a double action.

493. The graphical user interface of claim 492, wherein rows and columns are orthogonal and not spatially perpendicular.

494. The graphical user interface of claim 489, wherein the media display view is one of a plurality of media display views, wherein each media display view corresponds to a time period and is configured to:

obtain data corresponding to a plurality of content attribute row items spotlighted during the time period; and

display the obtained data in corresponding content attribute rows and selection columns.

495. The graphical user interface of claim 489, wherein the content attribute row items are selected from a group including: (i) artists, (ii) tracks, (iii) albums, (iv) playlists, (v) gurus, and (vi) social graph.

496. A processor-implemented method for displaying content items, comprising:

obtaining a user selection of a content attribute row item;

displaying the selected content attribute row item in a corresponding attribute row of a first selection column of a media display view;

identifying related content attribute row items; and

providing the identified related content attribute row items for selection; and

displaying the selected related content attribute row item in a corresponding attribute row of a subsequent selection column of the media display view.

497. The method of claim 496, wherein the selection column establishes the sequence of selection of the content attribute row items.

498. The method of claim 496, further comprising a media selection view displaying a designated spotlight area that is configured to receive the selected content attribute row item.

499. The method of claim 497, wherein the selection of the content attribute row item is made by a user via one of (i) a single action, or (ii) a double action.

500. The method of claim 489, wherein rows and columns are orthogonal and not spatially perpendicular.

501. The method of claim 496, wherein the media display view corresponds to a time period, the method further comprising:

obtaining data corresponding to a plurality of content attribute row items spotlighted during the time period; and

displaying the obtained data in corresponding content attribute rows and selection columns.

502. The method of claim 496, wherein the content attribute row items are selected from a group including: (i) artists, (ii) tracks, (iii) albums, (iv) playlists, (v) gurus, and (vi) social graph.

503. A system for displaying content items, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain a user selection of a content attribute row item;

display the selected content attribute row item in a corresponding attribute row of a first selection column of a media display view;

identify related content attribute row items; and

provide the identified related content attribute row items for selection; and

display the selected related content attribute row item in a corresponding attribute row of a subsequent selection column of the media display view.

504. The system of claim 503, wherein the selection column establishes the sequence of selection of the content attribute row items.

505. The system of claim 503, further comprising a media selection view wherein the processor issues instructions to display a designated spotlight area that is configured to receive the selected content attribute row item.

506. The system of claim 504, wherein the selection of the content attribute row item is made by a user via one of (i) a single action, or (ii) a double action.

507. The system of claim 503, wherein rows and columns are orthogonal and not spatially perpendicular.

508. The system of claim 503, wherein the media display view corresponds to a time period, and wherein the processor issues further instructions to:

obtain data corresponding to a plurality of content attribute row items spotlighted during the time period; and

display the obtained data in corresponding content attribute rows and selection columns.

509. The system of claim 503, wherein the content attribute row items are selected from a group including: (i) artists, (ii) tracks, (iii) albums, (iv) playlists, (v) gurus, and (vi) social graph.

510. A processor-readable medium storing processor-issuable instructions for displaying content items wherein the processor issues instructions to:

obtain a user selection of a content attribute row item;

display the selected content attribute row item in a corresponding attribute row of a first selection column of a media display view;

identify related content attribute row items; and

provide the identified related content attribute row items for selection; and

display the selected related content attribute row item in a corresponding attribute row of a subsequent selection column in the media display view.

511. The medium of claim 510, wherein the selection column establishes the sequence of selection of the content attribute row items.

512. The medium of claim 510, further comprising a media selection view wherein the processor issues instructions to display a designated spotlight area that is configured to receive the selected content attribute row item.

513. The medium of claim 511, wherein the selection of the content attribute row item is made by a user via one of (i) a single action, or (ii) a double action.

514. The medium of claim 510, wherein rows and columns are orthogonal and not spatially perpendicular.

515. The medium of claim 510, wherein each media display view corresponds to a time period, and wherein the processor issues further instructions to:

obtain data corresponding to a plurality of content attribute row items spotlighted during the time period; and

display the obtained data in corresponding content attribute rows and selection columns.

516. The medium of claim 510, wherein the content attribute row items are selected from a group including: (i) artists, (ii) tracks, (iii) albums, (iv) playlists, (v) gurus, and (vi) social graph.

517. A search and discovery interface, comprising:

an entry point representation surrounded by a plurality of discovery supportive heuristic representations,

wherein the entry point representation is configured to receive a first universally resolvable content item selected from one of the plurality of discovery supportive heuristic representations;

wherein the interface is configured to identify, for each of the plurality of discovery supportive heuristic representations, a universally resolvable content item related to the content item in the entry point representation; and

wherein each of the plurality of discovery supportive heuristic representations is configured to display the corresponding identified universally resolvable content item.

518. The interface of claim 517, wherein the plurality of discovery supportive heuristic representations include (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

519. The interface of claim 518, wherein the content item in each of the plurality of discovery supportive heuristic representations is the most related (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

520. The interface of claim 517, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is shareable with one or more users.

521. The interface of claim 517, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is downloadable to one or more client devices.

522. The interface of claim 517, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is includable in one or more playlists.

523. A processor-implemented search and discovery method, comprising:

receiving at an entry point representation a first universally resolvable content item seed selected from one of a plurality of discovery supportive heuristic representations;

obtaining for each of the plurality of discovery supportive heuristic representations a universally resolvable content item related to the content item seed; and

displaying at each of the plurality of discovery supportive heuristic representations the corresponding related universally resolvable content item.

524. The method of claim 523, wherein the plurality of discovery supportive heuristic representations include (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

525. The method of claim 524, wherein the content item in each of the plurality of discovery supportive heuristic representations is the most related (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

526. The method of claim 523, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is shareable with one or more users.

527. The method of claim 523, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is downloadable to one or more client devices.

528. The method of claim 523, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is includable in one or more playlists.

529. A search and discovery system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

receive at an entry point representation a first universally resolvable content item seed selected from one of a plurality of discovery supportive heuristic representations;

obtain for each of the plurality of discovery supportive heuristic representations a universally resolvable content item related to the content item seed; and

display at each of the plurality of discovery supportive heuristic representations the corresponding related universally resolvable content item.

530. The system of claim 529, wherein the plurality of discovery supportive heuristic representations include (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

531. The system of claim 530, wherein the content item in each of the plurality of discovery supportive heuristic representations is the most related (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

532. The system of claim 529, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is shareable with one or more users.

533. The system of claim 529, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is downloadable to one or more client devices.

534. The system of claim 529, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is includable in one or more playlists.

535. A processor-readable search and discovery medium storing processor-issuable instructions, wherein the processor issues instructions to:

receive at an entry point representation a first universally resolvable content item seed selected from one of a plurality of discovery supportive heuristic representations;

obtain for each of the plurality of discovery supportive heuristic representations a universally resolvable content item related to the content item seed; and

display at each of the plurality of discovery supportive heuristic representations the corresponding related universally resolvable content item.

536. The medium of claim 535, wherein the plurality of discovery supportive heuristic representations include (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

537. The medium of claim 536, wherein the content item in each of the plurality of discovery supportive heuristic representations is the most related (i) track, (ii) artist, (iii) album, (iv) gurus, and (v) playlist.

538. The medium of claim 535, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is shareable with one or more users.

539. The medium of claim 535, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is downloadable to one or more client devices.

540. The medium of claim 535, wherein the universally resolvable content seed in the entry point representation and in each one of the plurality of discovery supportive category representations is includable in one or more playlists.

541. A processor-implemented method for providing universally resolvable content items, comprising:

receiving user selection of a universally resolvable content seed;

determining via a processor socially influenced content attributes associated with the universally resolvable content seed;

querying a universally resolvable content database using the socially influenced content attributes;

obtaining a ranked list of universally resolvable content items from the querying;

providing the ranked list of universally resolvable content items to the user.

542. The method of claim 541, further comprising:

creating a content query based on the socially influenced content attributes for the querying.

543. The method of claim 542, further comprising:

creating socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

544. The method of claim 541, wherein determining the socially influenced content attributes associated with the universally resolvable content seed includes:

determining if the universally resolvable content seed is a universally resolvable content item seed.

545. The method of claim 544, wherein when the universally resolvable content seed is a universally resolvable content item seed, determining the socially influenced content attributes includes:

retrieving user profile and social graph preferences;

utilizing the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

546. The method of claim 545, wherein the social graph preferences are derived from the user's one or more social networks.

547. The method of claim 544, wherein when the universally resolvable content seed is not a content item seed, determining the socially influenced content attributes further comprises:

selecting a socially influenced content item seed selection criterion; and

retrieving a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

548. The method of claim 547, further comprising:

retrieving user profile and social graph preferences; and

utilizing the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

549. The method of claim 547, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

550. The method of claim 543, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

551. The method of claim 550, wherein obtaining the ranked list of universally resolvable content item further comprises:

assigning a category weight to each one of the socially influenced ranking categories; and

ranking the socially influenced categorized results based on a calculated social influence score.

552. The method of claim 551, further comprising:

for each one of the unique results, calculating the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

553. The method of claim 541, further comprising:

obtaining from the user's client device a local cache request for a non-local universally resolvable content item; and

providing the non-local universally resolvable content item to the user's client device.

554. The method of claim 551, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

555. The method of claim 541, further comprising:

determining via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

querying the universally resolvable content database using the interest graph influenced content attributes;

obtaining a ranked list of universally resolvable content items from the querying;

providing the ranked list of universally resolvable content items to the user.

556. A system for providing universally resolvable content items, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

receive user selection of a universally resolvable content seed;

determine via a processor socially influenced content attributes associated with the universally resolvable content seed;

query a universally resolvable content database using the socially influenced content attributes;

obtain a ranked list of universally resolvable content items from the querying; and

provide the ranked list of universally resolvable content items to the user.

557. The system of claim 556, wherein the processor issues further instructions to:

create a content query based on the socially influenced content attributes for the querying.

558. The system of claim 557, wherein the processor issues further instructions to:

create socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

559. The system of claim 556, wherein the instructions to determine the socially influenced content attributes associated with the universally resolvable content seed includes instructions to:

determine if the universally resolvable content seed is a universally resolvable content item seed.

560. The system of claim 559, wherein when the universally resolvable content seed is a universally resolvable content item seed, the instructions to determine the socially influenced content attributes includes instructions to:

retrieve user profile and social graph preferences;

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

561. The system of claim 560, wherein the social graph preferences are derived from the user's one or more social networks.

562. The system of claim 559, wherein when the universally resolvable content seed is not a content item seed, the instructions to determine the socially influenced content attributes further comprises instructions to:

select a socially influenced content item seed selection criterion; and

retrieve a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

563. The system of claim 562, wherein the processor issues further instructions to:

retrieve user profile and social graph preferences; and

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

564. The system of claim 562, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

565. The system of claim 558, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

566. The system of claim 565, wherein the instructions to obtain the ranked list of universally resolvable content item further comprises instructions to:

assign a category weight to each one of the socially influenced ranking categories; and

rank the socially influenced categorized results based on a calculated social influence score.

567. The system of claim 566, wherein for each one of the unique results, the processor issues further instructions to calculate the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

568. The system of claim 556, wherein the processor issues further instructions to:

obtain from the user's client device a local cache request for a non-local universally resolvable content item; and

provide the non-local universally resolvable content item to the user's client device.

569. The system of claim 568, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

570. The system of claim 556, wherein the processor issues further instructions to:

determine via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

query the universally resolvable content database using the interest graph influenced content attributes;

obtain a ranked list of universally resolvable content items from the querying;

provide the ranked list of universally resolvable content items to the user.

571. A processor-readable medium storing processor-issuable instructions for providing universally resolvable content items, wherein the processor issues instructions to:

receive user selection of a universally resolvable content seed;

determine via a processor socially influenced content attributes associated with the universally resolvable content seed;

query a universally resolvable content database using the socially influenced content attributes;

obtain a ranked list of universally resolvable content items from the querying; and

provide the ranked list of universally resolvable content items to the user.

572. The medium of claim 571, wherein the processor issues further instructions to:

create a content query based on the socially influenced content attributes for the querying.

573. The medium of claim 572, wherein the processor issues further instructions to:

create socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

574. The medium of claim 571, wherein the instructions to determine the socially influenced content attributes associated with the universally resolvable content seed includes instructions to:

determine if the universally resolvable content seed is a universally resolvable content item seed.

575. The medium of claim 574, wherein when the universally resolvable content seed is a universally resolvable content item seed, the instructions to determine the socially influenced content attributes includes instructions to:

retrieve user profile and social graph preferences;

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

576. The medium of claim 575, wherein the social graph preferences are derived from the user's one or more social networks.

577. The medium of claim 574, wherein when the universally resolvable content seed is not a content item seed, the instructions to determine the socially influenced content attributes further comprises instructions to:

select a socially influenced content item seed selection criterion; and

retrieve a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

578. The medium of claim 577, wherein the processor issues further instructions to:

retrieve user profile and social graph preferences; and

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

579. The medium of claim 577, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

580. The medium of claim 573, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

581. The medium of claim 580, wherein the instructions to obtain the ranked list of universally resolvable content item further comprises instructions to:

assign a category weight to each one of the socially influenced ranking categories; and

rank the socially influenced categorized results based on a calculated social influence score.

582. The medium of claim 581, wherein for each one of the unique results, the processor issues further instructions to calculate the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

583. The medium of claim 571, wherein the processor issues further instructions to:

obtain from the user's client device a local cache request for a non-local universally resolvable content item; and

provide the non-local universally resolvable content item to the user's client device.

584. The medium of claim 583, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

585. The medium of claim 571, wherein the processor issues further instructions to:

determine via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

query the universally resolvable content database using the interest graph influenced content attributes;

obtain a ranked list of universally resolvable content items from the querying;

provide the ranked list of universally resolvable content items to the user.

586. An apparatus for providing universally resolvable content items, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

receive user selection of a universally resolvable content seed;

determine via a processor socially influenced content attributes associated with the universally resolvable content seed;

query a universally resolvable content database using the socially influenced content attributes;

obtain a ranked list of universally resolvable content items from the querying; and

provide the ranked list of universally resolvable content items to the user.

587. The apparatus of claim 586, wherein the processor issues further instructions to:

create a content query based on the socially influenced content attributes for the querying.

588. The apparatus of claim 587, wherein the processor issues further instructions to:

create socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

589. The apparatus of claim 586, wherein the instructions to determine the socially influenced content attributes associated with the universally resolvable content seed includes instructions to:

determine if the universally resolvable content seed is a universally resolvable content item seed.

590. The apparatus of claim 589, wherein when the universally resolvable content seed is a universally resolvable content item seed, the instructions to determine the socially influenced content attributes includes instructions to:

retrieve user profile and social graph preferences;

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

591. The apparatus of claim 590, wherein the social graph preferences are derived from the user's one or more social networks.

592. The apparatus of claim 589, wherein when the universally resolvable content seed is not a content item seed, the instructions to determine the socially influenced content attributes further comprises instructions to:

select a socially influenced content item seed selection criterion; and

retrieve a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

593. The apparatus of claim 592, wherein the processor issues further instructions to:

retrieve user profile and social graph preferences; and

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

594. The apparatus of claim 592, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

595. The apparatus of claim 588, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

596. The apparatus of claim 595, wherein the instructions to obtain the ranked list of universally resolvable content item further comprises instructions to:

assign a category weight to each one of the socially influenced ranking categories; and

rank the socially influenced categorized results based on a calculated social influence score.

597. The apparatus of claim 596, wherein for each one of the unique results, the processor issues further instructions to calculate the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

598. The apparatus of claim 586, wherein the processor issues further instructions to:

obtain from the user's client device a local cache request for a non-local universally resolvable content item; and

provide the non-local universally resolvable content item to the user's client device.

599. The apparatus of claim 598, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

600. The apparatus of claim 586, wherein the processor issues further instructions to:

determine via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

query the universally resolvable content database using the interest graph influenced content attributes;

obtain a ranked list of universally resolvable content items from the querying;

provide the ranked list of universally resolvable content items to the user.

601. A processor-implemented method for providing universally resolvable content items, comprising:

providing user selection of a universally resolvable content seed;

providing a request to determine via a processor socially influenced content attributes associated with the universally resolvable content seed;

providing a request to querying a universally resolvable content database using the socially influenced content attributes;

providing a request obtaining a ranked list of universally resolvable content items from the querying;

receiving the ranked list of universally resolvable content items to the user.

602. The method of claim 601, further comprising:

creating a content query based on the socially influenced content attributes for the querying.

603. The method of claim 602, further comprising:

providing authorization to create socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

604. The method of claim 601, wherein determining the socially influenced content attributes associated with the universally resolvable content seed includes:

providing authorization to determine if the universally resolvable content seed is a universally resolvable content item seed.

605. The method of claim 604, wherein when the universally resolvable content seed is a universally resolvable content item seed, determining the socially influenced content attributes includes:

retrieving user profile and social graph preferences;

utilizing the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

606. The method of claim 605, wherein the social graph preferences are derived from the user's one or more social networks.

607. The method of claim 604, wherein when the universally resolvable content seed is not a content item seed, determining the socially influenced content attributes further comprises:

selecting a socially influenced content item seed selection criterion; and

retrieving a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

608. The method of claim 607, further comprising:

providing user profile and social graph preferences; and

providing authorization to utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

609. The method of claim 607, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

610. The method of claim 603, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

611. The method of claim 610, wherein obtaining the ranked list of universally resolvable content item further comprises:

assigning a category weight to each one of the socially influenced ranking categories; and

ranking the socially influenced categorized results based on a calculated social influence score.

612. The method of claim 611, further comprising:

for each one of the unique results, calculating the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

613. The method of claim 601, further comprising:

obtaining from the user's client device a local cache request for a non-local universally resolvable content item; and

providing the non-local universally resolvable content item to the user's client device.

614. The method of claim 611, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

615. The method of claim 601, further comprising:

providing authorization to determine via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

providing authorization to query the universally resolvable content database using the interest graph influenced content attributes;

providing a ranked list of universally resolvable content items from the querying;

obtaining the ranked list of universally resolvable content items to the user.

616. A system for providing universally resolvable content items, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide user selection of a universally resolvable content seed;

provide a request to determine via a processor socially influenced content attributes associated with the universally resolvable content seed;

provide a request to query a universally resolvable content database using the socially influenced content attributes;

provide a request to obtain a ranked list of universally resolvable content items from the querying; and

obtain the ranked list of universally resolvable content items to the user.

617. The system of claim 616, wherein the processor issues further instructions to:

create a content query based on the socially influenced content attributes for the querying.

618. The system of claim 617, wherein the processor issues further instructions to:

create socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

619. The system of claim 616, wherein the instructions to determine the socially influenced content attributes associated with the universally resolvable content seed includes instructions to:

determine if the universally resolvable content seed is a universally resolvable content item seed.

620. The system of claim 619, wherein when the universally resolvable content seed is a universally resolvable content item seed, the instructions to determine the socially influenced content attributes includes instructions to:

retrieve user profile and social graph preferences;

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

621. The system of claim 620, wherein the social graph preferences are derived from the user's one or more social networks.

622. The system of claim 619, wherein when the universally resolvable content seed is not a content item seed, the instructions to determine the socially influenced content attributes further comprises instructions to:

select a socially influenced content item seed selection criterion; and

retrieve a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

623. The system of claim 622, wherein the processor issues further instructions to:

retrieve user profile and social graph preferences; and

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

624. The system of claim 622, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

625. The system of claim 618, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

626. The system of claim 625, wherein the instructions to obtain the ranked list of universally resolvable content item further comprises instructions to:

assign a category weight to each one of the socially influenced ranking categories; and

rank the socially influenced categorized results based on a calculated social influence score.

627. The system of claim 626, wherein for each one of the unique results, the processor issues further instructions to calculate the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

628. The system of claim 616, wherein the processor issues further instructions to:

obtain from the user's client device a local cache request for a non-local universally resolvable content item; and

provide the non-local universally resolvable content item to the user's client device.

629. The system of claim 628, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

630. The system of claim 616, wherein the processor issues further instructions to:

provide a request to determine via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

provide a request to query the universally resolvable content database using the interest graph influenced content attributes;

provide a request to obtain a ranked list of universally resolvable content items from the querying;

obtain the ranked list of universally resolvable content items to the user.

631. A processor-readable medium storing processor-issuable instructions for providing universally resolvable content items, wherein the processor issues instructions to:

provide user selection of a universally resolvable content seed;

provide a request to determine via a processor socially influenced content attributes associated with the universally resolvable content seed;

provide a request to query a universally resolvable content database using the socially influenced content attributes;

provide a request to obtain a ranked list of universally resolvable content items from the querying; and

obtain the ranked list of universally resolvable content items to the user.

632. The medium of claim 631, wherein the processor issues further instructions to:

create a content query based on the socially influenced content attributes for the querying.

633. The medium of claim 632, wherein the processor issues further instructions to:

create socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

634. The medium of claim 631, wherein the instructions to determine the socially influenced content attributes associated with the universally resolvable content seed includes instructions to:

determine if the universally resolvable content seed is a universally resolvable content item seed.

635. The medium of claim 634, wherein when the universally resolvable content seed is a universally resolvable content item seed, the instructions to determine the socially influenced content attributes includes instructions to:

retrieve user profile and social graph preferences;

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

636. The medium of claim 635, wherein the social graph preferences are derived from the user's one or more social networks.

637. The medium of claim 634, wherein when the universally resolvable content seed is not a content item seed, the instructions to determine the socially influenced content attributes further comprises instructions to:

select a socially influenced content item seed selection criterion; and

retrieve a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

638. The medium of claim 637, wherein the processor issues further instructions to:

retrieve user profile and social graph preferences; and

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

639. The medium of claim 637, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

640. The medium of claim 633, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

641. The medium of claim 640, wherein the instructions to obtain the ranked list of universally resolvable content item further comprises instructions to:

assign a category weight to each one of the socially influenced ranking categories; and

rank the socially influenced categorized results based on a calculated social influence score.

642. The medium of claim 641, wherein for each one of the unique results, the processor issues further instructions to calculate the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

643. The medium of claim 631, wherein the processor issues further instructions to:

obtain from the user's client device a local cache request for a non-local universally resolvable content item; and

provide the non-local universally resolvable content item to the user's client device.

644. The medium of claim 643, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

645. The medium of claim 631, wherein the processor issues further instructions to:

provide a request to determine via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

provide a request to query the universally resolvable content database using the interest graph influenced content attributes;

provide a request to obtain a ranked list of universally resolvable content items from the querying;

obtain the ranked list of universally resolvable content items to the user.

646. An apparatus for providing universally resolvable content items, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide user selection of a universally resolvable content seed;

provide a request to determine via a processor socially influenced content attributes associated with the universally resolvable content seed;

provide a request to query a universally resolvable content database using the socially influenced content attributes;

provide a request to obtain a ranked list of universally resolvable content items from the querying; and

obtain the ranked list of universally resolvable content items to the user.

647. The apparatus of claim 646, wherein the processor issues further instructions to:

create a content query based on the socially influenced content attributes for the querying.

648. The apparatus of claim 647, wherein the processor issues further instructions to:

create socially influenced ranking categories and populating the ranking categories with results from the query to obtain the ranked list of universally resolvable content items.

649. The apparatus of claim 646, wherein the instructions to determine the socially influenced content attributes associated with the universally resolvable content seed includes instructions to:

determine if the universally resolvable content seed is a universally resolvable content item seed.

650. The apparatus of claim 649, wherein when the universally resolvable content seed is a universally resolvable content item seed, the instructions to determine the socially influenced content attributes includes instructions to:

retrieve user profile and social graph preferences;

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories to obtain the ranked list of universally resolvable content items.

651. The apparatus of claim 650, wherein the social graph preferences are derived from the user's one or more social networks.

652. The apparatus of claim 649, wherein when the universally resolvable content seed is not a content item seed, the instructions to determine the socially influenced content attributes further comprises instructions to:

select a socially influenced content item seed selection criterion; and

retrieve a universally resolvable content item seed associated with the universally resolvable content seed based on the selected criterion.

653. The apparatus of claim 652, wherein the processor issues further instructions to:

retrieve user profile and social graph preferences; and

utilize the retrieved user profile and social graph preferences to create socially influenced ranking categories for obtaining the ranked list of universally resolvable content items.

654. The apparatus of claim 652, wherein the socially influenced content item seed selection criterion is one of a: (i) a specified default, (ii) currently played track, (iii) most played track, (iv) favorite track, (v) favorite genre, and (vi) last purchase.

655. The apparatus of claim 648, wherein the results from the query are assigned a weight corresponding to relevance to the content query.

656. The apparatus of claim 655, wherein the instructions to obtain the ranked list of universally resolvable content item further comprises instructions to:

assign a category weight to each one of the socially influenced ranking categories; and

rank the socially influenced categorized results based on a calculated social influence score.

657. The apparatus of claim 656, wherein for each one of the unique results, the processor issues further instructions to calculate the social influence score based on the assigned category weight and the weight corresponding to relevance to the content query.

658. The apparatus of claim 646, wherein the processor issues further instructions to:

obtain from the user's client device a local cache request for a non-local universally resolvable content item; and

provide the non-local universally resolvable content item to the user's client device.

659. The apparatus of claim 658, wherein the non-local universally resolvable content item in the user's client device is marked as temporary.

660. The apparatus of claim 646, wherein the processor issues further instructions to:

provide a request to determine via the processor interest graph influenced content attributes associated with the universally resolvable content seed;

provide a request to query the universally resolvable content database using the interest graph influenced content attributes;

provide a request to obtain a ranked list of universally resolvable content items from the querying;

obtain the ranked list of universally resolvable content items to the user.

661. A processor-implemented method, comprising:

obtaining information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

obtaining the user's social influence weight in a universally resolvable media content service;

obtaining a social influence weight associated with the activity; and

updating the user's social influence profile based on the activity.

662. The method of claim 661, further comprising:

prior to the updating, determining whether the activity meets the social influence weight upgrade criteria.

663. The method of claim 661, wherein updating the user's social influence profile based on the activity further comprises:

obtaining social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

664. The method of claim 663, further comprising:

obtaining historical data corresponding to the user engagement in the activity; and

adjusting the social influence points based on the historical data.

665. The method of claim 661, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

666. The method of claim 661, further comprising:

qualifying the user for at least one promotional incentive based on the updated social influence profile.

667. The method of claim 666, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

668. The method of claim 666, further comprising:

providing the user the at least one promotional incentive when the activity matches one or more activity criteria.

669. The method of claim 661, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

670. The method of claim 665, further comprising:

determining whether the activity is a URMC socially influencing activity.

671. The method of claim 670, wherein the determining is based on tracked frequency of user engagement with a playlist sharing activity.

672. The method of claim 670, wherein the determining is based on tracked license purchase attributable to the user.

673. The method of claim 670, wherein the determining is based on tracked number of users following and unfollowing the user.

674. The method of claim 670, wherein the determining is based on tracked response to content sharing.

675. The method of claim 670, wherein the determining is based on tracked usage volume of other users attributable to the user.

676. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

obtain the user's social influence weight in a universally resolvable media content service;

obtain a social influence weight associated with the activity; and

update the user's social influence profile based on the activity.

677. The system of claim 676, wherein the processor issues further instructions to:

prior to the update, determine whether the activity meets the social influence weight upgrade criteria.

678. The system of claim 676, wherein the instructions to update the user's social influence profile based on the activity further comprises instructions to:

obtain social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

679. The system of claim 678, wherein the processor issues further instructions to: obtain historical data corresponding to the user engagement in the activity; and

adjust the social influence points based on the historical data.

680. The system of claim 676, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

681. The system of claim 676, wherein the processor issues further instructions to:

qualify the user for at least one promotional incentive based on the updated social influence profile.

682. The system of claim 681, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

683. The system of claim 681, wherein the processor issues further instructions to:

provide the user the at least one promotional incentive when the activity matches one or more activity criteria.

684. The system of claim 676, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

685. The system of claim 680, wherein the processor issues further instructions to:

determine whether the activity is a URMC socially influencing activity.

686. The system of claim 685, wherein the determination is based on tracked frequency of user engagement with a playlist sharing activity.

687. The system of claim 685, wherein the determination is based on tracked license purchase attributable to the user.

688. The system of claim 685, wherein the determination is based on tracked number of users following and unfollowing the user.

689. The system of claim 685, wherein the determination is based on tracked response to content sharing.

690. The system of claim 685, wherein the determination is based on tracked usage volume of other users attributable to the user.

691. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

obtain information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

obtain the user's social influence weight in a universally resolvable media content service;

obtain a social influence weight associated with the activity; and

update the user's social influence profile based on the activity.

692. The medium of claim 691, wherein the processor issues further instructions to:

prior to the update, determine whether the activity meets the social influence weight upgrade criteria.

693. The medium of claim 691, wherein the instructions to update the user's social influence profile based on the activity further comprises instructions to:

obtain social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

694. The medium of claim 693, wherein the processor issues further instructions to: obtain historical data corresponding to the user engagement in the activity; and

adjust the social influence points based on the historical data.

695. The medium of claim 691, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

696. The medium of claim 691, wherein the processor issues further instructions to:

qualify the user for at least one promotional incentive based on the updated social influence profile.

697. The medium of claim 696, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

698. The medium of claim 696, wherein the processor issues further instructions to:

provide the user the at least one promotional incentive when the activity matches one or more activity criteria.

699. The medium of claim 691, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

700. The medium of claim 695 wherein the processor issues further instructions to:

determine whether the activity is a URMC socially influencing activity.

701. The medium of claim 700, wherein the determination is based on tracked frequency of user engagement with a playlist sharing activity.

702. The medium of claim 700, wherein the determination is based on tracked license purchase attributable to the user.

703. The medium of claim 700, wherein the determination is based on tracked number of users following and unfollowing the user.

704. The medium of claim 700, wherein the determination is based on tracked response to content sharing.

705. The medium of claim 700, wherein the determination is based on tracked usage volume of other users attributable to the user.

706. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

obtain the user's social influence weight in a universally resolvable media content service;

obtain a social influence weight associated with the activity; and

update the user's social influence profile based on the activity.

707. The apparatus of claim 706, wherein the processor issues further instructions to:

prior to the update, determine whether the activity meets the social influence weight upgrade criteria.

708. The apparatus of claim 706, wherein the instructions to update the user's social influence profile based on the activity further comprises instructions to:

obtain social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

709. The apparatus of claim 708, wherein the processor issues further instructions to: obtain historical data corresponding to the user engagement in the activity; and

adjust the social influence points based on the historical data.

710. The apparatus of claim 706, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

711. The apparatus of claim 706, wherein the processor issues further instructions to:

qualify the user for at least one promotional incentive based on the updated social influence profile.

712. The apparatus of claim 711, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

713. The apparatus of claim 711, wherein the processor issues further instructions to:

provide the user the at least one promotional incentive when the activity matches one or more activity criteria.

714. The apparatus of claim 706, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

715. The apparatus of claim 710 wherein the processor issues further instructions to:

determine whether the activity is a URMC socially influencing activity.

716. The apparatus of claim 715, wherein the determination is based on tracked frequency of user engagement with a playlist sharing activity.

717. The apparatus of claim 715, wherein the determination is based on tracked license purchase attributable to the user.

718. The apparatus of claim 715, wherein the determination is based on tracked number of users following and unfollowing the user.

719. The apparatus of claim 715, wherein the determination is based on tracked response to content sharing.

720. The apparatus of claim 715, wherein the determination is based on tracked usage volume of other users attributable to the user.

721. A processor-implemented method, comprising:

providing information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

providing the user's social influence weight in a universally resolvable media content service;

providing a social influence weight associated with the activity; and

providing a request to update the user's social influence profile based on the activity.

722. The method of claim 721, further comprising:

prior to the updating, determining whether the activity meets the social influence weight upgrade criteria.

723. The method of claim 721, wherein updating the user's social influence profile based on the activity further comprises:

obtaining social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

724. The method of claim 723, further comprising:

obtaining historical data corresponding to the user engagement in the activity; and

adjusting the social influence points based on the historical data.

725. The method of claim 721, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

726. The method of claim 721, further comprising:

qualifying the user for at least one promotional incentive based on the updated social influence profile.

727. The method of claim 726, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

728. The method of claim 726, further comprising:

providing the user the at least one promotional incentive when the activity matches one or more activity criteria.

729. The method of claim 721, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

730. The method of claim 725, further comprising:

determining whether the activity is a URMC socially influencing activity.

731. The method of claim 730, wherein the determining is based on tracked frequency of user engagement with a playlist sharing activity.

732. The method of claim 730, wherein the determining is based on tracked license purchase attributable to the user.

733. The method of claim 730, wherein the determining is based on tracked number of users following and unfollowing the user.

734. The method of claim 730, wherein the determining is based on tracked response to content sharing.

735. The method of claim 730, wherein the determining is based on tracked usage volume of other users attributable to the user.

736. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

provide the user's social influence weight in a universally resolvable media content service;

provide a social influence weight associated with the activity; and

providing a request to update the user's social influence profile based on the activity.

737. The system of claim 736, wherein the processor issues further instructions to:

prior to the update, determine whether the activity meets the social influence weight upgrade criteria.

738. The system of claim 736, wherein the instructions to update the user's social influence profile based on the activity further comprises instructions to:

obtain social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

739. The system of claim 738, wherein the processor issues further instructions to: obtain historical data corresponding to the user engagement in the activity; and

adjust the social influence points based on the historical data.

740. The system of claim 736, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

741. The system of claim 736, wherein the processor issues further instructions to:

qualify the user for at least one promotional incentive based on the updated social influence profile.

742. The system of claim 741, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

743. The system of claim 741, wherein the processor issues further instructions to:

provide the user the at least one promotional incentive when the activity matches one or more activity criteria.

744. The system of claim 736, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

745. The system of claim 740, wherein the processor issues further instructions to:

determine whether the activity is a URMC socially influencing activity.

746. The system of claim 745, wherein the determination is based on tracked frequency of user engagement with a playlist sharing activity.

747. The system of claim 745, wherein the determination is based on tracked license purchase attributable to the user.

748. The system of claim 745, wherein the determination is based on tracked number of users following and unfollowing the user.

749. The system of claim 745, wherein the determination is based on tracked response to content sharing.

750. The system of claim 745, wherein the determination is based on tracked usage volume of other users attributable to the user.

751. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

provide information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

provide the user's social influence weight in a universally resolvable media content service;

provide a social influence weight associated with the activity; and

providing a request to update the user's social influence profile based on the activity.

752. The medium of claim 751, wherein the processor issues further instructions to:

prior to the update, determine whether the activity meets the social influence weight upgrade criteria.

753. The medium of claim 751, wherein the instructions to update the user's social influence profile based on the activity further comprises instructions to:

obtain social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

754. The medium of claim 753, wherein the processor issues further instructions to: obtain historical data corresponding to the user engagement in the activity; and

adjust the social influence points based on the historical data.

755. The medium of claim 751, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

756. The medium of claim 751, wherein the processor issues further instructions to:

qualify the user for at least one promotional incentive based on the updated social influence profile.

757. The medium of claim 756, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

758. The medium of claim 756, wherein the processor issues further instructions to:

provide the user the at least one promotional incentive when the activity matches one or more activity criteria.

759. The medium of claim 751, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

760. The medium of claim 755 wherein the processor issues further instructions to:

determine whether the activity is a URMC socially influencing activity.

761. The medium of claim 760, wherein the determination is based on tracked frequency of user engagement with a playlist sharing activity.

762. The medium of claim 760, wherein the determination is based on tracked license purchase attributable to the user.

763. The medium of claim 760, wherein the determination is based on tracked number of users following and unfollowing the user.

764. The medium of claim 760, wherein the determination is based on tracked response to content sharing.

765. The medium of claim 760, wherein the determination is based on tracked usage volume of other users attributable to the user.

766. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain information relating to universally resolvable media content ("URMC") social influence weighted user engagement in at least one URMC socially influencing activity;

provide the user's social influence weight in a universally resolvable media content service;

provide a social influence weight associated with the activity; and

provide a request to update the user's social influence profile based on the activity.

767. The apparatus of claim 766, wherein the processor issues further instructions to:

prior to the update, determine whether the activity meets the social influence weight upgrade criteria.

768. The apparatus of claim 766, wherein the instructions to update the user's social influence profile based on the activity further comprises instructions to:

obtain social influence points associated with the activity; and

determine the social influence weight corresponding to the social influence points.

769. The apparatus of claim 768, wherein the processor issues further instructions to: obtain historical data corresponding to the user engagement in the activity; and

adjust the social influence points based on the historical data.

770. The apparatus of claim 766, wherein the activity is at least one of: (i) playlist creation; (ii) playlist sharing; (iii) media content rating; (iv) messaging; (v) posting; and (vi) influencing a number of users to play, download or purchase one or more tracks.

771. The apparatus of claim 766, wherein the processor issues further instructions to:

qualify the user for at least one promotional incentive based on the updated social influence profile.

772. The apparatus of claim 771, wherein the at least one promotional incentive is one: (i) purchase discount; (ii) free merchandise; and (iii) admission to events.

773. The apparatus of claim 771, wherein the processor issues further instructions to:

provide the user the at least one promotional incentive when the activity matches one or more activity criteria.

774. The apparatus of claim 766, wherein the socially influencing activity is related to at least one of: a social graph and an interest graph.

775. The apparatus of claim 770 wherein the processor issues further instructions to:

determine whether the activity is a URMC socially influencing activity.

776. The apparatus of claim 775, wherein the determination is based on tracked frequency of user engagement with a playlist sharing activity.

777. The apparatus of claim 775, wherein the determination is based on tracked license purchase attributable to the user.

778. The apparatus of claim 775, wherein the determination is based on tracked number of users following and unfollowing the user.

779. The apparatus of claim 775, wherein the determination is based on tracked response to content sharing.

780. The apparatus of claim 775, wherein the determination is based on tracked usage volume of other users attributable to the user.

781. A processor-implemented method, comprising:

detecting user initiation of a universally resolvable media content ("URMC") event in a client;

obtaining the URMC event identifying information;

recording the URMC event identifying information in association with the event in an event log in the client;

obtaining reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

determining activation of a URMC upload threshold trigger by evaluating the at least one URMC user activity upload rule;

initiating reporting of the logged URMC event identifying information based on the trigger activation; and

updating the client upon successful acknowledgement of said reporting by a server.

782. The method of claim 781, further comprising:

anonymizing the URMC event identifying information in the event log before initiating said reporting.

783. The method of claim 782, wherein a decision for anonymizing the URMC event identifying information is based on user preference information.

784. The method of claim 781, wherein when the client is disconnected from a communication network:

suspending said reporting until the client is connected to the communication network.

785. The method of claim 784, wherein when said reporting is suspended and a user initiation of a URMC event is detected,:

determining, using at least one URMC upload threshold rule, whether to disable contents of the URMC collection in the client.

786. The method of claim 781, wherein the URMC event is one of: (1) content started; (ii) content paused; (iii) content stopped; (iv) content skipped; and (v) application closed.

787. The method of claim 781, wherein the URMC event identifying information includes play session information including: play session start time, play session end time, total play session time for each content item in at least one of user library section, community section, discovery section and magic playlist.

788. The method of claim 781, wherein the URMC event identifying information includes at least one of: (i) content event name; (ii) event time stamp; (iii) universally resolvable content identifier; and (iv) user information.

789. The method of claim 781, wherein the at least one URMC user activity upload rule specifies a time for initiating reporting.

790. The method of claim 781, wherein the at least one URMC user activity upload rule specifies a number of URMC events for initiating reporting.

791. The method of claim 781, wherein the at least one URMC user activity upload rule specifies a number of each type of URMC event for initiating reporting.

792. The method of claim 781, further comprising categorizing the URMC event as at least one of: (i) play event; (ii) import event; (iii) share event; (iv) community event; and (v) search event.

793. The method of claim 792, further comprising selecting one or more URMC event categories for reporting based on the user's enrollment status in guru program.

794. The method of claim 792, wherein the reported URMC event identifying information is used for determining influence points attributable to one or more URMC service users.

795. The method of claim 792, wherein the reported URMC event identifying information is used for determining recommendations for the user.

796. The method of claim 792, wherein the reported URMC event identifying information is used for determining license payouts to URMC service partners.

797. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

detect user initiation of a universally resolvable media content ("URMC") event in a client;

obtain the URMC event identifying information;

record the URMC event identifying information in association with the event in an event log in the client;

obtain reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

determine activation of a URMC upload threshold trigger by evaluating the at least one URMC user activity upload rule;

initiate reporting of the logged URMC event identifying information based on the trigger activation; and

update the client upon successful acknowledgement of said reporting by a server.

798. The system of claim 797, further comprising instructions to:

anonymize the URMC event identifying information in the event log before initiating said reporting.

799. The system of claim 798, wherein a decision for anonymizing the URMC event identifying information is based on user preference information.

800. The system of claim 797, wherein when the client is disconnected from a communication network, providing instructions to:

suspend said reporting until the client is connected to the communication network.

801. The system of claim 800, wherein when said reporting is suspended and a user initiation of a URMC event is detected, providing instructions to:

determine, using at least one URMC upload threshold rule, whether to disable contents of the URMC collection in the client.

802. The system of claim 797, wherein the URMC event is one of: (1) content started; (ii) content paused; (iii) content stopped; (iv) content skipped; and (v) application closed.

803. The system of claim 797, wherein the URMC event identifying information includes play session information including: play session start time, play session end time, total play session time for each content item in at least one of user library section, community section, discovery section and magic playlist.

804. The system of claim 797, wherein the URMC event identifying information includes at least one of: (i) content event name; (ii) event time stamp; (iii) universally resolvable content identifier; and (iv) user information.

805. The system of claim 797, wherein the at least one URMC user activity upload rule specifies a time for initiating reporting.

806. The system of claim 797, wherein the at least one URMC user activity upload rule specifies a number of URMC events for initiating reporting.

807. The system of claim 797, wherein the at least one URMC user activity upload rule specifies a number of each type of URMC event for initiating reporting.

808. The system of claim 797, further comprising categorizing the URMC event as at least one of: (i) play event; (ii) import event; (iii) share event; (iv) community event; and (v) search event.

809. The system of claim 808, further comprising instructions to select one or more URMC event categories for reporting based on the user's enrollment status in guru program.

810. The system of claim 808, wherein the reported URMC event identifying information is used for determining influence points attributable to one or more URMC service users.

811. The system of claim 808, wherein the reported URMC event identifying information is used for determining recommendations for the user.

812. The system of claim 808, wherein the reported URMC event identifying information is used for determining license payouts to URMC service partners.

813. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

detect user initiation of a universally resolvable media content ("URMC") event in a client;

obtain the URMC event identifying information;

record the URMC event identifying information in association with the event in an event log in the client;

obtain reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

determine activation of a URMC upload threshold trigger by evaluating the at least one URMC user activity upload rule;

initiate reporting of the logged URMC event identifying information based on the trigger activation; and

update the client upon successful acknowledgement of said reporting by a server.

814. The medium of claim 813, further comprising instructions to:

anonymize the URMC event identifying information in the event log before initiating said reporting.

815. The medium of claim 814, wherein a decision for anonymizing the URMC event identifying information is based on user preference information.

816. The medium of claim 813, wherein when the client is disconnected from a communication network, providing instructions to:

suspend said reporting until the client is connected to the communication network.

817. The medium of claim 816, wherein when said reporting is suspended and a user initiation of a URMC event is detected, providing instructions to:

determine, using at least one URMC upload threshold rule, whether to disable contents of the URMC collection in the client.

818. The medium of claim 813, wherein the URMC event is one of: (1) content started; (ii) content paused; (iii) content stopped; (iv) content skipped; and (v) application closed.

819. The medium of claim 813, wherein the URMC event identifying information includes play session information including: play session start time, play session end time, total play session time for each content item in at least one of user library section, community section, discovery section and magic playlist.

820. The medium of claim 813, wherein the URMC event identifying information includes at least one of: (i) content event name; (ii) event time stamp; (iii) universally resolvable content identifier; and (iv) user information.

821. The medium of claim 813, wherein the at least one URMC user activity upload rule specifies a time for initiating reporting.

822. The medium of claim 813, wherein the at least one URMC user activity upload rule specifies a number of URMC events for initiating reporting.

823. The medium of claim 813, wherein the at least one URMC user activity upload rule specifies a number of each type of URMC event for initiating reporting.

824. The medium of claim 813, further comprising categorizing the URMC event as at least one of: (i) play event; (ii) import event; (iii) share event; (iv) community event; and (v) search event.

825. The medium of claim 824, further comprising instructions to select one or more URMC event categories for reporting based on the user's enrollment status in guru program.

826. The medium of claim 824, wherein the reported URMC event identifying information is used for determining influence points attributable to one or more URMC service users.

827. The medium of claim 824, wherein the reported URMC event identifying information is used for determining recommendations for the user.

828. The medium of claim 824, wherein the reported URMC event identifying information is used for determining license payouts to URMC service partners.

829. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

detect user initiation of a universally resolvable media content ("URMC") event in a client;

obtain the URMC event identifying information;

record the URMC event identifying information in association with the event in an event log in the client;

obtain reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

determine activation of a URMC upload threshold trigger by evaluating the at least one URMC user activity upload rule;

initiate reporting of the logged URMC event identifying information based on the trigger activation; and

update the client upon successful acknowledgement of said reporting by a server.

830. The apparatus of claim 829, further comprising instructions to:

anonymize the URMC event identifying information in the event log before initiating said reporting.

831. The apparatus of claim 830, wherein a decision for anonymizing the URMC event identifying information is based on user preference information.

832. The apparatus of claim 829, wherein when the client is disconnected from a communication network, providing instructions to:

suspend said reporting until the client is connected to the communication network.

833. The apparatus of claim 832, wherein when said reporting is suspended and a user initiation of a URMC event is detected, providing instructions to:

determine, using at least one URMC upload threshold rule, whether to disable contents of the URMC collection in the client.

834. The apparatus of claim 829, wherein the URMC event is one of: (1) content started; (ii) content paused; (iii) content stopped; (iv) content skipped; and (v) application closed.

835. The apparatus of claim 829, wherein the URMC event identifying information includes play session information including: play session start time, play session end time, total play session time for each content item in at least one of user library section, community section, discovery section and magic playlist.

836. The apparatus of claim 829, wherein the URMC event identifying information includes at least one of: (i) content event name; (ii) event time stamp; (iii) universally resolvable content identifier; and (iv) user information.

837. The apparatus of claim 829, wherein the at least one URMC user activity upload rule specifies a time for initiating reporting.

838. The apparatus of claim 829, wherein the at least one URMC user activity upload rule specifies a number of URMC events for initiating reporting.

839. The apparatus of claim 829, wherein the at least one URMC user activity upload rule specifies a number of each type of URMC event for initiating reporting.

840. The apparatus of claim 829, further comprising categorizing the URMC event as at least one of: (i) play event; (ii) import event; (iii) share event; (iv) community event; and (v) search event.

841. The apparatus of claim 840, further comprising instructions to select one or more URMC event categories for reporting based on the user's enrollment status in guru program.

842. The apparatus of claim 840, wherein the reported URMC event identifying information is used for determining influence points attributable to one or more URMC service users.

843. The apparatus of claim 840, wherein the reported URMC event identifying information is used for determining recommendations for the user.

844. The apparatus of claim 840, wherein the reported URMC event identifying information is used for determining license payouts to URMC service partners.

845. A processor-implemented method, comprising:

obtaining notification of a user initiation of a universally resolvable media content ("URMC") event in a client;

obtaining an event log recording the URMC event identifying information in association with the event;

providing reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

obtaining reporting of the logged URMC event identifying information that is triggered in accordance with at least one URMC user activity upload rule; and

providing an acknowledgment to the client upon obtaining said reporting.

846. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain notification of a user initiation of a universally resolvable media content ("URMC") event in a client;

obtain an event log recording the URMC event identifying information in association with the event;

provide reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

obtain reporting of the logged URMC event identifying information that is triggered in accordance with at least one URMC user activity upload rule; and

provide an acknowledgment to the client upon obtaining said reporting.

847. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

obtain notification of a user initiation of a universally resolvable media content ("URMC") event in a client;

obtain an event log recording the URMC event identifying information in association with the event;

provide reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

obtain reporting of the logged URMC event identifying information that is triggered in accordance with at least one URMC user activity upload rule; and

provide an acknowledgment to the client upon obtaining said reporting.

848. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain notification of a user initiation of a universally resolvable media content ("URMC") event in a client;

obtain an event log recording the URMC event identifying information in association with the event;

provide reporting frequency preference setting, wherein the preference setting includes at least one URMC user activity upload rule;

obtain reporting of the logged URMC event identifying information that is triggered in accordance with at least one URMC user activity upload rule; and

provide an acknowledgment to the client upon obtaining said reporting.

849. A processor-implemented method, comprising:

identifying an unlicensed content item and uniquely resolving it within a universally resolvable media content ("URMC") service;

obtaining aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

obtaining an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

evaluating the obtained aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

identifying a target for a license request for the uniquely resolved content item; and

sending the license request to the identified target.

850. The method of claim 849, further comprising:

obtaining, from the target, a license authorizing addition of the uniquely resolved content item to the URMC catalog.

851. The method of claim 850, further comprising:

obtaining lossless original media file;

licensing, encrypting and encoding the obtained media file; and

making the encoded content media file available to users of the URMC service.

852. The method of claim 851, wherein the encoding includes a standard quality encoding and a mobile quality encoding.

853. The method of claim 849, wherein the license request includes at least the uniquely resolved content identifying information and a request to add the content item to the URMC collection.

854. The method of claim 849, wherein the URMC service user engagement metric is track play count.

855. The method of claim 849, wherein the URMC service user engagement metric is at least one of: (i) share count; (ii) download count; (iii) rating; and (iv) comment count.

856. The method of claim 855, wherein the URMC service user engagement metric is associated with at least one of: (i) a track; (ii) a playlist; (iii) a smart playlist; (iv) a shared playlist; (v) a magic playlist; and (vi) a shared library.

857. The method of claim 849, wherein the at least one URMC license request threshold rule specifies a trigger for the license request when the aggregate URMC service user engagement metric associated with the uniquely resolved content item is greater than a percent threshold of the aggregate URMC service user engagement metric associated with the plurality of URMC content items.

858. The method of claim 849, wherein the at least one URMC license request threshold rule specifies a threshold for the aggregate URMC service user engagement metrics associated with the uniquely resolved content item.

859. The method of claim 849, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises acoustically matching the content item with URMC items in a URMC catalog.

860. The method of claim 849, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises querying a URMC metadata database using metadata associated with the content item.

861. The method of claim 849, further comprising:

obtaining metadata associated with the uniquely resolved content item; and

querying a URMC license database using the obtained metadata for availability of license.

862. The method of claim 849, wherein the target for the license request is identified based on at least one of an acoustical fingerprint and metadata associated with the uniquely resolved content item.

863. The method of claim 849, wherein the identified target is a rights clearing agency.

864. The method of claim 849, wherein the identified target is one of participating licensors of the URMC service.

865. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

identify an unlicensed content item and uniquely resolving it within a universally resolvable media content ("URMC") service;

obtain aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

obtain an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

evaluate the obtained aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

identify a target for a license request for the uniquely resolved content item; and

send the license request to the identified target.

866. The system of claim 865, further comprising instructions to:

obtain, from the target, a license authorizing addition of the uniquely resolved content item to the URMC catalog.

867. The system of claim 866, further comprising instructions to:

obtain lossless original media file;

license, encrypting and encoding the obtained media file; and

make the encoded content media file available to users of the URMC service.

868. The system of claim 867, wherein the encoding includes a standard quality encoding and a mobile quality encoding.

869. The system of claim 865, wherein the license request includes at least the uniquely resolved content identifying information and a request to add the content item to the URMC collection.

870. The system of claim 865, wherein the URMC service user engagement metric is track play count.

871. The system of claim 865, wherein the URMC service user engagement metric is at least one of: (i) share count; (ii) download count; (iii) rating; and (iv) comment count.

872. The system of claim 871, wherein the URMC service user engagement metric is associated with at least one of: (i) a track; (ii) a playlist; (iii) a smart playlist; (iv) a shared playlist; (v) a magic playlist; and (vi) a shared library.

873. The system of claim 865, wherein the at least one URMC license request threshold rule specifies a trigger for the license request when the aggregate URMC service user engagement metric associated with the uniquely resolved content item is greater than a percent threshold of the aggregate URMC service user engagement metric associated with the plurality of URMC content items.

874. The system of claim 865, wherein the at least one URMC license request threshold rule specifies a threshold for the aggregate URMC service user engagement metrics associated with the uniquely resolved content item.

875. The system of claim 865, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises acoustically matching the content item with URMC items in a URMC catalog.

876. The system of claim 865, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises querying a URMC metadata database using metadata associated with the content item.

877. The system of claim 865, further comprising instructions to:

obtain metadata associated with the uniquely resolved content item; and

query a URMC license database using the obtained metadata for availability of license.

878. The system of claim 865, wherein the target for the license request is identified based on at least one of an acoustical fingerprint and metadata associated with the uniquely resolved content item.

879. The system of claim 865, wherein the identified target is a rights clearing agency.

880. The system of claim 865, wherein the identified target is one of participating licensors of the URMC service.

881. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

identify an unlicensed content item and uniquely resolving it within a universally resolvable media content ("URMC") service;

obtain aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

obtain an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

evaluate the obtained aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

identify a target for a license request for the uniquely resolved content item; and

send the license request to the identified target.

882. The medium of claim 881, further comprising instructions to:

obtain, from the target, a license authorizing addition of the uniquely resolved content item to the URMC catalog.

883. The medium of claim 882, further comprising instructions to:

obtain lossless original media file;

license, encrypting and encoding the obtained media file; and

make the encoded content media file available to users of the URMC service.

884. The medium of claim 883, wherein the encoding includes a standard quality encoding and a mobile quality encoding.

885. The medium of claim 881, wherein the license request includes at least the uniquely resolved content identifying information and a request to add the content item to the URMC collection.

886. The medium of claim 881, wherein the URMC service user engagement metric is track play count.

887. The medium of claim 881, wherein the URMC service user engagement metric is at least one of: (i) share count; (ii) download count; (iii) rating; and (iv) comment count.

888. The medium of claim 887, wherein the URMC service user engagement metric is associated with at least one of: (i) a track; (ii) a playlist; (iii) a smart playlist; (iv) a shared playlist; (v) a magic playlist; and (vi) a shared library.

889. The medium of claim 881, wherein the at least one URMC license request threshold rule specifies a trigger for the license request when the aggregate URMC service user engagement metric associated with the uniquely resolved content item is greater than a percent threshold of the aggregate URMC service user engagement metric associated with the plurality of URMC content items.

890. The medium of claim 881, wherein the at least one URMC license request threshold rule specifies a threshold for the aggregate URMC service user engagement metrics associated with the uniquely resolved content item.

891. The medium of claim 881, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises acoustically matching the content item with URMC items in a URMC catalog.

892. The medium of claim 881, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises querying a URMC metadata database using metadata associated with the content item.

893. The medium of claim 881, further comprising instructions to:

obtain metadata associated with the uniquely resolved content item; and

query a URMC license database using the obtained metadata for availability of license.

894. The medium of claim 881, wherein the target for the license request is identified based on at least one of an acoustical fingerprint and metadata associated with the uniquely resolved content item.

895. The medium of claim 881, wherein the identified target is a rights clearing agency.

896. The medium of claim 881, wherein the identified target is one of participating licensors of the URMC service.

897. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

identify an unlicensed content item and uniquely resolving it within a universally resolvable media content ("URMC") service;

obtain aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

obtain an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

evaluate the obtained aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

identify a target for a license request for the uniquely resolved content item; and

send the license request to the identified target.

898. The apparatus of claim 897, further comprising instructions to:

obtain, from the target, a license authorizing addition of the uniquely resolved content item to the URMC catalog.

899. The apparatus of claim 898, further comprising instructions to:

obtain lossless original media file;

license, encrypting and encoding the obtained media file; and

make the encoded content media file available to users of the URMC service.

900. The apparatus of claim 899, wherein the encoding includes a standard quality encoding and a mobile quality encoding.

901. The apparatus of claim 897, wherein the license request includes at least the uniquely resolved content identifying information and a request to add the content item to the URMC collection.

902. The apparatus of claim 897, wherein the URMC service user engagement metric is track play count.

903. The apparatus of claim 897, wherein the URMC service user engagement metric is at least one of: (i) share count; (ii) download count; (iii) rating; and (iv) comment count.

904. The apparatus of claim 903, wherein the URMC service user engagement metric is associated with at least one of: (i) a track; (ii) a playlist; (iii) a smart playlist; (iv) a shared playlist; (v) a magic playlist; and (vi) a shared library.

905. The apparatus of claim 897, wherein the at least one URMC license request threshold rule specifies a trigger for the license request when the aggregate URMC service user engagement metric associated with the uniquely resolved content item is greater than a percent threshold of the aggregate URMC service user engagement metric associated with the plurality of URMC content items.

906. The apparatus of claim 897, wherein the at least one URMC license request threshold rule specifies a threshold for the aggregate URMC service user engagement metrics associated with the uniquely resolved content item.

907. The apparatus of claim 897, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises acoustically matching the content item with URMC items in a URMC catalog.

908. The apparatus of claim 897, wherein identifying the unlicensed content item and uniquely resolving it within the URMC service further comprises querying a URMC metadata database using metadata associated with the content item.

909. The apparatus of claim 897, further comprising instructions to:

obtain metadata associated with the uniquely resolved content item; and

query a URMC license database using the obtained metadata for availability of license.

910. The apparatus of claim 897, wherein the target for the license request is identified based on at least one of an acoustical fingerprint and metadata associated with the uniquely resolved content item.

911. The apparatus of claim 897, wherein the identified target is a rights clearing agency.

912. The apparatus of claim 897, wherein the identified target is one of participating licensors of the URMC service.

913. A processor-implemented method, comprising:

providing an unlicensed content item for identification and uniquely resolving it within a universally resolvable media content ("URMC") service;

providing an indication to obtain aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

providing an indication to obtain an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

obtaining an indication of an evaluation of the aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

obtaining an identification of a target for a license request for the uniquely resolved content item; and

obtaining an indication of sending the license request to the identified target.

914. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide an unlicensed content item for identification and uniquely resolving it within a universally resolvable media content ("URMC") service;

provide an indication to obtain aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

provide an indication to obtain an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

obtain an indication of an evaluation of the aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

obtain an identification of a target for a license request for the uniquely resolved content item; and

obtain an indication of sending the license request to the identified target.

915. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

provide an unlicensed content item for identification and uniquely resolving it within a universally resolvable media content ("URMC") service;

provide an indication to obtain aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

provide an indication to obtain an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

obtain an indication of an evaluation of the aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

obtain an identification of a target for a license request for the uniquely resolved content item; and

obtain an indication of sending the license request to the identified target.

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916. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide an unlicensed content item for identification and uniquely resolving it within a universally resolvable media content ("URMC") service;

provide an indication to obtain aggregate URMC service user engagement metric associated with the uniquely resolved content item during a predefined period of time;

provide an indication to obtain an aggregate URMC service user engagement metric associated with a plurality of URMC items during the predefined period of time;

obtain an indication of an evaluation of the aggregate URMC service user engagement metrics using at least one URMC license request threshold rule;

obtain an identification of a target for a license request for the uniquely resolved content item; and

obtain an indication of sending the license request to the identified target.

917. A processor-implemented method, comprising:

detecting a plurality of universally resolvable media content ("URMC") events initiated at a client;

obtaining URMC event identifying information for each detected URMC event;

determining if each detected URMC event is reportable based on the URMC event identifying information;

determining a reporting category for each reportable URMC event based on the URMC event identifying information;

recording each reportable URMC event and the associated reporting category in an event log in the client; and

initiating reporting of the logged URMC event identifying information.

918. The method of claim 917, further comprising:

obtaining reporting frequency preference setting, wherein the preference setting includes at least one URMC event reporting rule; and

initiating reporting of the logged URMC event identifying information based on the obtained reporting frequency preference setting.

919. The method of claim 918, further comprising updating the client upon successful acknowledgement of said reporting by a server.

920. The method of claim 917, wherein reportable events include at least one of: (i) play session time; (ii) playlist feature use; (iii) importing; (iv)sharing; (v) community; (vi) search; (vii) website; (viii) client; (ix) email; (x) marketing; (xi) user; and (xii) license and device.

921. The method of claim 920, wherein each reportable event is associated with a URMC service user identifier and a date and time stamp.

922. The method of claim 921, wherein determining if each detected URMC event is reportable based on the URMC event identifying information.

923. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

detect a plurality of universally resolvable media content ("URMC") events initiated at a client;

obtain URMC event identifying information for each detected URMC event;

determine if each detected URMC event is reportable based on the URMC event identifying information;

determine a reporting category for each reportable URMC event based on the URMC event identifying information;

record each reportable URMC event and the associated reporting category in an event log in the client; and

initiate reporting of the logged URMC event identifying information.

924. The system of claim 923, further comprising:

obtain reporting frequency preference setting, wherein the preference setting includes at least one URMC event reporting rule; and

initiate reporting of the logged URMC event identifying information based on the obtained reporting frequency preference setting.

925. The system of claim 924, further comprising updating the client upon successful acknowledgement of said reporting by a server.

926. The system of claim 923, wherein reportable events include at least one of: (i) play session time; (ii) playlist feature use; (iii) importing; (iv)sharing; (v) community; (vi) search; (vii) website; (viii) client; (ix) email; (x) marketing; (xi) user; and (xii) license and device.

927. The system of claim 926, wherein each reportable event is associated with a URMC service user identifier and a date and time stamp.

928. The system of claim 927, wherein determining if each detected URMC event is reportable based on the URMC event identifying information.

929. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

detect a plurality of universally resolvable media content ("URMC") events initiated at a client;

obtain URMC event identifying information for each detected URMC event;

determine if each detected URMC event is reportable based on the URMC event identifying information;

determine a reporting category for each reportable URMC event based on the URMC event identifying information;

record each reportable URMC event and the associated reporting category in an event log in the client; and

initiate reporting of the logged URMC event identifying information.

930. The medium of claim 929, further comprising:

obtain reporting frequency preference setting, wherein the preference setting includes at least one URMC event reporting rule; and

initiate reporting of the logged URMC event identifying information based on the obtained reporting frequency preference setting.

931. The medium of claim 930, further comprising updating the client upon successful acknowledgement of said reporting by a server.

932. The medium of claim 929, wherein reportable events include at least one of: (i) play session time; (ii) playlist feature use; (iii) importing; (iv)sharing; (v) community; (vi) search; (vii) website; (viii) client; (ix) email; (x) marketing; (xi) user; and (xii) license and device.

933. The medium of claim 932, wherein each reportable event is associated with a URMC service user identifier and a date and time stamp.

934. The medium of claim 933, wherein determining if each detected URMC event is reportable based on the URMC event identifying information.

935. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

detect a plurality of universally resolvable media content ("URMC") events initiated at a client;

obtain URMC event identifying information for each detected URMC event;

determine if each detected URMC event is reportable based on the URMC event identifying information;

determine a reporting category for each reportable URMC event based on the URMC event identifying information;

record each reportable URMC event and the associated reporting category in an event log in the client; and

initiate reporting of the logged URMC event identifying information.

936. The apparatus of claim 935, further comprising:

obtain reporting frequency preference setting, wherein the preference setting includes at least one URMC event reporting rule; and

initiate reporting of the logged URMC event identifying information based on the obtained reporting frequency preference setting.

937. The apparatus of claim 936, further comprising updating the client upon successful acknowledgement of said reporting by a server.

938. The apparatus of claim 935, wherein reportable events include at least one of: (i) play session time; (ii) playlist feature use; (iii) importing; (iv)sharing; (v) community; (vi) search; (vii) website; (viii) client; (ix) email; (x) marketing; (xi) user; and (xii) license and device.

939. The apparatus of claim 938, wherein each reportable event is associated with a URMC service user identifier and a date and time stamp.

940. The apparatus of claim 939, wherein determining if each detected URMC event is reportable based on the URMC event identifying information.

941. A processor-implemented method, comprising:

providing a request to detect a plurality of universally resolvable media content ("URMC") events initiated at a client;

providing URMC event identifying information for each detected URMC event;

providing a request to determine if each detected URMC event is reportable based on the URMC event identifying information;

providing a request to determine a reporting category for each reportable URMC event based on the URMC event identifying information;

providing a request to record each reportable URMC event and the associated reporting category in an event log in the client; and

providing a request to initiate reporting of the logged URMC event identifying information.

942. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide a request to detect a plurality of universally resolvable media content ("URMC") events initiated at a client;

provide URMC event identifying information for each detected URMC event;

provide a request to determine if each detected URMC event is reportable based on the URMC event identifying information;

provide a request to determine a reporting category for each reportable URMC event based on the URMC event identifying information;

provide a request to record each reportable URMC event and the associated reporting category in an event log in the client; and

provide a request to initiate reporting of the logged URMC event identifying information.

943. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

provide a request to detect a plurality of universally resolvable media content ("URMC") events initiated at a client;

provide URMC event identifying information for each detected URMC event;

provide a request to determine if each detected URMC event is reportable based on the URMC event identifying information;

provide a request to determine a reporting category for each reportable URMC event based on the URMC event identifying information;

provide a request to record each reportable URMC event and the associated reporting category in an event log in the client; and

provide a request to initiate reporting of the logged URMC event identifying information.

944. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide a request to detect a plurality of universally resolvable media content ("URMC") events initiated at a client;

provide URMC event identifying information for each detected URMC event;

provide a request to determine if each detected URMC event is reportable based on the URMC event identifying information;

provide a request to determine a reporting category for each reportable URMC event based on the URMC event identifying information;

provide a request to record each reportable URMC event and the associated reporting category in an event log in the client; and

provide a request to initiate reporting of the logged URMC event identifying information.

945. A processor-implemented method, comprising:

receiving from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

querying a URMC usage database to obtain the URMC item usage metric;

determining, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

providing the determined payment amount to the requestor.

946. The method of claim 945, wherein the URMC usage payment obligation rules specify royalty rate for a unit of the usage metric.

947. The method of claim 946, wherein the royalty rate is specific to a geography.

948. The method of claim 945, wherein the payment amount is device license fees based on prorated share of the URMC item usage.

949. The method of claim 945, wherein the request specifies at least one criterion for selecting the URMC item.

950. The method of claim 945, further comprising querying a URMC reporting database using the specified criterion to obtain the URMC item.

951. The method of claim 945, wherein the URMC usage metric is play count.

952. The method of claim 945, wherein the URMC usage metric is number of license activations.

953. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

receive from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

query a URMC usage database to obtain the URMC item usage metric;

determine, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

provide the determined payment amount to the requestor.

954. The system of claim 953, wherein the URMC usage payment obligation rules specify royalty rate for a unit of the usage metric.

955. The system of claim 954, wherein the royalty rate is specific to a geography.

956. The system of claim 953, wherein the payment amount is device license fees based on prorated share of the URMC item usage.

957. The system of claim 953, wherein the request specifies at least one criterion for selecting the URMC item.

958. The system of claim 953, further comprising instructions to query a URMC reporting database using the specified criterion to obtain the URMC item.

959. The system of claim 953, wherein the URMC usage metric is play count.

960. The system of claim 953, wherein the URMC usage metric is number of license activations.

961. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

receive from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

query a URMC usage database to obtain the URMC item usage metric;

determine, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

provide the determined payment amount to the requestor.

962. The medium of claim 961, wherein the URMC usage payment obligation rules specify royalty rate for a unit of the usage metric.

963. The medium of claim 962, wherein the royalty rate is specific to a geography.

964. The medium of claim 961, wherein the payment amount is device license fees based on prorated share of the URMC item usage.

965. The medium of claim 961, wherein the request specifies at least one criterion for selecting the URMC item.

966. The medium of claim 961, further comprising instructions to query a URMC reporting database using the specified criterion to obtain the URMC item.

967. The medium of claim 961, wherein the URMC usage metric is play count.

968. The medium of claim 961, wherein the URMC usage metric is number of license activations.

969. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

receive from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

query a URMC usage database to obtain the URMC item usage metric;

determine, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

provide the determined payment amount to the requestor.

970. The apparatus of claim 969, wherein the URMC usage payment obligation rules specify royalty rate for a unit of the usage metric.

971. The apparatus of claim 970, wherein the royalty rate is specific to a geography.

972. The apparatus of claim 969, wherein the payment amount is device license fees based on prorated share of the URMC item usage.

973. The apparatus of claim 969, wherein the request specifies at least one criterion for selecting the URMC item.

974. The apparatus of claim 969, further comprising instructions to query a URMC reporting database using the specified criterion to obtain the URMC item.

975. The apparatus of claim 969, wherein the URMC usage metric is play count.

976. The apparatus of claim 969, wherein the URMC usage metric is number of license activations.

977. A processor-implemented method, comprising:

providing from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

providing a request to query a URMC usage database to obtain the URMC item usage metric;

providing a request to determine, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

obtaining the determined payment amount to the requestor.

978. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

provide a request to query a URMC usage database to obtain the URMC item usage metric;

provide a request to determine, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

obtain the determined payment amount to the requestor.

979. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

provide from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

provide a request to query a URMC usage database to obtain the URMC item usage metric;

provide a request to determine, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

obtain the determined payment amount to the requestor.

980. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

provide from a requestor a payment request for usage of a universally resolvable media content ("URMC") item;

provide a request to query a URMC usage database to obtain the URMC item usage metric;

provide a request to determine, based on URMC usage payment obligation rules associated with the requestor and the URMC item usage metric, a payment amount owed for usage of the URMC item; and

obtain the determined payment amount to the requestor.

981. A processor-implemented method, comprising:

obtaining from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtaining the user's social influence metric in the service;

obtaining a purchase price associated with the URMC content item;

determining, based on the user's social influence metric, a discount;

providing the user an option to purchase the URMC content item at a purchase price reduced by the discount;

receiving from the user an indication and an authorization to purchase the URMC item;

charging an account associated with the user the purchase price reduced by the discount; and

providing the user a mechanism for unlocking the URMC item.

982. The method of claim 981, wherein the unlocking mechanism is a digital rights management (DRM) free version of the URMC item provided to the client.

983. The method of claim 981, wherein the unlocking mechanism is a decryption key configured to unlock the URMC item by the user's client software.

984. The method of claim 981, wherein the unlocked URMC item has no rights management restrictions.

985. The method of claim 981, wherein the unlocked URMC item has no encryption

986. The method of claim 981, wherein the social influence metric is a number of points associated with a social activity.

987. The method of claim 986, wherein the discount is triggered when the number of social activity points associated with the user exceeds a threshold.

988. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtain the user's social influence metric in the service;

obtain a purchase price associated with the URMC content item;

determine, based on the user's social influence metric, a discount;

provide the user an option to purchase the URMC content item at a purchase price reduced by the discount;

receive from the user an indication and an authorization to purchase the URMC item;

charge an account associated with the user the purchase price reduced by the discount; and

provide the user a mechanism for unlocking the URMC item.

989. The system of claim 988, wherein the unlocking mechanism is a digital rights management (DRM) free version of the URMC item provided to the client.

990. The system of claim 988, wherein the unlocking mechanism is a decryption key configured to unlock the URMC item by the user's client software.

991. The system of claim 988, wherein the unlocked URMC item has no rights management restrictions.

992. The system of claim 988, wherein the unlocked URMC item has no encryption

993. The system of claim 988, wherein the social influence metric is a number of points associated with a social activity.

994. The system of claim 993, wherein the discount is triggered when the number of social activity points associated with the user exceeds a threshold.

995. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

obtain from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtain the user's social influence metric in the service;

obtain a purchase price associated with the URMC content item;

determine, based on the user's social influence metric, a discount;

provide the user an option to purchase the URMC content item at a purchase price reduced by the discount;

receive from the user an indication and an authorization to purchase the URMC item;

charge an account associated with the user the purchase price reduced by the discount; and

provide the user a mechanism for unlocking the URMC item.

996. The medium of claim 995, wherein the unlocking mechanism is a digital rights management (DRM) free version of the URMC item provided to the client.

997. The medium of claim 995, wherein the unlocking mechanism is a decryption key configured to unlock the URMC item by the user's client software.

998. The medium of claim 995, wherein the unlocked URMC item has no rights management restrictions.

999. The medium of claim 995, wherein the unlocked URMC item has no encryption

1000. The medium of claim 995, wherein the social influence metric is a number of points associated with a social activity.

1001. The medium of claim 1000, wherein the discount is triggered when the number of social activity points associated with the user exceeds a threshold.

1002. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtain the user's social influence metric in the service;

obtain a purchase price associated with the URMC content item;

determine, based on the user's social influence metric, a discount;

provide the user an option to purchase the URMC content item at a purchase price reduced by the discount;

receive from the user an indication and an authorization to purchase the URMC item;

charge an account associated with the user the purchase price reduced by the discount; and

provide the user a mechanism for unlocking the URMC item.

1003. The apparatus of claim 1002, wherein the unlocking mechanism is a digital rights management (DRM) free version of the URMC item provided to the client.

1004. The apparatus of claim 1002, wherein the unlocking mechanism is a decryption key configured to unlock the URMC item by the user's client software.

1005. The apparatus of claim 1002, wherein the unlocked URMC item has no rights management restrictions.

1006. The apparatus of claim 1002, wherein the unlocked URMC item has no encryption

1007. The apparatus of claim 1002, wherein the social influence metric is a number of points associated with a social activity.

1008. The apparatus of claim 1007, wherein the discount is triggered when the number of social activity points associated with the user exceeds a threshold.

1009. A processor-implemented method, comprising:

obtaining a request to purchase an encryption free universally resolvable media content ("URMC") item from a user of the URMC service;

obtaining a purchase price associated with the content item;

determining whether the user meets a discount criteria for purchasing the encryption free content item;

calculating, based on the determining, a discounted purchase price;

providing the user an option to purchase the encryption free content item at the discounted purchase price;

receiving from the user an indication and an authorization to purchase the encryption free content item;

charging an account associated with the user the discounted purchase price; and

providing the user the encryption free content item.

1010. The method of claim 1009, wherein the discount criteria includes reaching a threshold number of points via influencing activity.

1011. The method of claim 1009, wherein the discount criteria includes having the content item in a playlist created by the user.

1012. The method of claim 1011, wherein the purchase price is progressively discounted by an amount for every degree of separation users that add the content.

1013. The method of claim 1009, wherein the discount criteria includes reaching a threshold number of plays of the content item discovered via the user's playlist or library.

1014. The method of claim 1009, wherein the discount criteria includes reaching a threshold number of users playing the content item discovered via the user's playlist or library.

1015. The method of claim 1009, wherein the discount criteria includes reaching a threshold number of encryption free purchases of content item.

1016. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain a request to purchase an encryption free universally resolvable media content ("URMC") item from a user of the URMC service;

obtain a purchase price associated with the content item;

determine whether the user meets a discount criteria for purchasing the encryption free content item;

calculate, based on the determining, a discounted purchase price;

provide the user an option to purchase the encryption free content item at the discounted purchase price;

receive from the user an indication and an authorization to purchase the encryption free content item;

charge an account associated with the user the discounted purchase price; and

provide the user the encryption free content item.

1017. The system of claim 1016, wherein the discount criteria includes reaching a threshold number of points via influencing activity.

1018. The system of claim 1016, wherein the discount criteria includes having the content item in a playlist created by the user.

1019. The system of claim 1018, wherein the purchase price is progressively discounted by an amount for every degree of separation users that add the content.

1020. The system of claim 1016, wherein the discount criteria includes reaching a threshold number of plays of the content item discovered via the user's playlist or library.

1021. The system of claim 1016, wherein the discount criteria includes reaching a threshold number of users playing the content item discovered via the user's playlist or library.

1022. The system of claim 1016, wherein the discount criteria includes reaching a threshold number of encryption free purchases of content item.

1023. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

obtain a request to purchase an encryption free universally resolvable media content ("URMC") item from a user of the URMC service;

obtain a purchase price associated with the content item;

determine whether the user meets a discount criteria for purchasing the encryption free content item;

calculate, based on the determining, a discounted purchase price;

provide the user an option to purchase the encryption free content item at the discounted purchase price;

receive from the user an indication and an authorization to purchase the encryption free content item;

charge an account associated with the user the discounted purchase price; and

provide the user the encryption free content item.

1024. The medium of claim 1023, wherein the discount criteria includes reaching a threshold number of points via influencing activity.

1025. The medium of claim 1023, wherein the discount criteria includes having the content item in a playlist created by the user.

1026. The medium of claim 1025, wherein the purchase price is progressively discounted by an amount for every degree of separation users that add the content.

1027. The medium of claim 1023, wherein the discount criteria includes reaching a threshold number of plays of the content item discovered via the user's playlist or library.

1028. The medium of claim 1023, wherein the discount criteria includes reaching a threshold number of users playing the content item discovered via the user's playlist or library.

1029. The medium of claim 1023, wherein the discount criteria includes reaching a threshold number of encryption free purchases of content item.

1030. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain a request to purchase an encryption free universally resolvable media content ("URMC") item from a user of the URMC service;

obtain a purchase price associated with the content item;

determine whether the user meets a discount criteria for purchasing the encryption free content item;

calculate, based on the determining, a discounted purchase price;

provide the user an option to purchase the encryption free content item at the discounted purchase price;

receive from the user an indication and an authorization to purchase the encryption free content item;

charge an account associated with the user the discounted purchase price; and

provide the user the encryption free content item.

1031. The apparatus of claim 1030, wherein the discount criteria includes reaching a threshold number of points via influencing activity.

1032. The apparatus of claim 1030, wherein the discount criteria includes having the content item in a playlist created by the user.

1033. The apparatus of claim 1032, wherein the purchase price is progressively discounted by an amount for every degree of separation users that add the content.

1034. The apparatus of claim 1030, wherein the discount criteria includes reaching a threshold number of plays of the content item discovered via the user's playlist or library.

1035. The apparatus of claim 1030, wherein the discount criteria includes reaching a threshold number of users playing the content item discovered via the user's playlist or library.

1036. The apparatus of claim 1030, wherein the discount criteria includes reaching a threshold number of encryption free purchases of content item.

1037. A processor-implemented method, comprising:

obtaining from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtaining a purchase price associated with the URMC item;

providing the user an option to purchase the URMC item at a purchase price;

receiving from the user an indication and an authorization to purchase the URMC item;

charging an account associated with the user the purchase price; and

providing the user a mechanism for unlocking the URMC item.

1038. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtain a purchase price associated with the URMC item;

provide the user an option to purchase the URMC item at a purchase price;

receive from the user an indication and an authorization to purchase the URMC item;

charge an account associated with the user the purchase price; and

provide the user a mechanism for unlocking the URMC item.

1039. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

obtain from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtain a purchase price associated with the URMC item;

provide the user an option to purchase the URMC item at a purchase price;

receive from the user an indication and an authorization to purchase the URMC item;

charge an account associated with the user the purchase price; and

provide the user a mechanism for unlocking the URMC item.

1040. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain from a user of a universally resolvable media content ("URMC") service a request to purchase an unlocked URMC item;

obtain a purchase price associated with the URMC item;

provide the user an option to purchase the URMC item at a purchase price;

receive from the user an indication and an authorization to purchase the URMC item;

charge an account associated with the user the purchase price; and

provide the user a mechanism for unlocking the URMC item.

1041. A processor implemented method comprising:

detecting a request to engage a universally resolvable media content ("URMC") item;

obtaining an expiration date for a URMC license token associated with the URMC item;

determining, based on the obtained expiration date, whether the license token is expired;

discarding a license key associated with the expired license token;

denying the request to engage the URMC item with the associated expired license token;

providing a request for an updated token and requisite credentials for the updated token;

obtaining a response including an updated token; and

engaging the requested URMC item with an associated valid updated token.

1042. The method of claim 1041, wherein the response includes a user node identifier and at least one subscription node identifier.

1043. The method of claim 1042, wherein the response includes the user node to the at least one subscription node link.

1044. The method of claim 1043, wherein the subscription node specifies a territory where a user's device is licensed for use.

1045. The method of claim 1043, wherein the subscription node specifies a territory where the URMC item is licensed for use.

1046. The method of claim 1041, wherein the response includes a user to device link having an associated expiration date.

1047. The method of claim 1043, further comprising retrieving a key for territory specified by the subscription node for decrypting encryption for engaging the URMC item.

1048. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

detect a request to engage a universally resolvable media content ("URMC") item;

obtain an expiration date for a URMC license token associated with the URMC item;

determine, based on the obtained expiration date, whether the license token is expired;

discard a license key associated with the expired license token;

deny the request to engage the URMC item with the associated expired license token;

provide a request for an updated token and requisite credentials for the updated token;

obtain a response including an updated token; and

engage the requested URMC item with an associated valid updated token.

1049. The system of claim 1048, wherein the response includes a user node identifier and at least one subscription node identifier.

1050. The system of claim 1049, wherein the response includes the user node to the at least one subscription node link.

1051. The system of claim 1050, wherein the subscription node specifies a territory where a user's device is licensed for use.

1052. The system of claim 1050, wherein the subscription node specifies a territory where the URMC item is licensed for use.

1053. The system of claim 1048, wherein the response includes a user to device link having an associated expiration date.

1054. The system of claim 1050, further comprising instructions to retrieve a key for territory specified by the subscription node for decrypting encryption for engaging the URMC item.

1055. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

detect a request to engage a universally resolvable media content ("URMC") item;

obtain an expiration date for a URMC license token associated with the URMC item;

determine, based on the obtained expiration date, whether the license token is expired;

discard a license key associated with the expired license token;

deny the request to engage the URMC item with the associated expired license token;

provide a request for an updated token and requisite credentials for the updated token;

obtain a response including an updated token; and

engage the requested URMC item with an associated valid updated token.

1056. The medium of claim 1055, wherein the response includes a user node identifier and at least one subscription node identifier.

1057. The medium of claim 1056, wherein the response includes the user node to the at least one subscription node link.

1058. The medium of claim 1057, wherein the subscription node specifies a territory where a user's device is licensed for use.

1059. The medium of claim 1057, wherein the subscription node specifies a territory where the URMC item is licensed for use.

1060. The medium of claim 1055, wherein the response includes a user to device link having an associated expiration date.

1061. The medium of claim 1057, further comprising instructions to retrieve a key for territory specified by the subscription node for decrypting encryption for engaging the URMC item.

1062. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

detect a request to engage a universally resolvable media content ("URMC") item;

obtain an expiration date for a URMC license token associated with the URMC item;

determine, based on the obtained expiration date, whether the license token is expired;

discard a license key associated with the expired license token;

deny the request to engage the URMC item with the associated expired license token;

provide a request for an updated token and requisite credentials for the updated token;

obtain a response including an updated token; and

engage the requested URMC item with an associated valid updated token.

1063. The apparatus of claim 1062, wherein the response includes a user node identifier and at least one subscription node identifier.

1064. The apparatus of claim 1063, wherein the response includes the user node to the at least one subscription node link.

1065. The apparatus of claim 1064, wherein the subscription node specifies a territory where a user's device is licensed for use.

1066. The apparatus of claim 1064, wherein the subscription node specifies a territory where the URMC item is licensed for use.

1067. The apparatus of claim 1062, wherein the response includes a user to device link having an associated expiration date.

1068. The apparatus of claim 1064, further comprising instructions to retrieve a key for territory specified by the subscription node for decrypting encryption for engaging the URMC item.

1069. A processor-implemented method, comprising:

obtaining a request for a license token for decrypting a universally resolvable media content ("URMC") item for a user of the URMC service;

determining whether an issued link between the user and at least one device associated with the request is valid;

obtaining confirmation of at least one instance of content usage reporting for the issued link from the device;

determining, based on the valid issued link and the obtained confirmation, an expiration date for a new link;

generating and sending the requested license token for the new link to the device; and

issuing and sending the new link to the device.

1070. A system, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain a request for a license token for decrypting a universally resolvable media content ("URMC") item for a user of the URMC service;

determine whether an issued link between the user and at least one device associated with the request is valid;

obtain confirmation of at least one instance of content usage reporting for the issued link from the device;

determine, based on the valid issued link and the obtained confirmation, an expiration date for a new link;

generate and send the requested license token for the new link to the device; and

issue and send the new link to the device.

1071. A processor-readable medium storing processor-issuable instructions, wherein the processor issues instructions to:

obtain a request for a license token for decrypting a universally resolvable media content ("URMC") item for a user of the URMC service;

determine whether an issued link between the user and at least one device associated with the request is valid;

obtain confirmation of at least one instance of content usage reporting for the issued link from the device;

determine, based on the valid issued link and the obtained confirmation, an expiration date for a new link;

generate and send the requested license token for the new link to the device; and

issue and send the new link to the device.

1072. An apparatus, comprising:

a memory;

a processor disposed in communication with said memory, and configured to issue a plurality of processing instructions stored in the memory, wherein the processor issues instructions to:

obtain a request for a license token for decrypting a universally resolvable media content ("URMC") item for a user of the URMC service;

determine whether an issued link between the user and at least one device associated with the request is valid;

obtain confirmation of at least one instance of content usage reporting for the issued link from the device;

determine, based on the valid issued link and the obtained confirmation, an expiration date for a new link;

generate and send the requested license token for the new link to the device; and

issue and send the new link to the device.

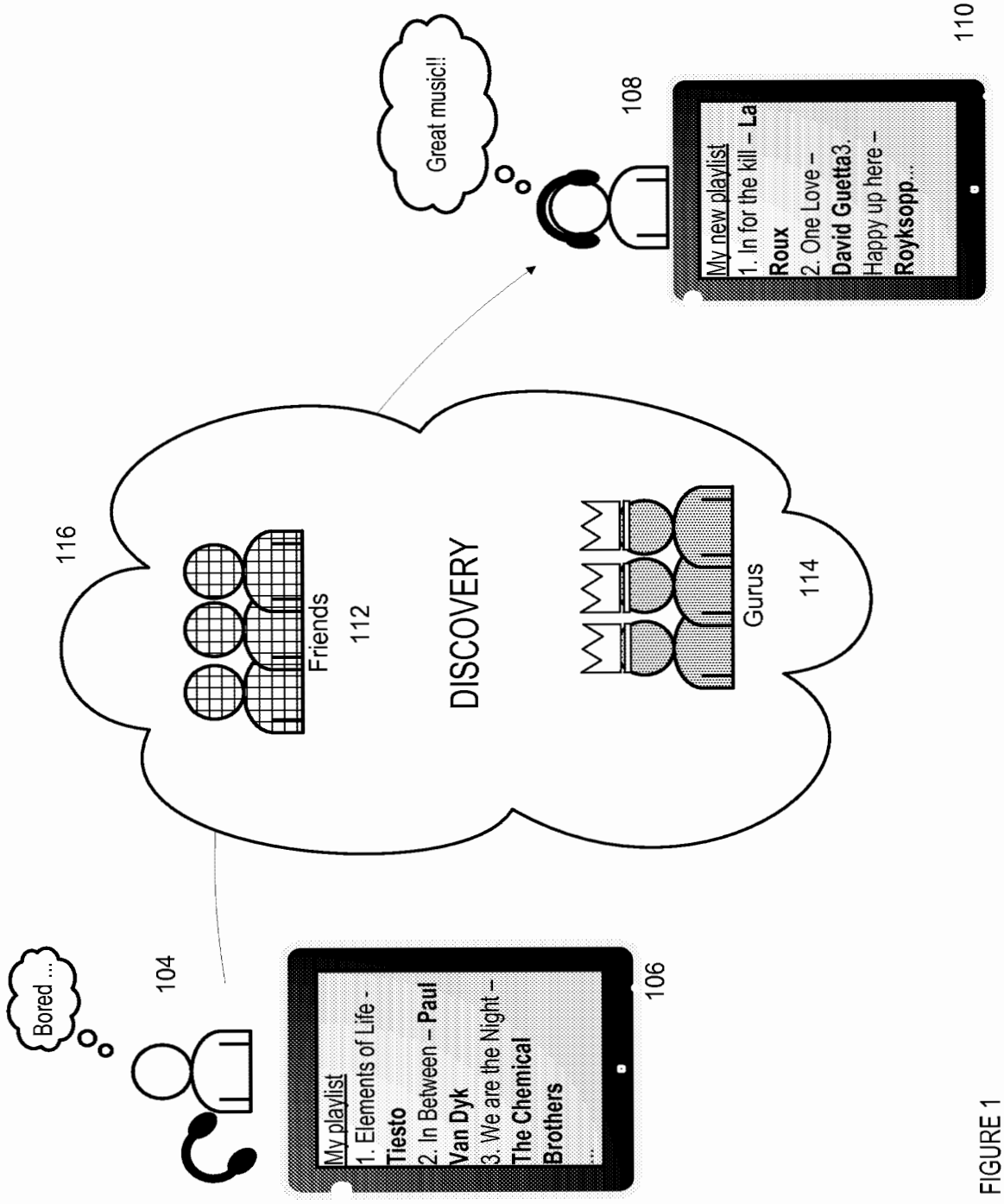

Bored ...
104
My playlist
1. Elements of Life - Tiesto
2. In Between – Paul Van Dyk
3. We are the Night – The Chemical Brothers
...
106
116
Friends
112
DISCOVERY
Gurus
114
Great music!!
108
My new playlist
1. In for the kill – La Roux
2. One Love – David Guetta3. Happy up here – Royksopp...
110

FIGURE 1

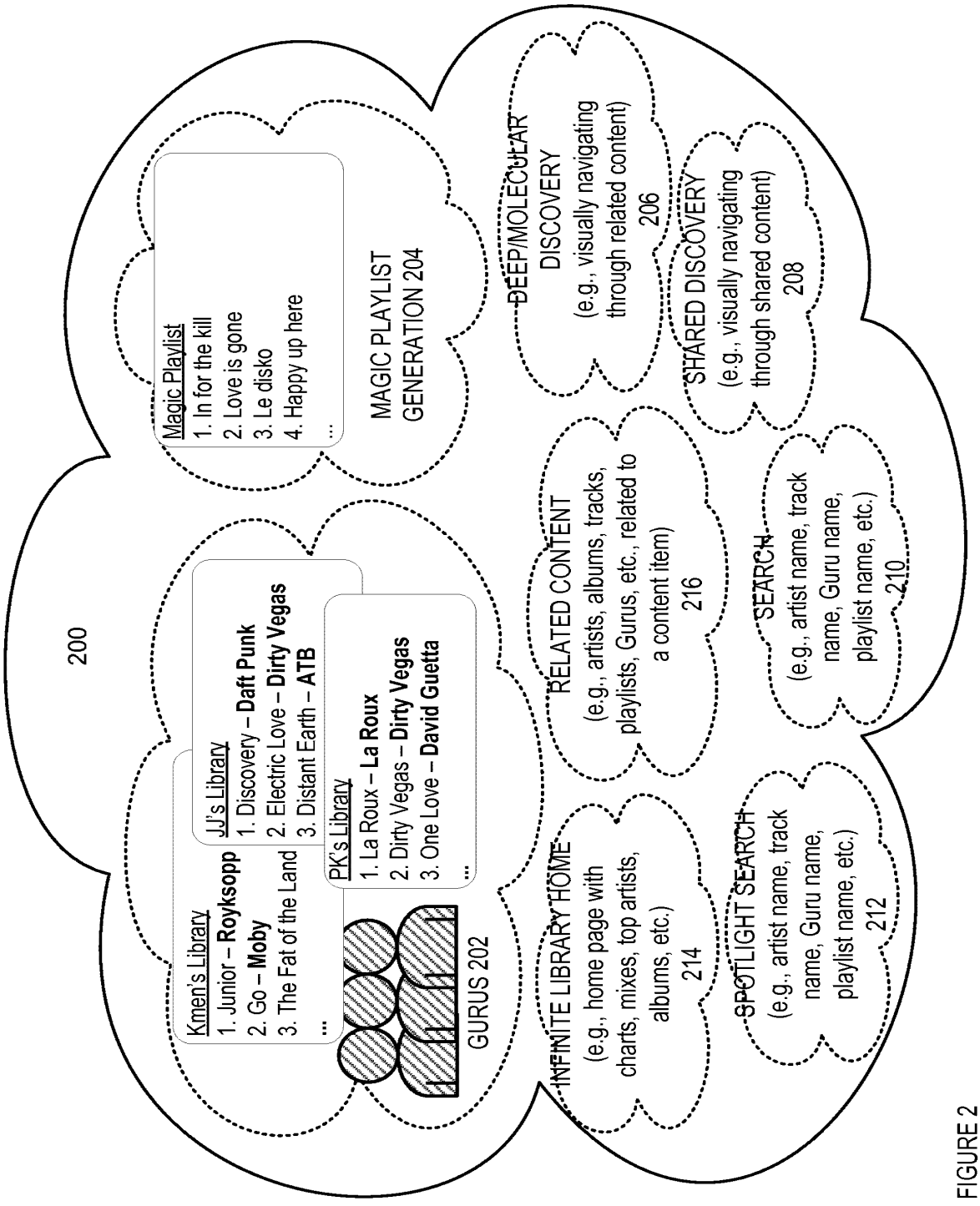

200
Kmen's Library
1. Junior – Royksopp
2. Go – Moby
3. The Fat of the Land
...
JJ's Library
1. Discovery – Daft Punk
2. Electric Love – Dirty Vegas
3. Distant Earth – ATB
...
PK's Library
1. La Roux – La Roux
2. Dirty Vegas – Dirty Vegas
3. One Love – David Guetta
...
GURUS 202
Magic Playlist
1. In for the kill
2. Love is gone
3. Le disko
4. Happy up here
...
MAGIC PLAYLIST GENERATION 204
DEEP/MOLECULAR DISCOVERY
(e.g., visually navigating through related content)
206
SHARED DISCOVERY
(e.g., visually navigating through shared content)
208
RELATED CONTENT
(e.g., artists, albums, tracks, playlists, Gurus, etc., related to a content item)
216
SEARCH
(e.g., artist name, track name, Guru name, playlist name, etc.)
210
INFINITE LIBRARY HOME
(e.g., home page with charts, mixes, top artists, albums, etc.)
214
SPOTLIGHT SEARCH
(e.g., artist name, track name, Guru name, playlist name, etc.)
212

FIGURE 2

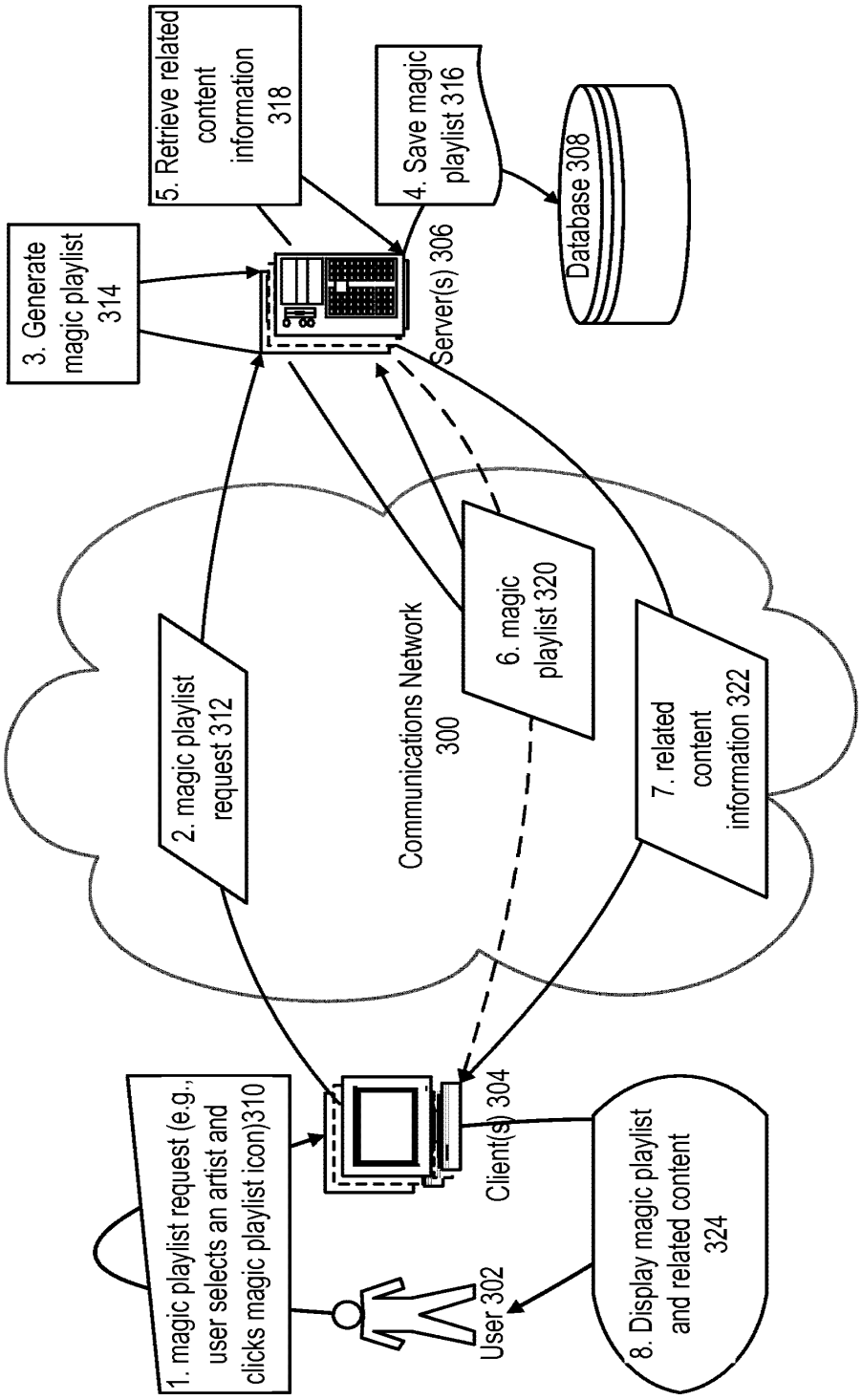

1. magic playlist request (e.g., user selects an artist and clicks magic playlist icon)310
User 302
Client(s) 304
2. magic playlist request 312
Communications Network 300
3. Generate magic playlist 314
Server(s) 306
4. Save magic playlist 316
5. Retrieve related content information 318
Database 308
6. magic playlist 320
7. related content information 322
8. Display magic playlist and related content 324

FIGURE 3

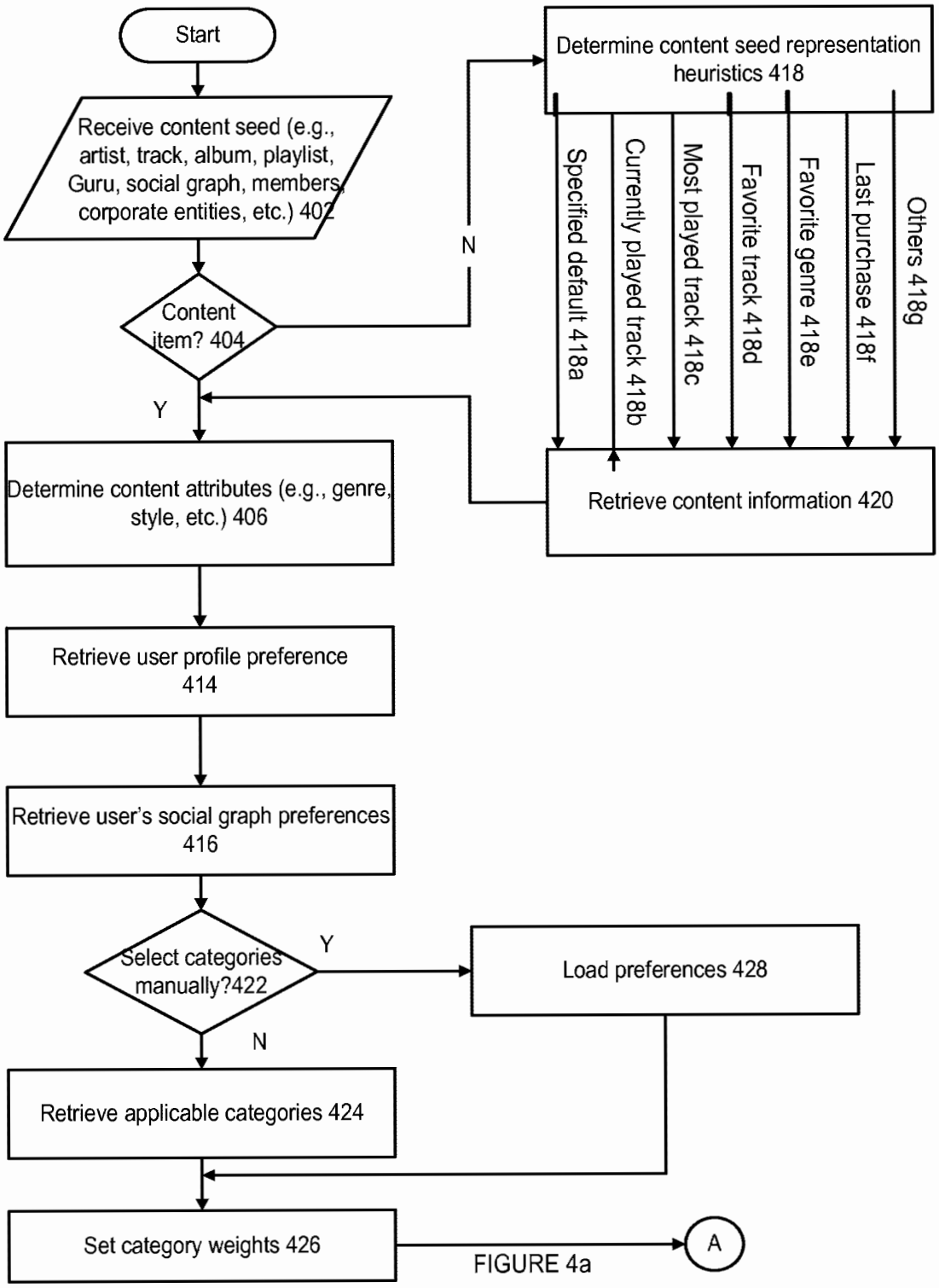

Start
Receive content seed (e.g., artist, track, album, playlist, Guru, social graph, members, corporate entities, etc.) 402
Content item? 404
N
Y
Determine content seed representation heuristics 418
Specified default 418a
Currently played track 418b
Most played track 418c
Favorite track 418d
Favorite genre 418e
Last purchase 418f
Others 418g
Retrieve content information 420
Determine content attributes (e.g., genre, style, etc.) 406
Retrieve user profile preference 414
Retrieve user's social graph preferences 416
Select categories manually?422
Y
N
Load preferences 428
Retrieve applicable categories 424
Set category weights 426
A

FIGURE 4a

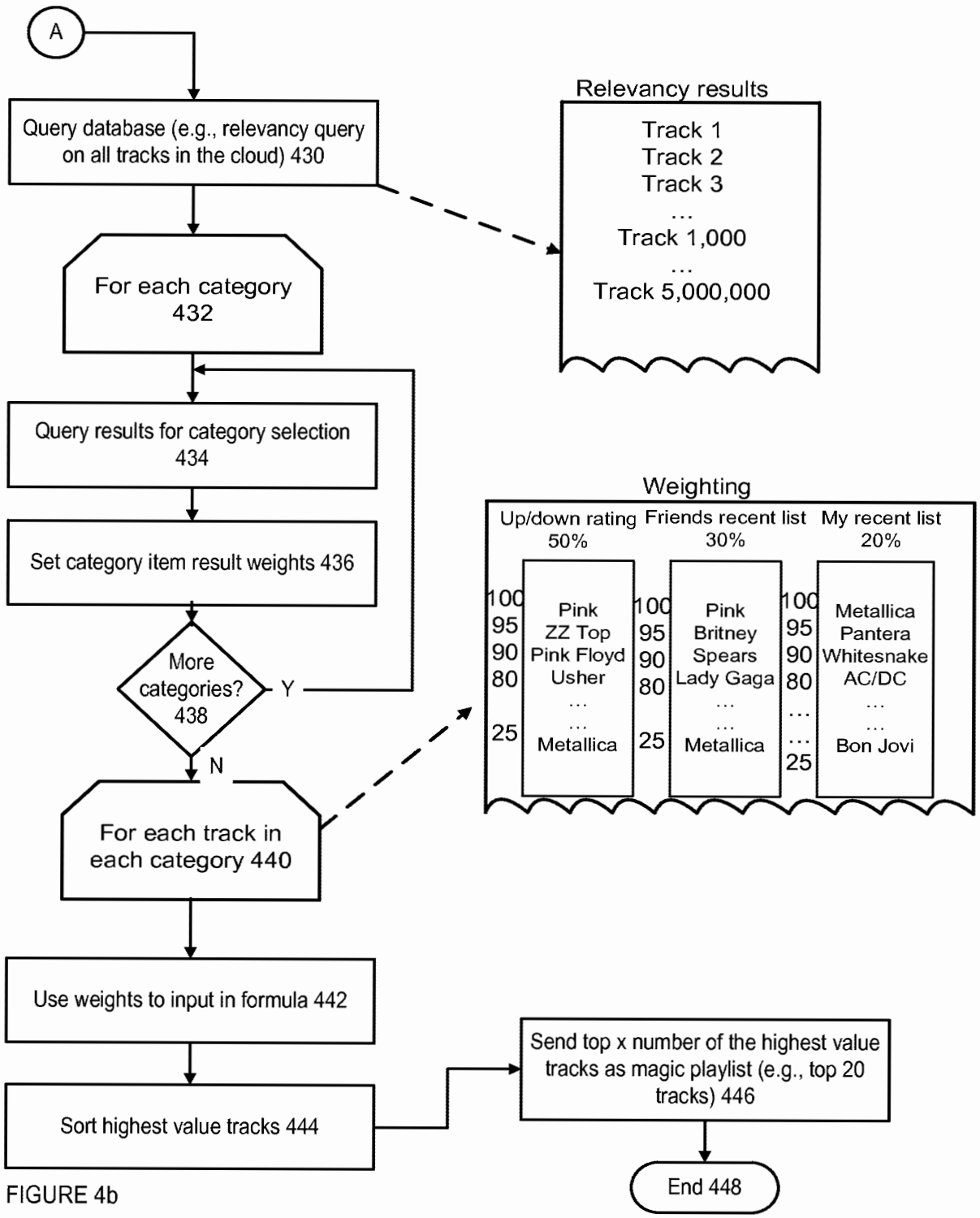

A
Query database (e.g., relevancy query on all tracks in the cloud) 430
Relevancy results
Track 1
Track 2
Track 3
…
Track 1,000
…
Track 5,000,000
For each category 432
Query results for category selection 434
Set category item result weights 436
More categories? 438
Y
N
Weighting
Up/down rating 50%
Friends recent list 30%
My recent list 20%
100
95
90
80
25
Pink
ZZ Top
Pink Floyd
Usher
Metallica
Pink
Britney Spears
Lady Gaga
Metallica
Metallica
Pantera
Whitesnake
AC/DC
Bon Jovi
For each track in each category 440
Use weights to input in formula 442
Sort highest value tracks 444
Send top x number of the highest value tracks as magic playlist (e.g., top 20 tracks) 446
End 448

FIGURE 4b

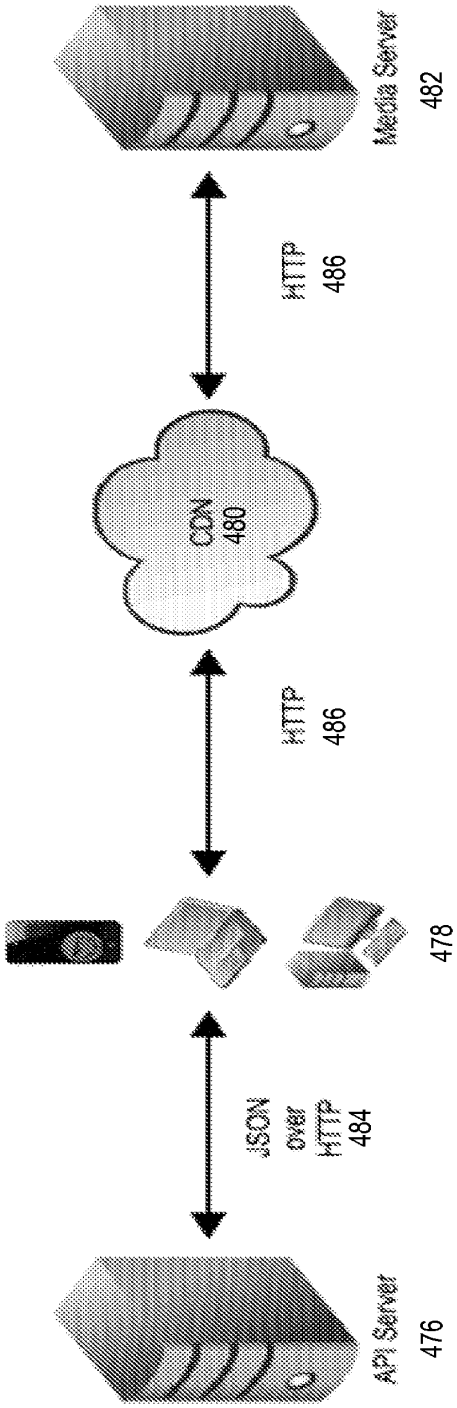

Media Server
482
HTTP
486
CDN
480
HTTP
486
478
JSON
over
HTTP
484
API Server
476

FIGURE 4c

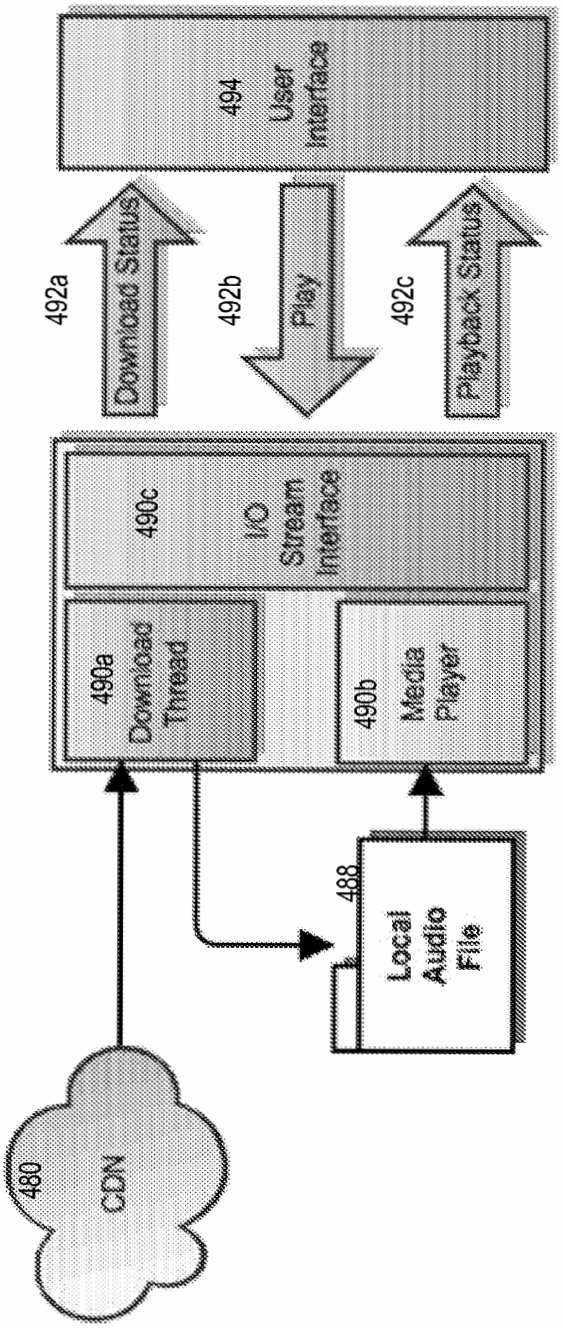

494
User Interface
492a
Download Status
492b
Play
492c
Playback Status
490c
I/O Stream Interface
490a
Download Thread
490b
Media Player
488
Local Audio File
480
CDN

FIGURE 4d

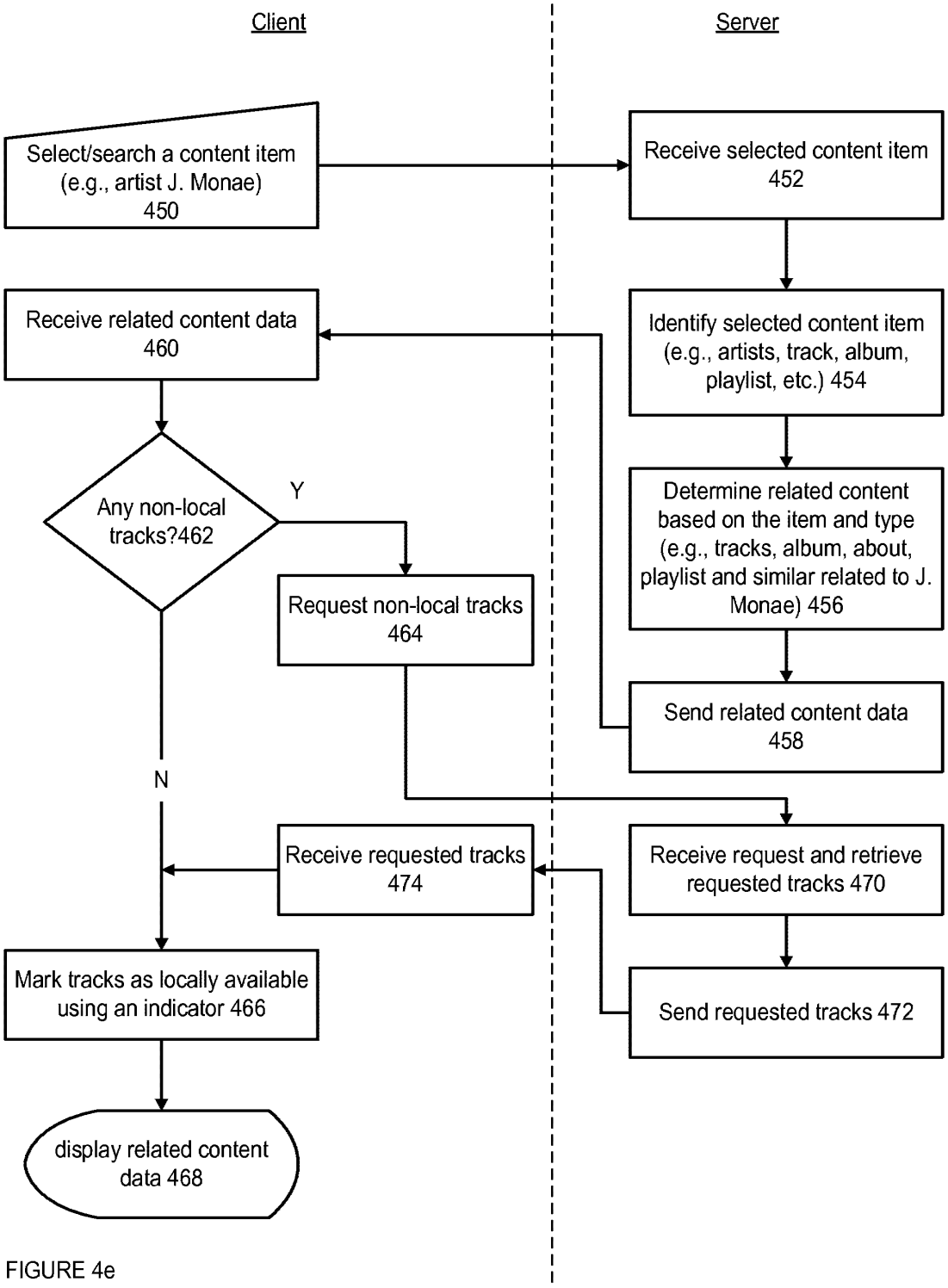

Client
Server
Select/search a content item (e.g., artist J. Monae) 450
Receive selected content item 452
Identify selected content item (e.g., artists, track, album, playlist, etc.) 454
Determine related content based on the item and type (e.g., tracks, album, about, playlist and similar related to J. Monae) 456
Send related content data 458
Receive request and retrieve requested tracks 470
Send requested tracks 472
Receive related content data 460
Any non-local tracks?462
Y
N
Request non-local tracks 464
Receive requested tracks 474
Mark tracks as locally available using an indicator 466
display related content data 468

FIGURE 4e

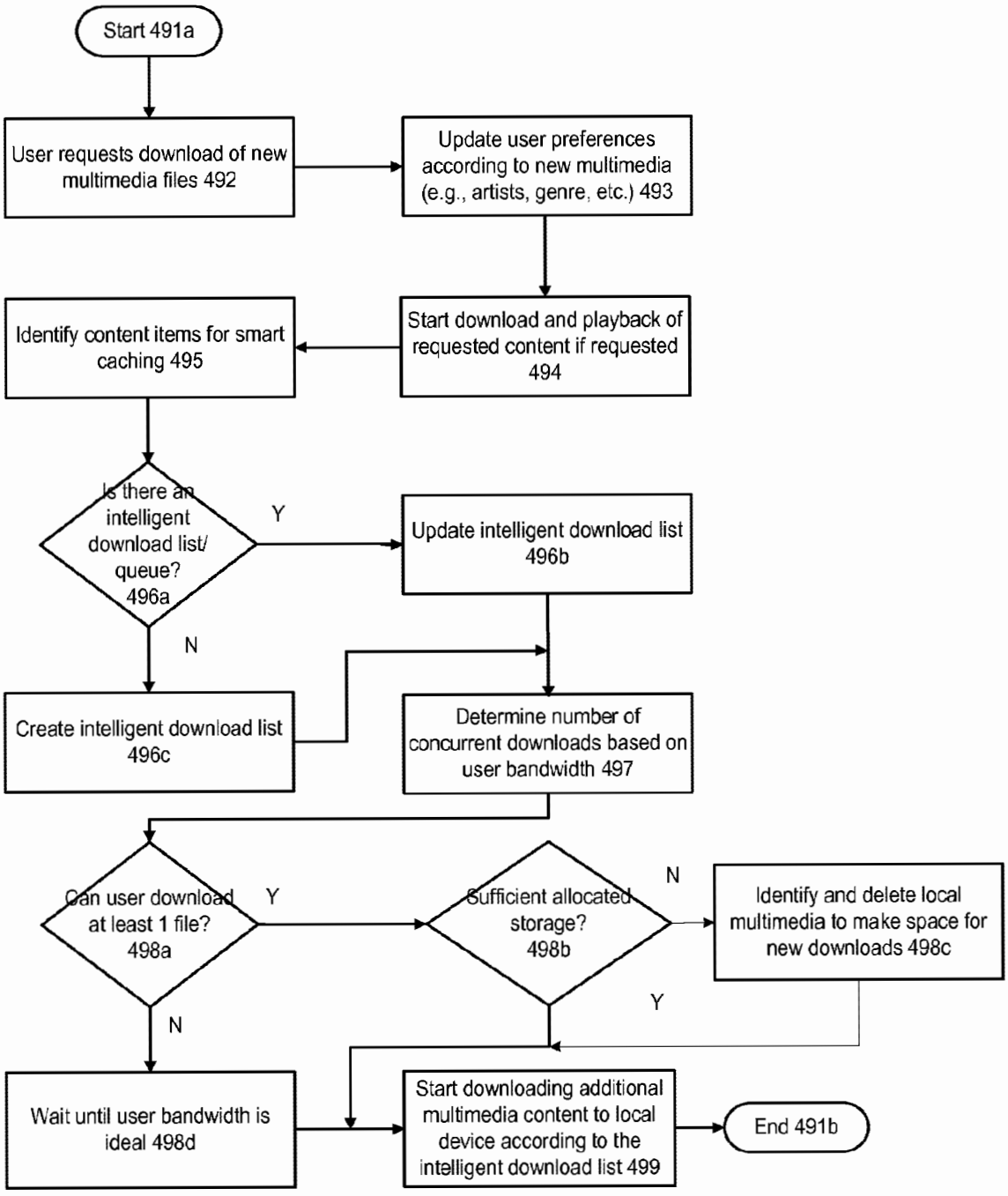

Start 491a
User requests download of new multimedia files 492
Update user preferences according to new multimedia (e.g., artists, genre, etc.) 493
Start download and playback of requested content if requested 494
Identify content items for smart caching 495
Is there an intelligent download list/ queue? 496a
Y
N
Update intelligent download list 496b
Create intelligent download list 496c
Determine number of concurrent downloads based on user bandwidth 497
Can user download at least 1 file? 498a
Y
N
Sufficient allocated storage? 498b
N
Y
Identify and delete local multimedia to make space for new downloads 498c
Wait until user bandwidth is ideal 498d
Start downloading additional multimedia content to local device according to the intelligent download list 499
End 491b

FIGURE 4f

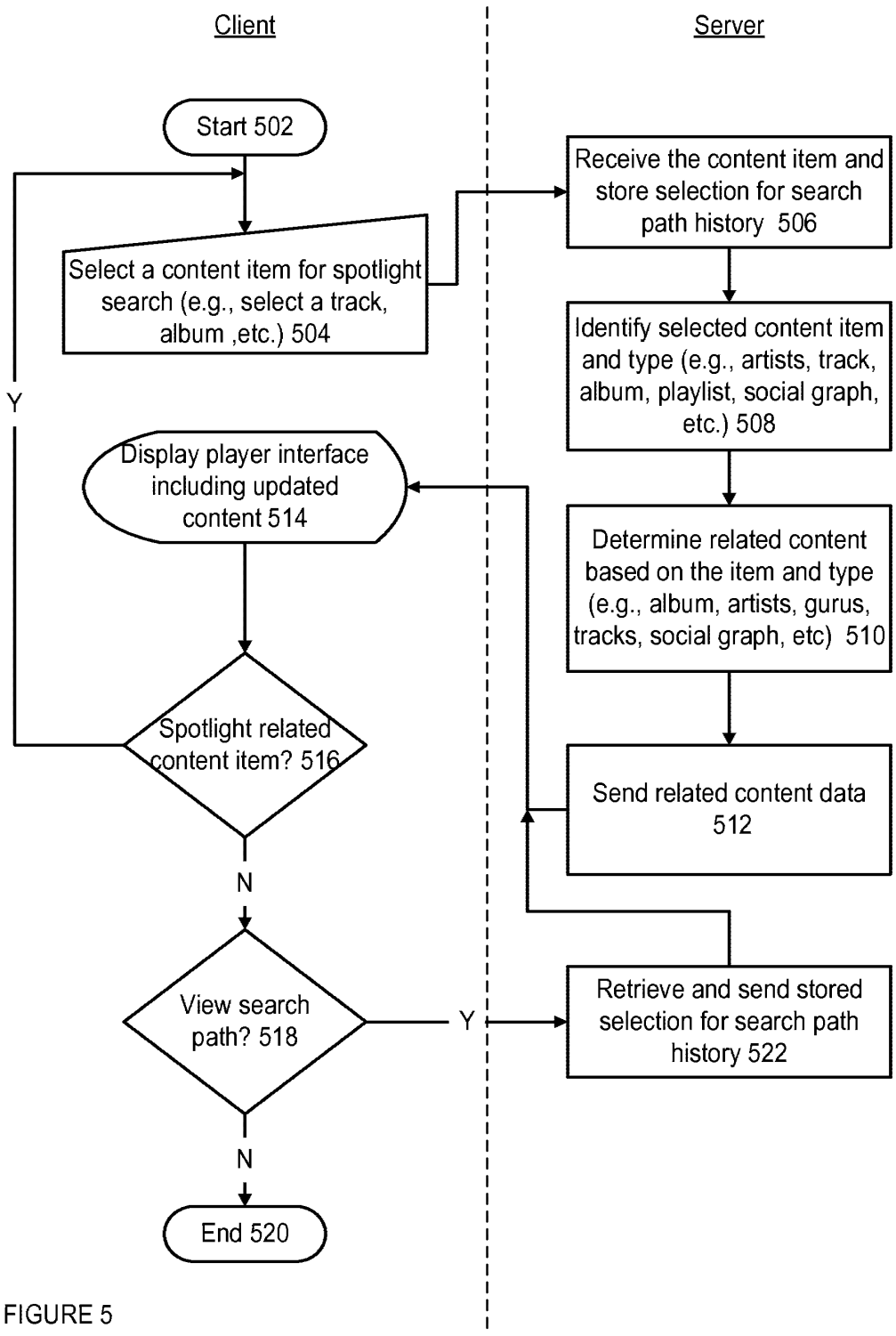

Client
Server
Start 502
Select a content item for spotlight search (e.g., select a track, album ,etc.) 504
Receive the content item and store selection for search path history 506
Identify selected content item and type (e.g., artists, track, album, playlist, social graph, etc.) 508
Determine related content based on the item and type (e.g., album, artists, gurus, tracks, social graph, etc) 510
Send related content data 512
Display player interface including updated content 514
Spotlight related content item? 516
Y
N
View search path? 518
Y
Retrieve and send stored selection for search path history 522
N
End 520

FIGURE 5

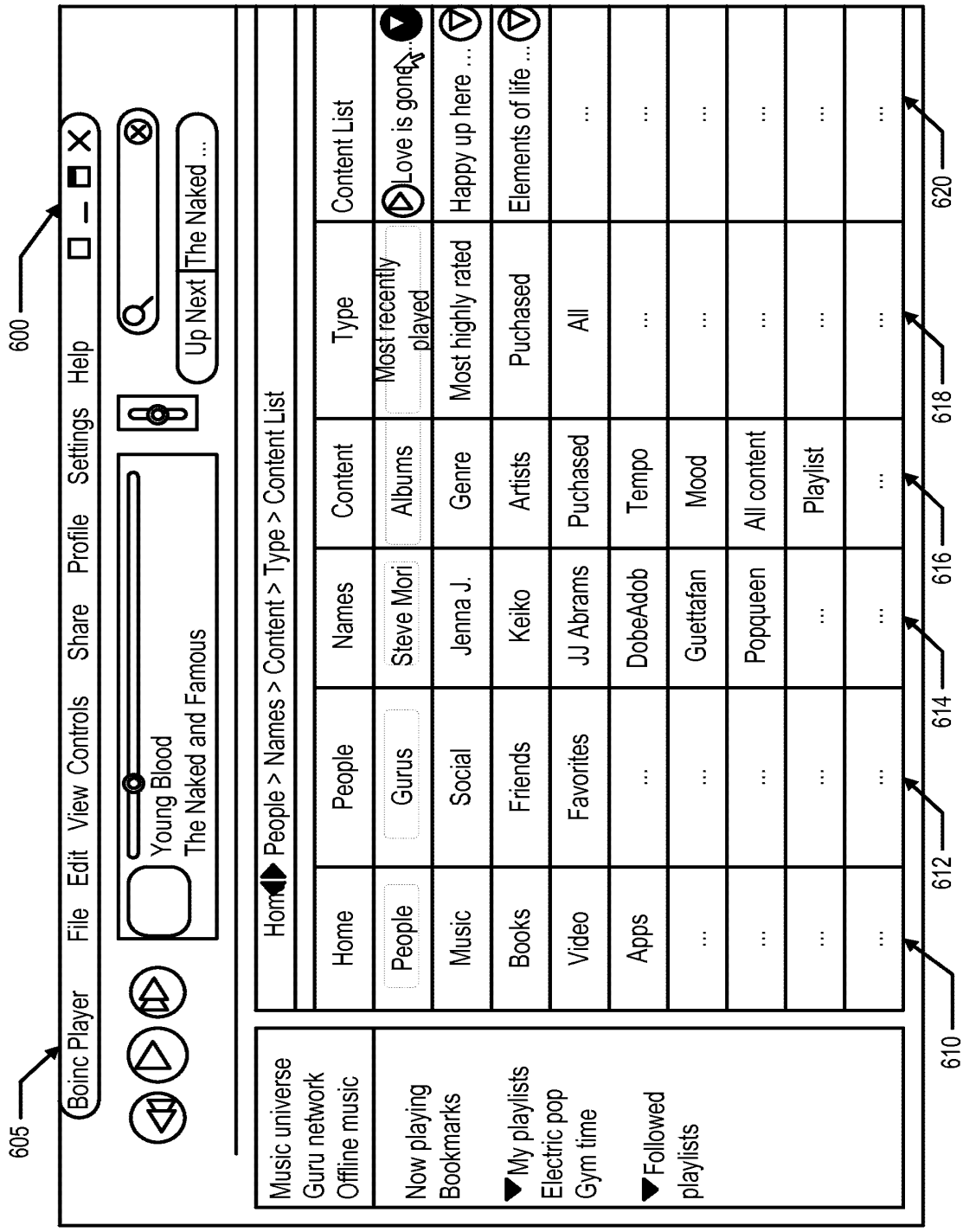

605
600
Boinc Player File Edit View Controls Share Profile Settings Help
Young Blood
The Naked and Famous
Up Next The Naked ...
Music universe
Guru network
Offline music
Now playing
Bookmarks
My playlists
Electric pop
Gym time
Followed playlists
Hom People > Names > Content > Type > Content List
Home
People
Music
Books
Video
Apps
...
People
Gurus
Social
Friends
Favorites
...
...
Names
Steve Mori
Jenna J.
Keiko
JJ Abrams
...
...
Content
Albums
Genre
Artists
Puchased
Tempo
Mood
All content
Playlist
...
Type
Most recently played
Most highly rated
Puchased
All
...
...
...
...
...
Content List
Love is gone...
Happy up here ...
Elements of life ...
...
...
...
...
...
...
610
612
614
616
618
620

FIGURE 6a

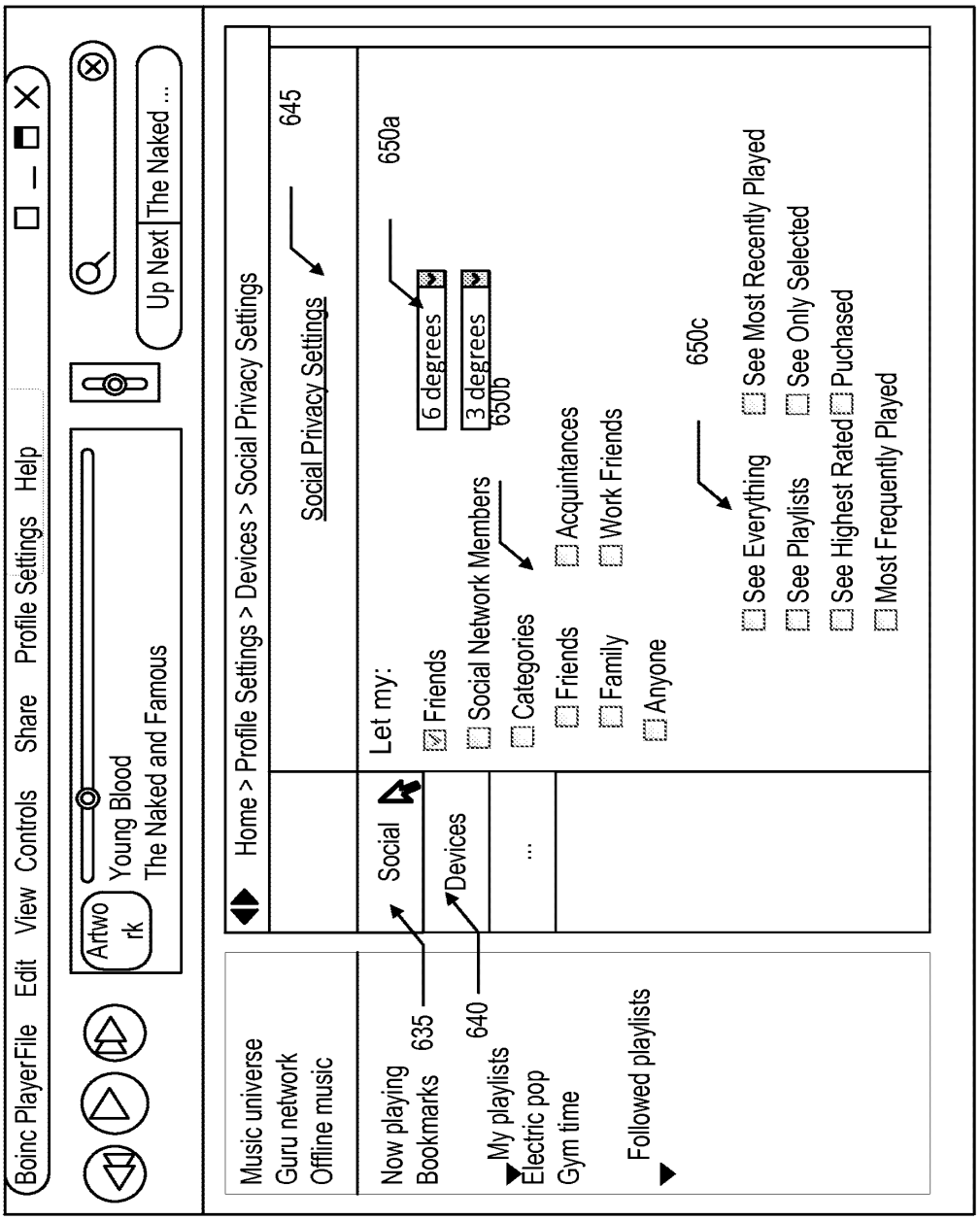

Boinc PlayerFile Edit View Controls Share Profile Settings Help
Artwo rk
Young Blood
The Naked and Famous
Up Next The Naked ...
Music universe
Guru network
Offline music
Now playing
Bookmarks
My playlists
Electric pop
Gym time
Followed playlists
635
640
Home > Profile Settings > Devices > Social Privacy Settings
Social
Devices
...
Social Privacy Settings
645
Let my:
650a
Friends
Social Network Members
Categories
Friends
Family
Anyone
Acquintances
Work Friends
6 degrees
3 degrees
650b
650c
See Everything
See Playlists
See Highest Rated
Most Frequently Played
See Most Recently Played
See Only Selected
Puchased

FIGURE 6b

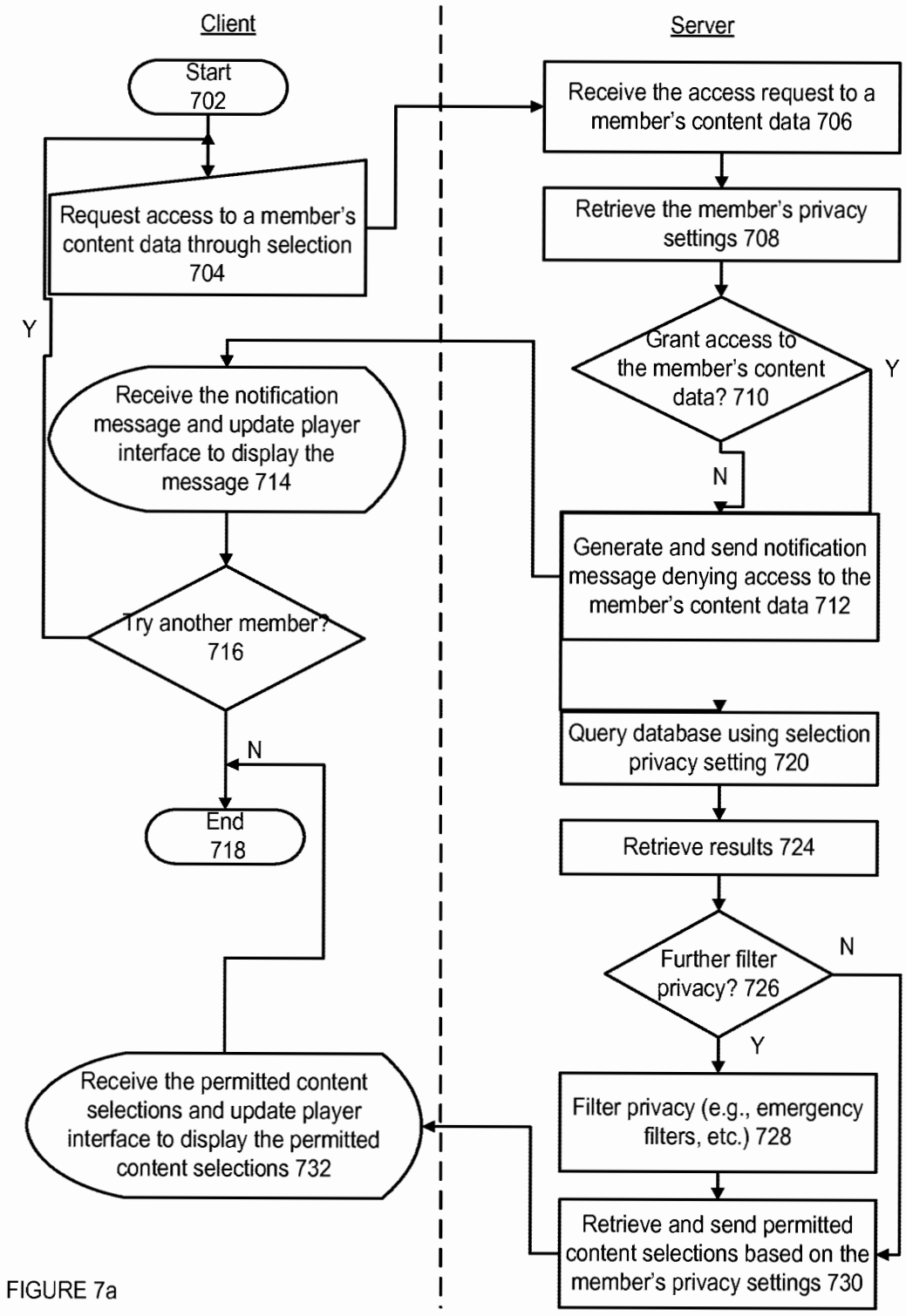

Client
Server
Start 702
Request access to a member's content data through selection 704
Receive the access request to a member's content data 706
Retrieve the member's privacy settings 708
Grant access to the member's content data? 710
Y
N
Receive the notification message and update player interface to display the message 714
Generate and send notification message denying access to the member's content data 712
Try another member? 716
Y
N
End 718
Query database using selection privacy setting 720
Retrieve results 724
Further filter privacy? 726
N
Y
Filter privacy (e.g., emergency filters, etc.) 728
Retrieve and send permitted content selections based on the member's privacy settings 730
Receive the permitted content selections and update player interface to display the permitted content selections 732

FIGURE 7a

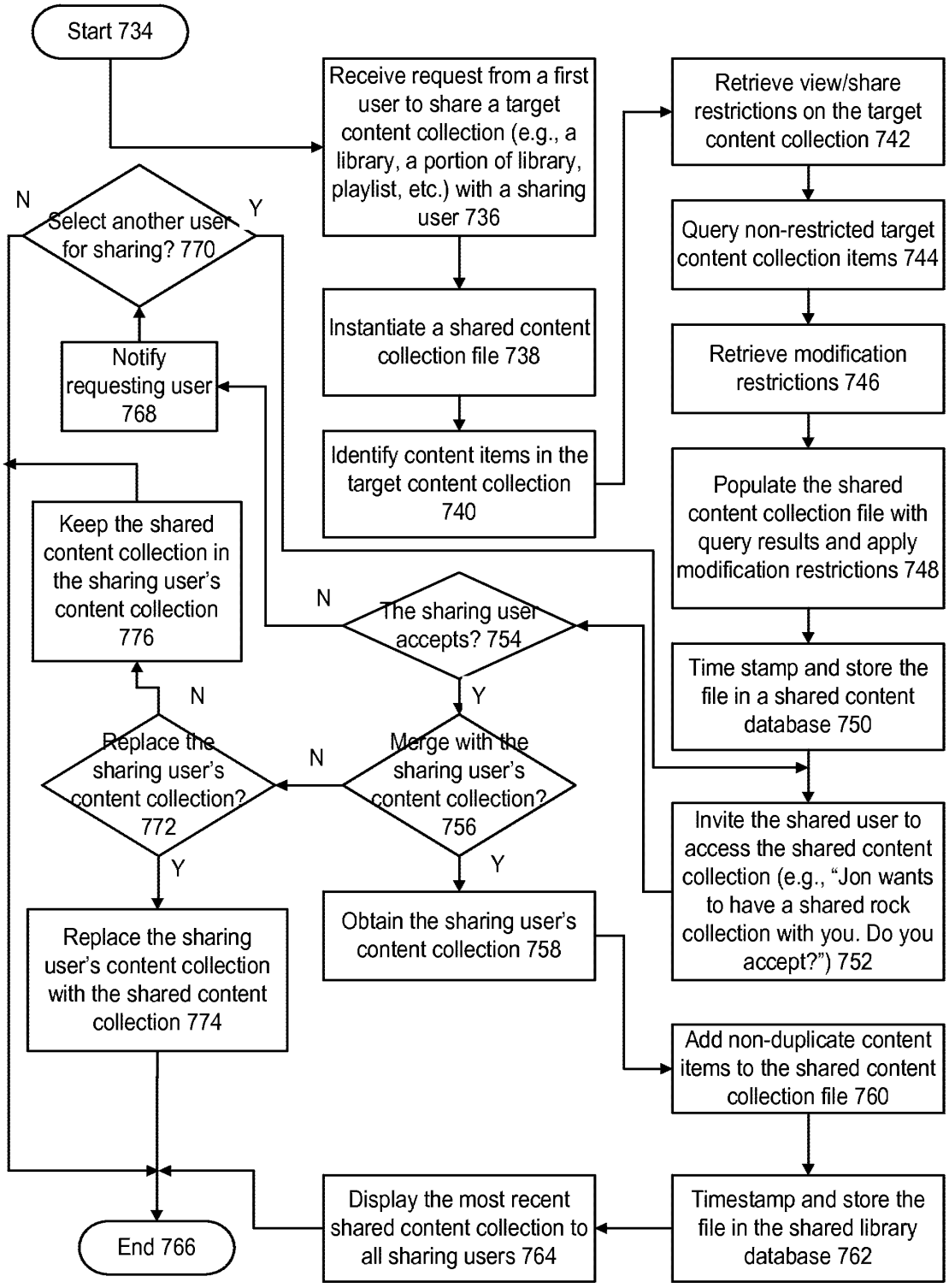

Start 734
Receive request from a first user to share a target content collection (e.g., a library, a portion of library, playlist, etc.) with a sharing user 736
Retrieve view/share restrictions on the target content collection 742
Query non-restricted target content collection items 744
Retrieve modification restrictions 746
Instantiate a shared content collection file 738
Identify content items in the target content collection 740
Populate the shared content collection file with query results and apply modification restrictions 748
Time stamp and store the file in a shared content database 750
Invite the shared user to access the shared content collection (e.g., "Jon wants to have a shared rock collection with you. Do you accept?") 752
The sharing user accepts? 754
N
Y
Merge with the sharing user's content collection? 756
Obtain the sharing user's content collection 758
Add non-duplicate content items to the shared content collection file 760
Timestamp and store the file in the shared library database 762
Display the most recent shared content collection to all sharing users 764
End 766
Select another user for sharing? 770
Notify requesting user 768
Keep the shared content collection in the sharing user's content collection 776
Replace the sharing user's content collection? 772
Replace the sharing user's content collection with the shared content collection 774

FIGURE 7b

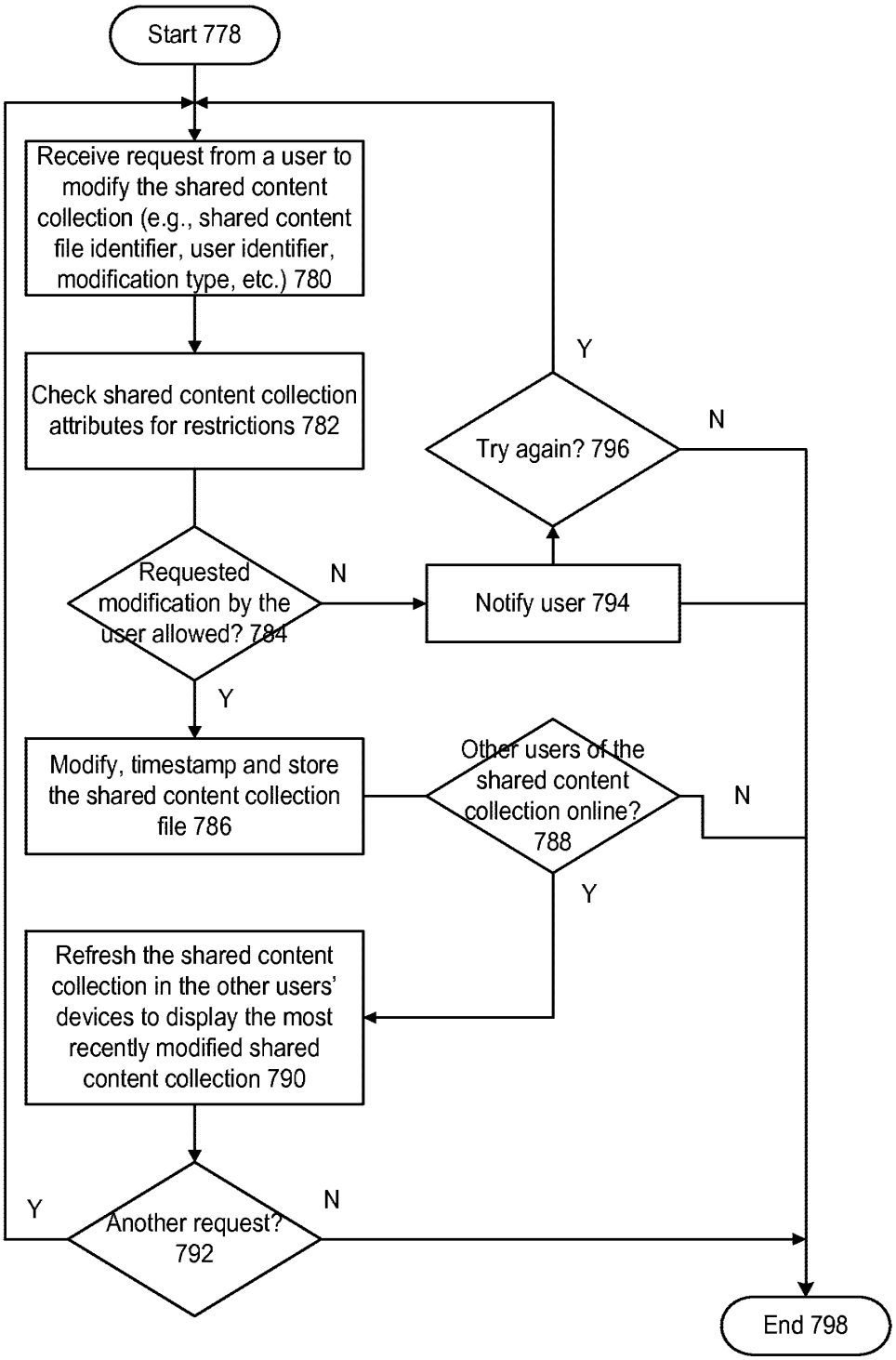

Start 778
Receive request from a user to modify the shared content collection (e.g., shared content file identifier, user identifier, modification type, etc.) 780
Check shared content collection attributes for restrictions 782
Requested modification by the user allowed? 784
N
Notify user 794
Try again? 796
Y
N
Y
Modify, timestamp and store the shared content collection file 786
Other users of the shared content collection online? 788
N
Y
Refresh the shared content collection in the other users' devices to display the most recently modified shared content collection 790
Another request? 792
Y
N
End 798

FIGURE 7c

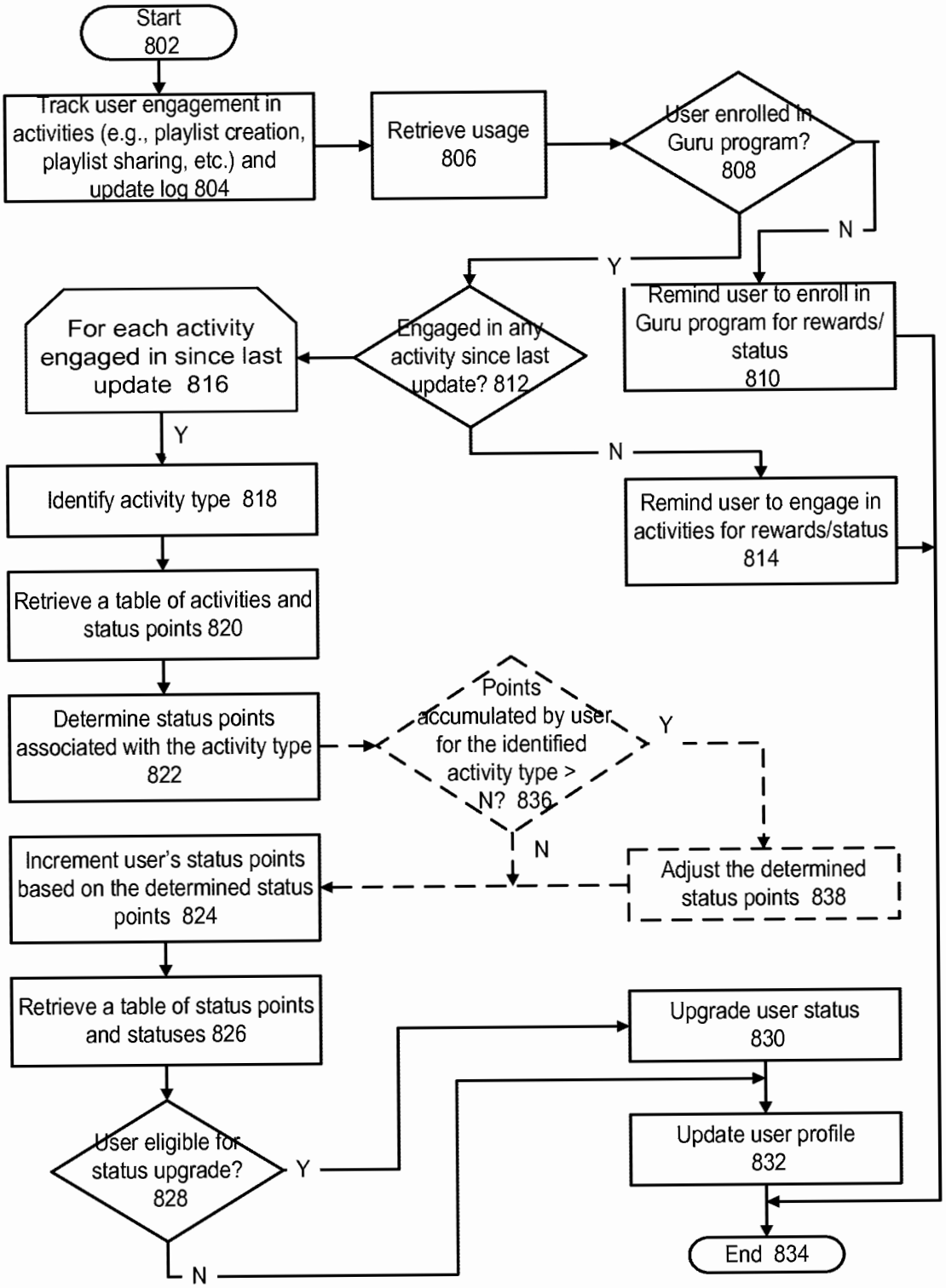

Start 802
Track user engagement in activities (e.g., playlist creation, playlist sharing, etc.) and update log 804
Retrieve usage 806
User enrolled in Guru program? 808
N
Y
Remind user to enroll in Guru program for rewards/ status 810
Engaged in any activity since last update? 812
For each activity engaged in since last update 816
Y
N
Identify activity type 818
Remind user to engage in activities for rewards/status 814
Retrieve a table of activities and status points 820
Determine status points associated with the activity type 822
Points accumulated by user for the identified activity type > N? 836
Y
N
Adjust the determined status points 838
Increment user's status points based on the determined status points 824
Retrieve a table of status points and statuses 826
Upgrade user status 830
User eligible for status upgrade? 828
Y
N
Update user profile 832
End 834

FIGURE 8a

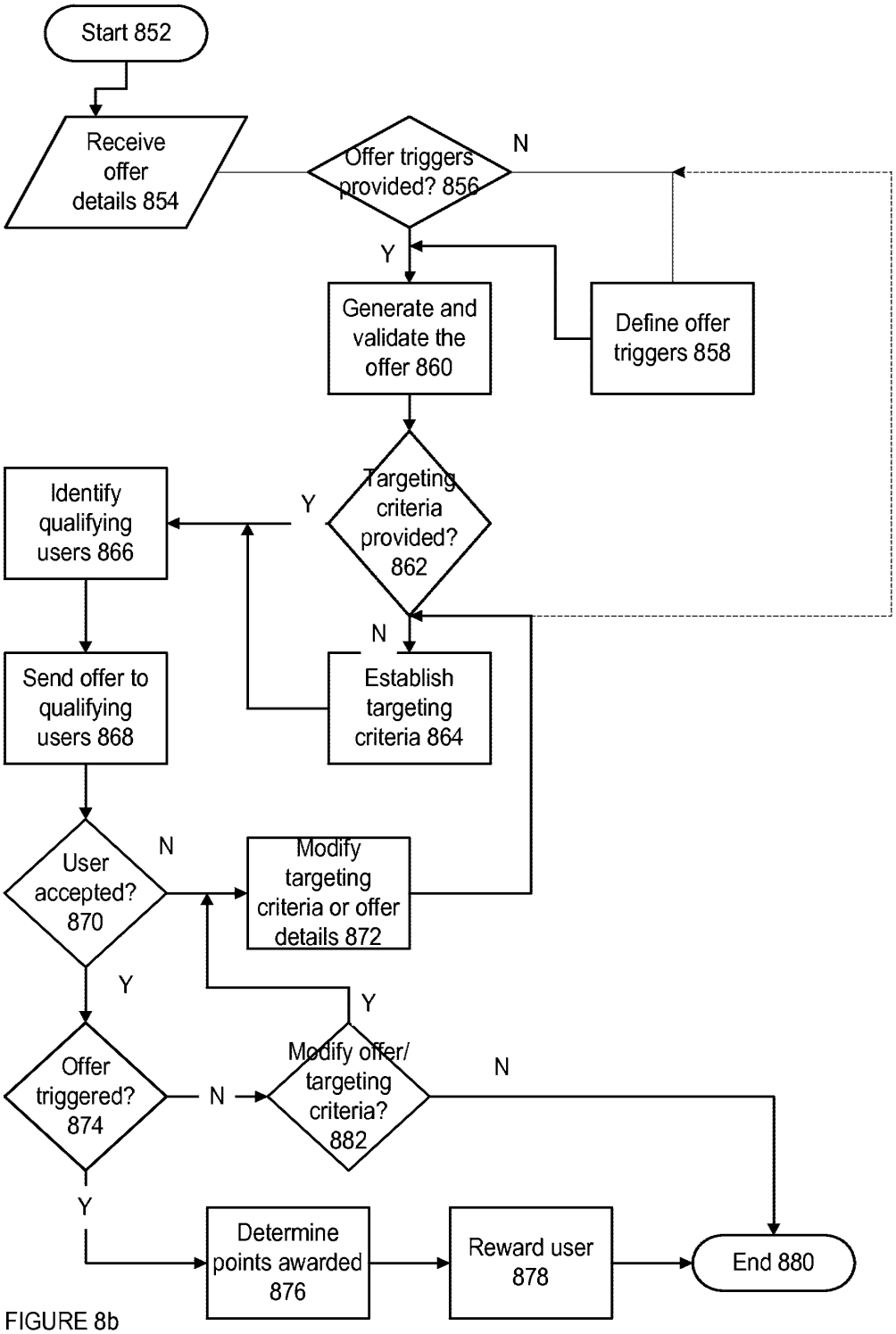

Start 852
Receive offer details 854
Offer triggers provided? 856
N
Y
Generate and validate the offer 860
Define offer triggers 858
Targeting criteria provided? 862
Y
Identify qualifying users 866
N
Establish targeting criteria 864
Send offer to qualifying users 868
User accepted? 870
N
Modify targeting criteria or offer details 872
Y
Y
Offer triggered? 874
N
Modify offer/ targeting criteria? 882
N
Y
Determine points awarded 876
Reward user 878
End 880

FIGURE 8b

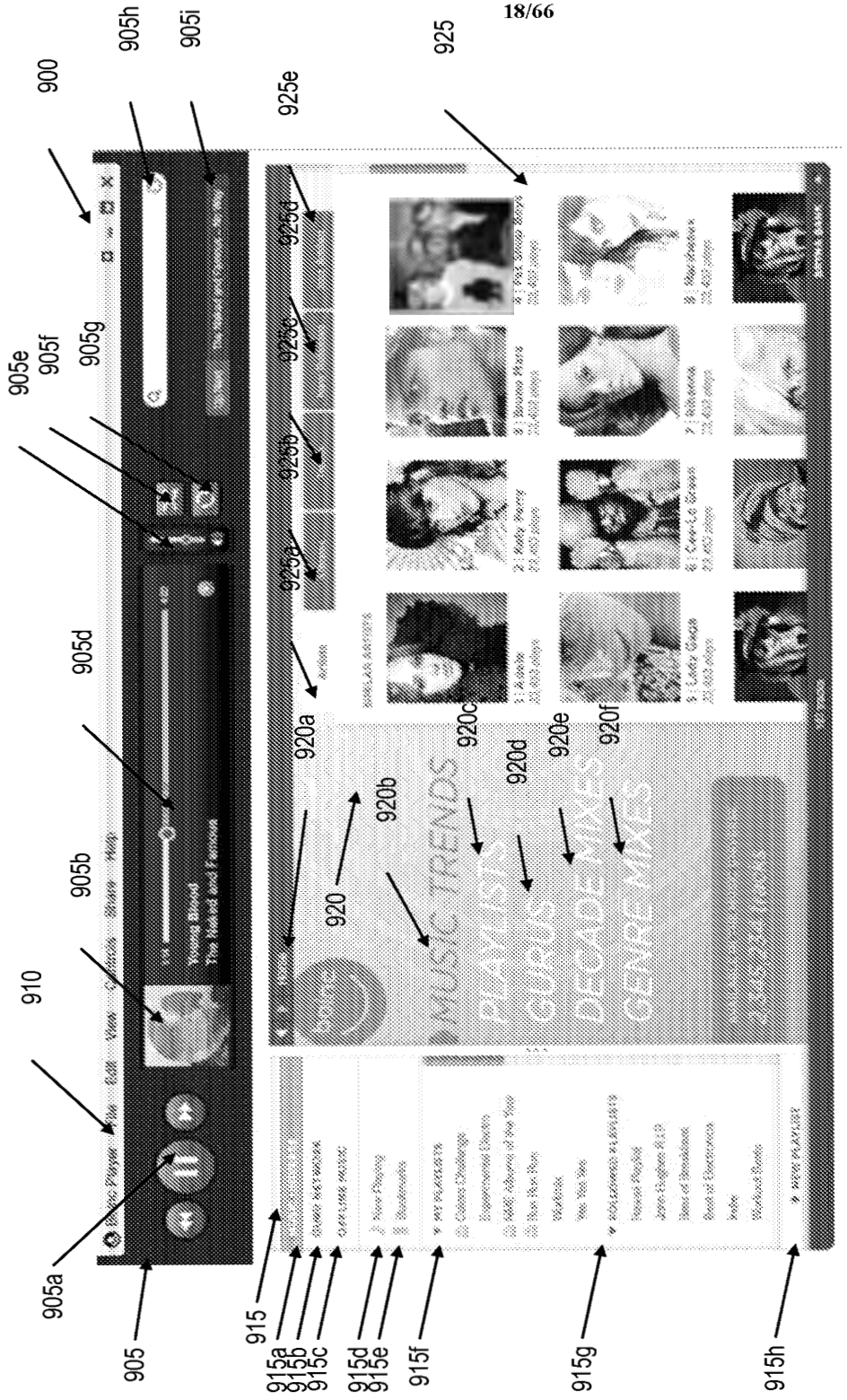

900
905h
905i
925
925e
905e
905f
905g
905d
905b
910
905a
905
915
915a
915b
915c
915d
915e
915f
915g
915h
920
920a
920b
920c
920d
920e
920f
925a
925b
925c
925d
MUSIC TRENDS
PLAYLISTS
GURUS
DECADE MIXES
GENRE MIXES

FIGURE 9

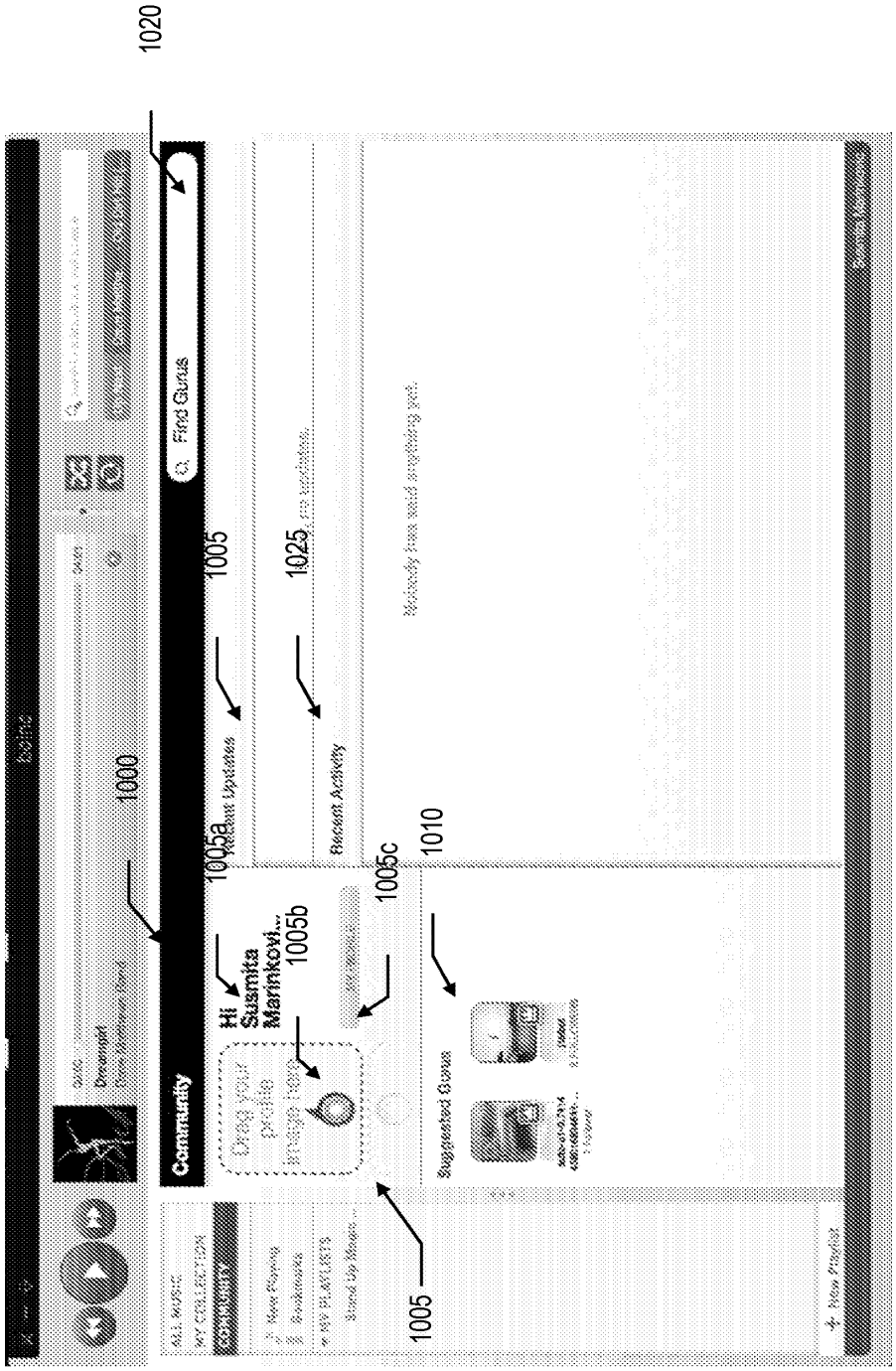

1020
1000
1005
1025
1005a
1010
1005c
1005b
1005
Community
Find Gurus
Hi Susmita Marinkovi...
Recent Activity
Suggested Gurus

FIGURE 10

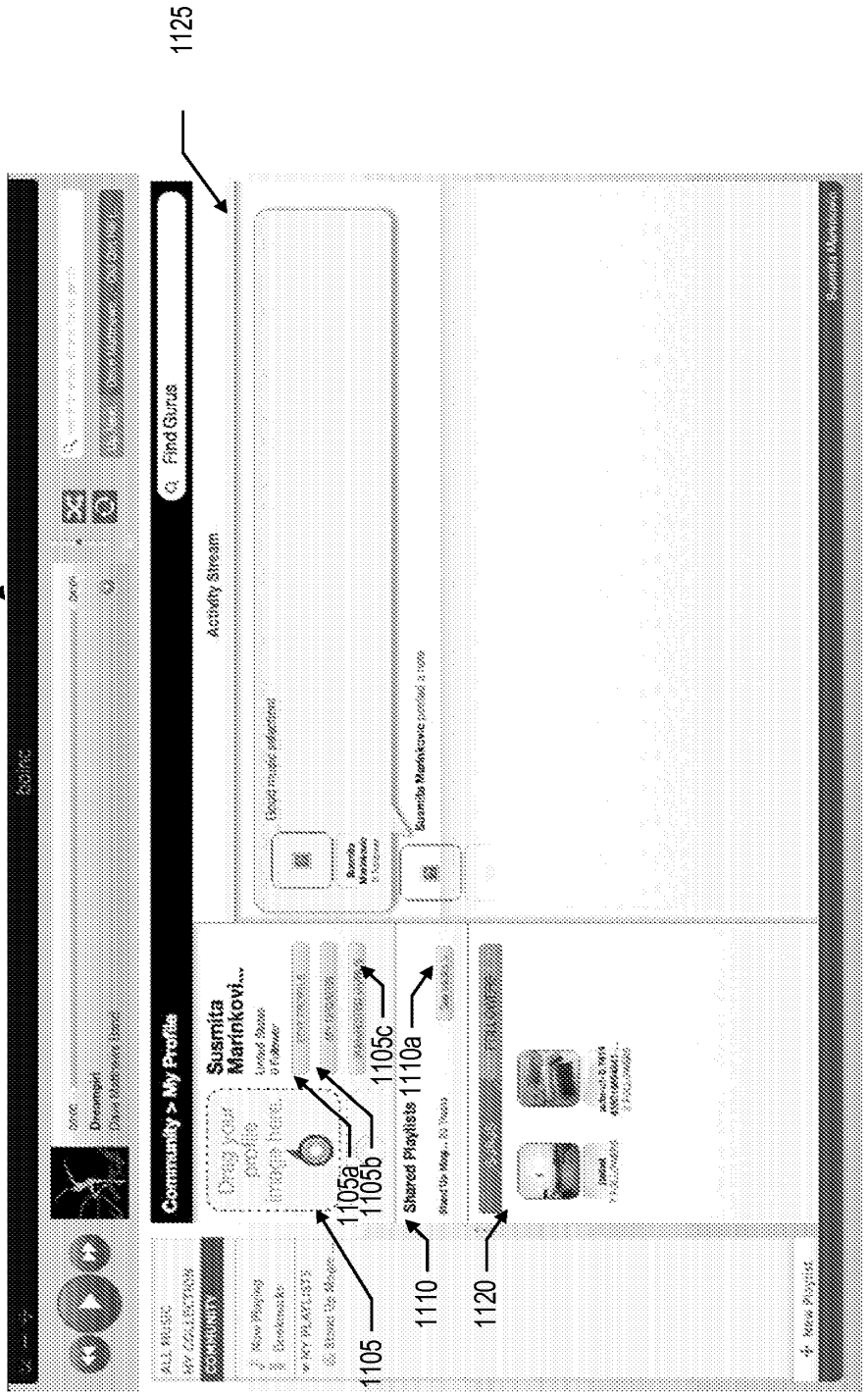

1100
1125
Community > My Profile
Find Gurus
Activity Stream
Susmita Marinkovi...
Shared Playlists
1105
1110
1120
1105a
1105b
1105c
1110a

FIGURE 11a

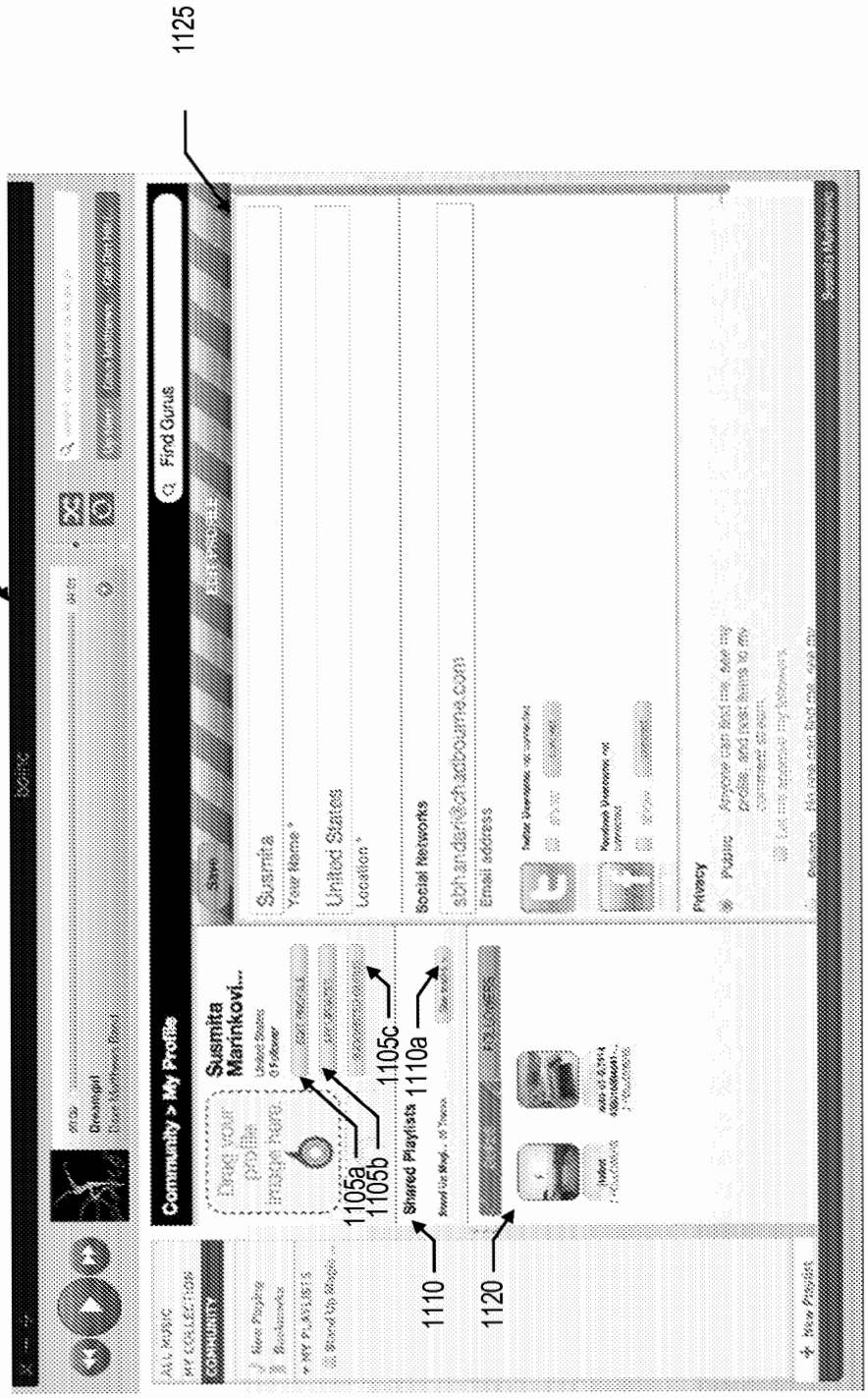

1100
1125
Community > My Profile
Find Gurus
Susmita Marinkovi...
Drag your profile image here
1105a
1105b
1105c
1110
1110a
1120
Susmita
United States
Social Networks
Email address
Privacy

FIGURE 11b

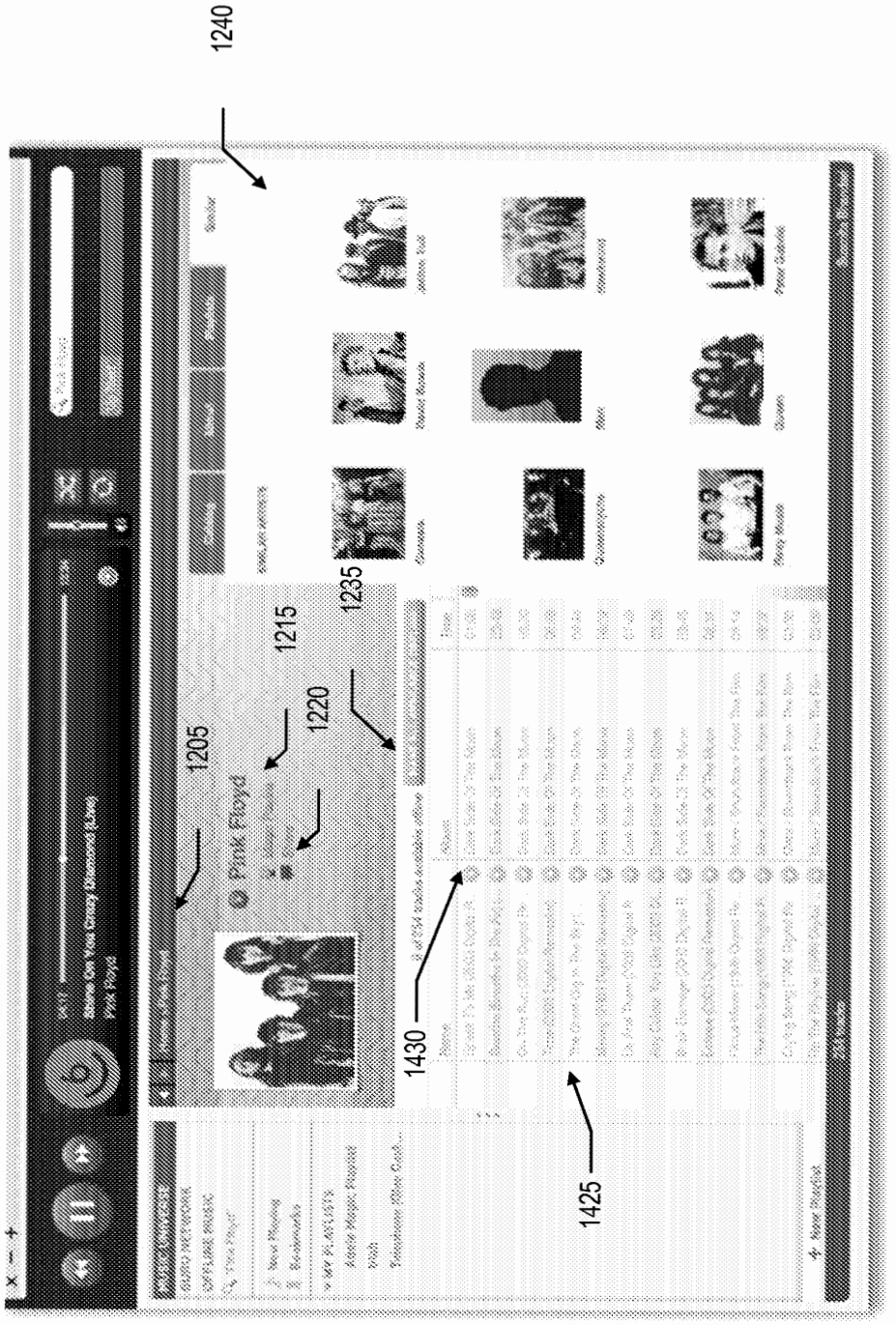


FIGURE 12a

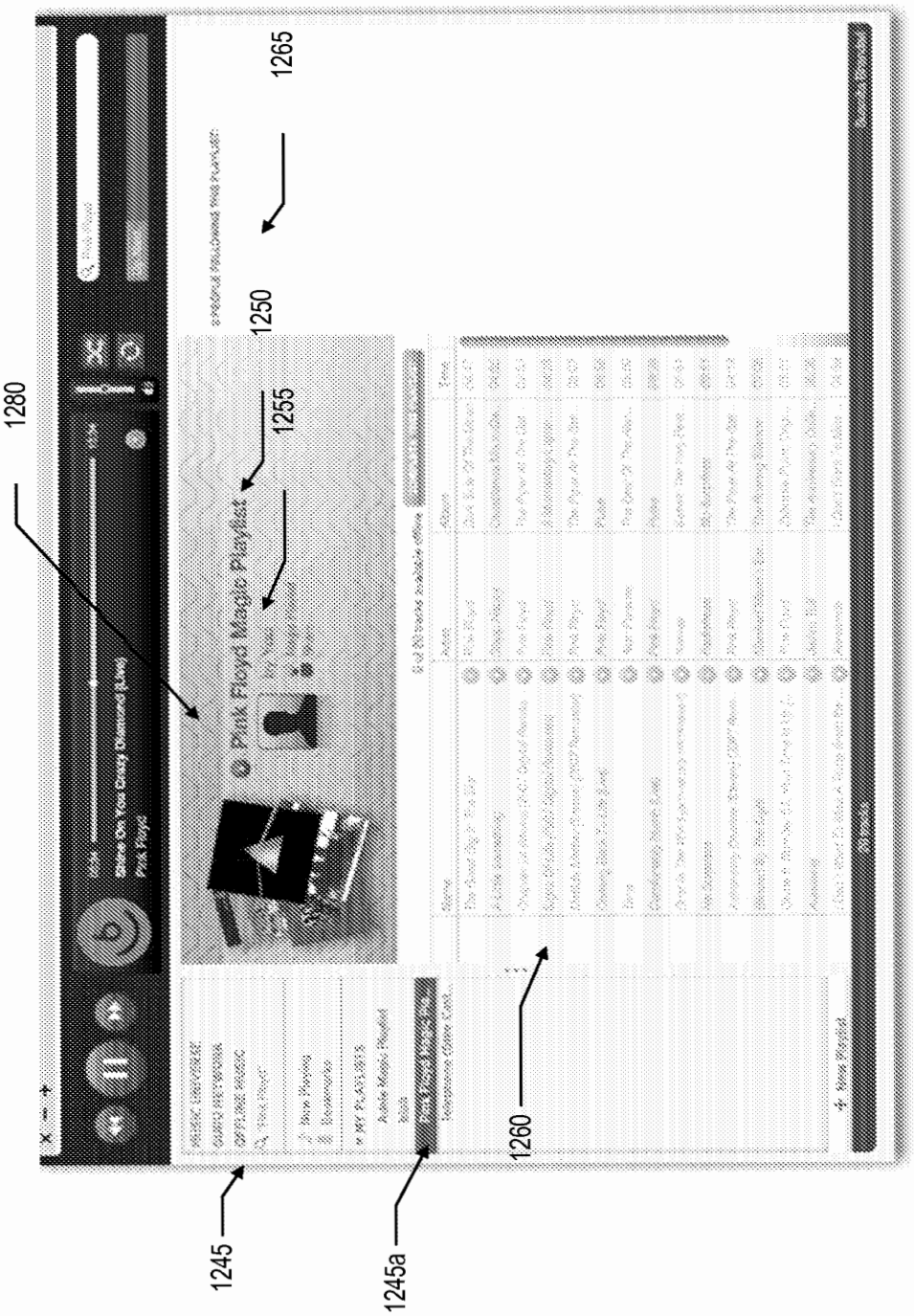


FIGURE 12b

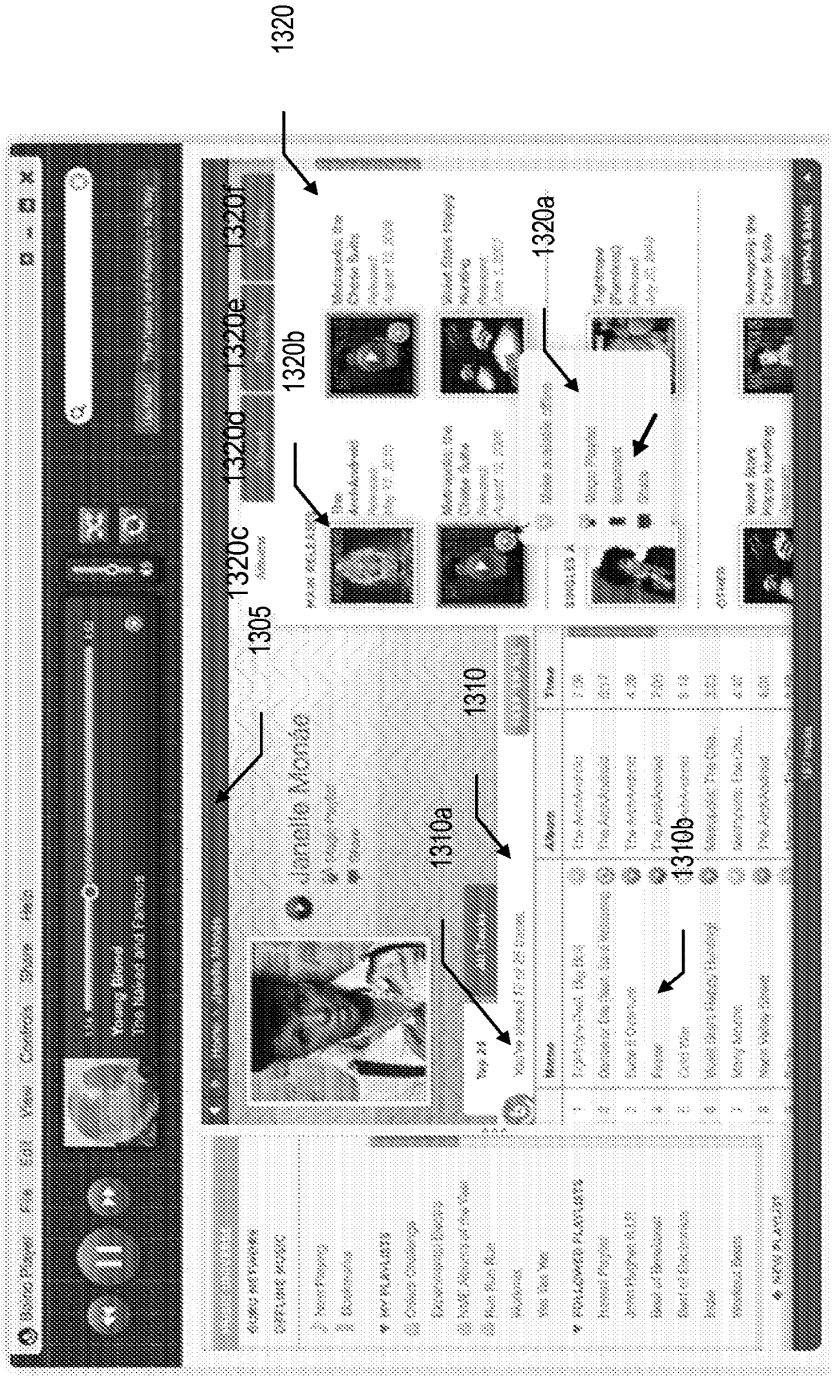

1320
1320c
1320d
1320e
1320f
1320b
1320a
1305
1310
1310a
1310b

FIGURE 13a



FIGURE 13b

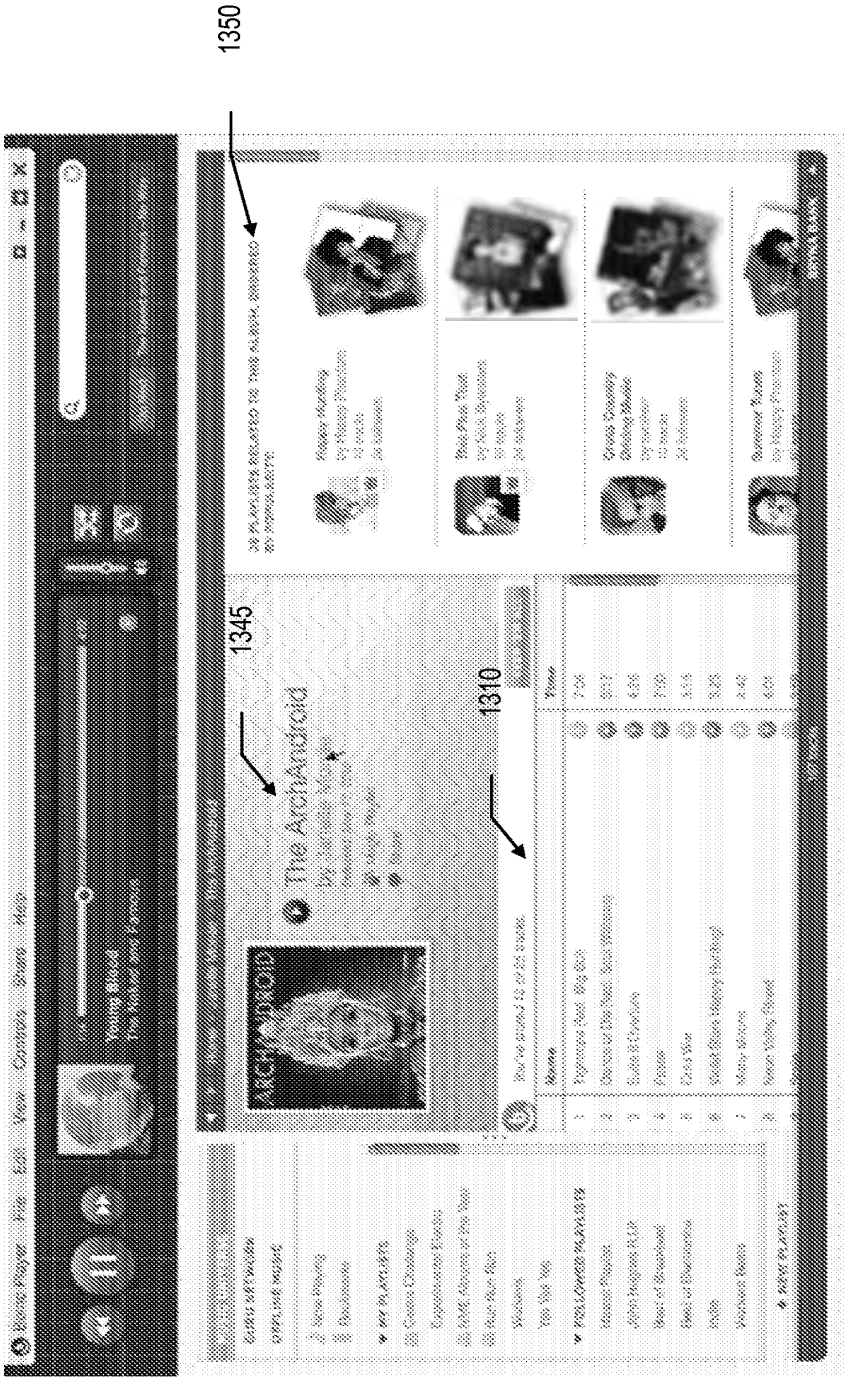


FIGURE 13c

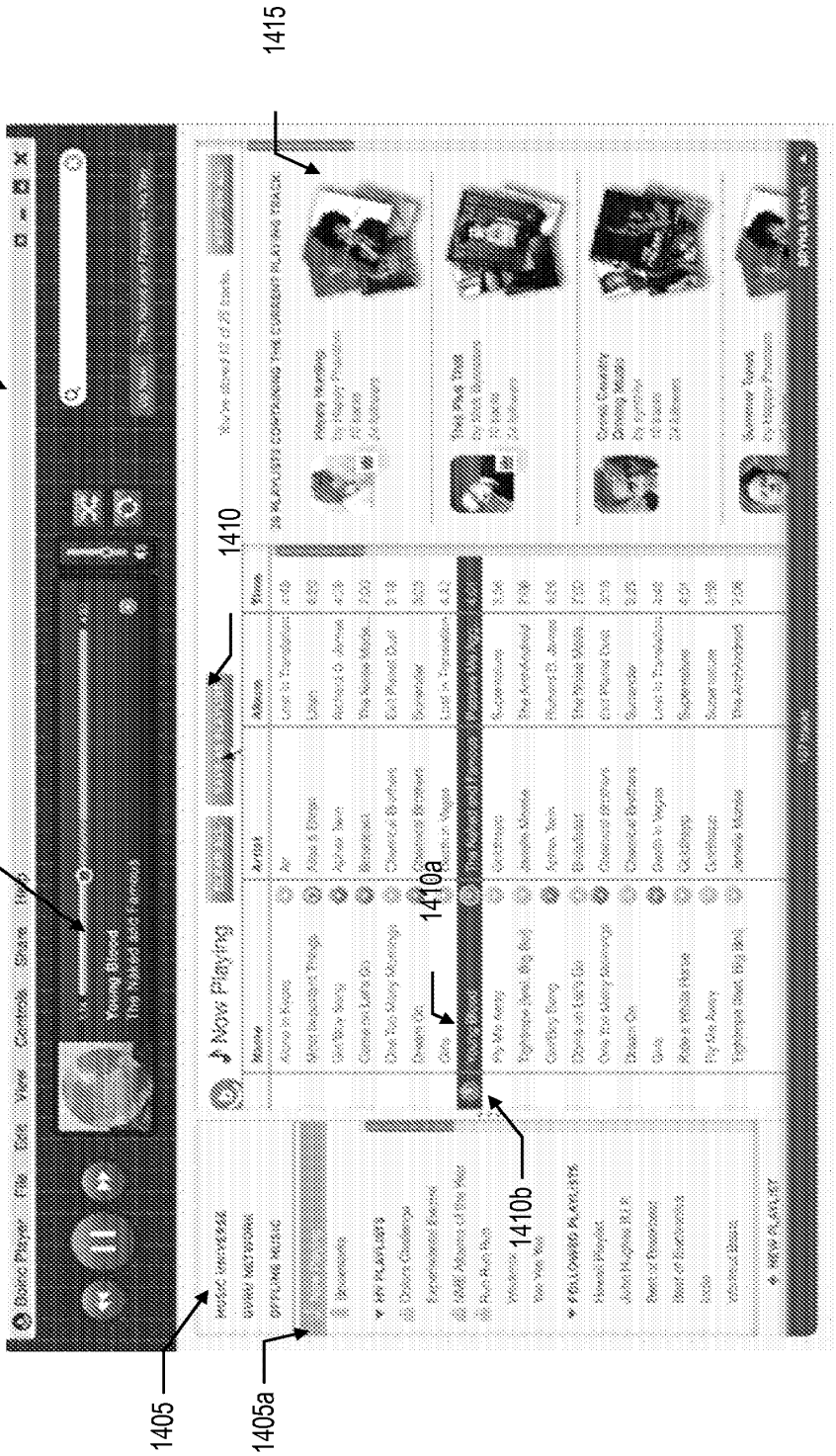


FIGURE 14

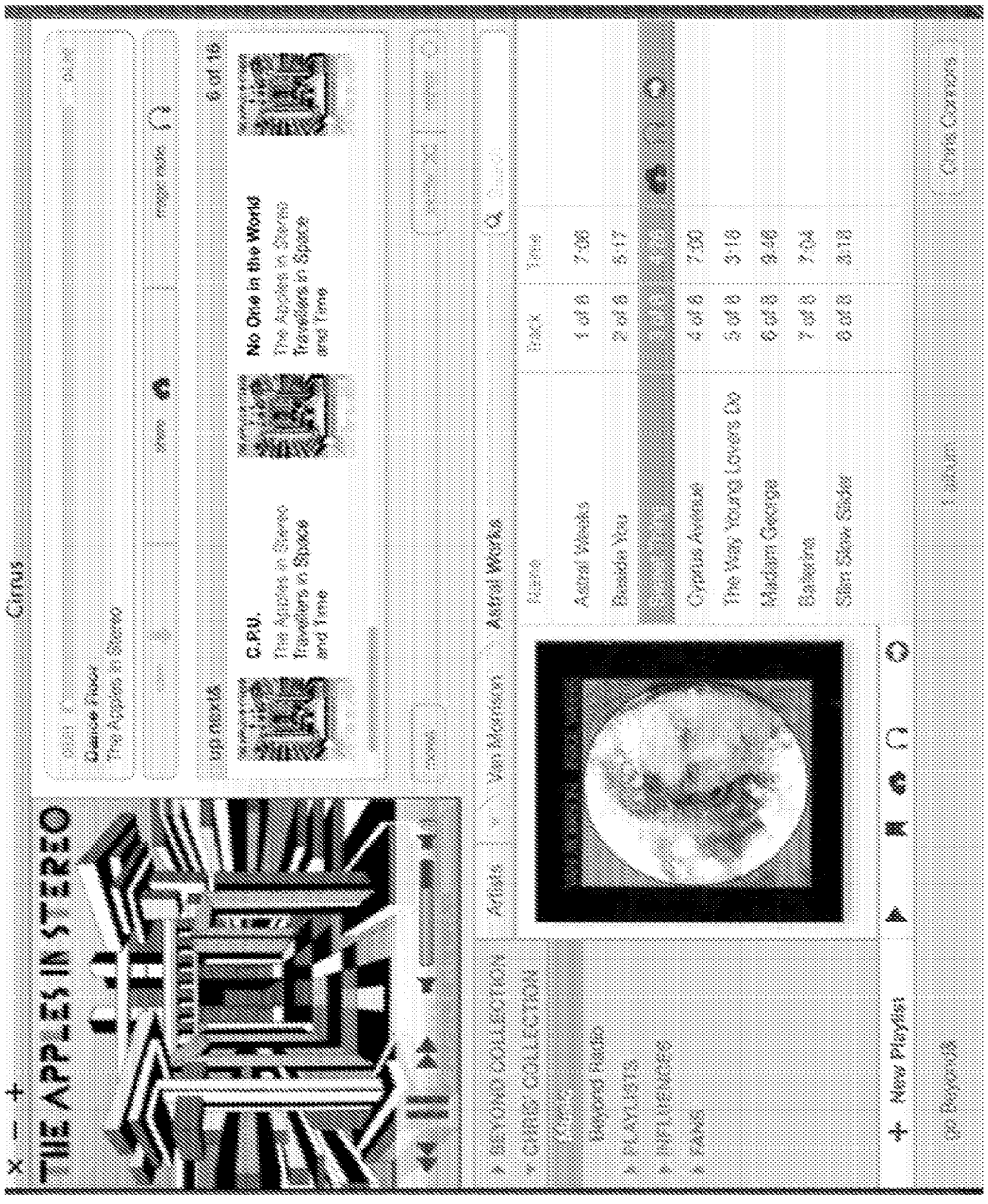

THE APPLES IN STEREO
Citrus
Astral Weeks
Van Morrison
Artists
Albums
Songs
Genres
Composers
Playlists
New Playlist
Name
Time
Astral Weeks
Beside You
Cypress Avenue
The Way Young Lovers Do
Madam George
Ballerina
Slim Slow Slider
C.P.U.
No One in the World
Core Genres

FIGURE 15a

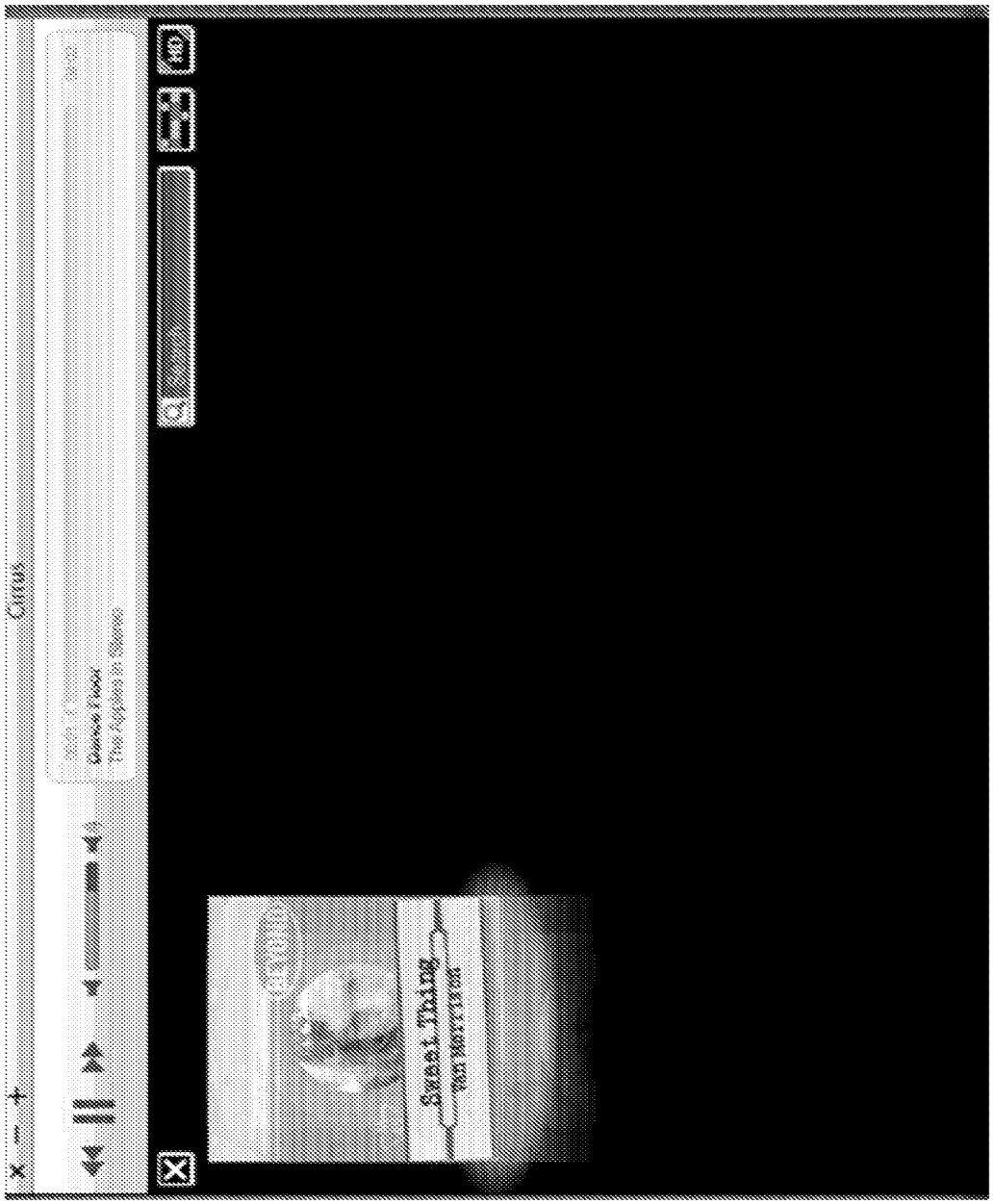


FIGURE 15b

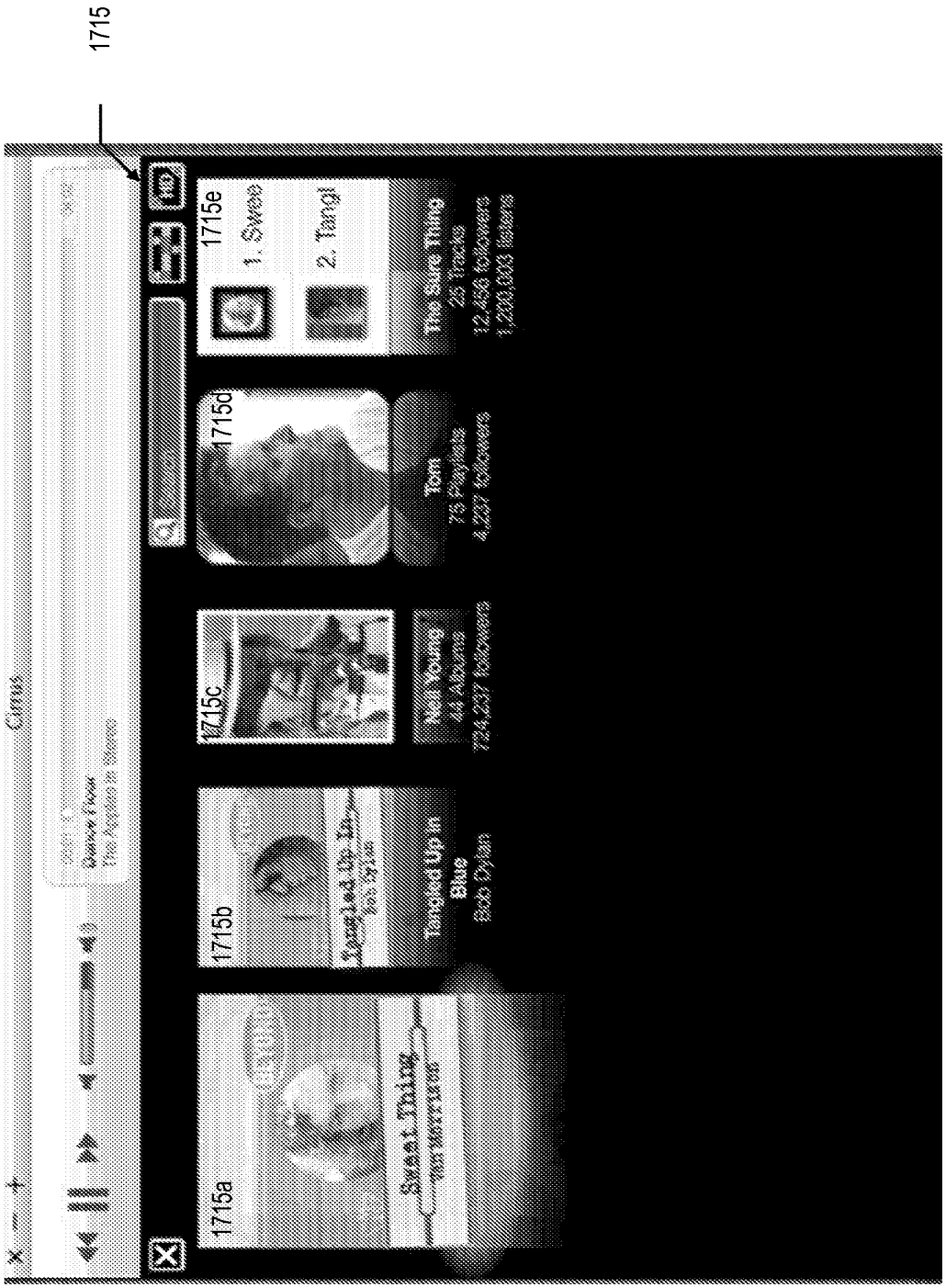

1715
1715a
1715b
1715c
1715d
1715e
Tangled Up in Blue
Bob Dylan
Nat Young
44 Albums
724,237 followers
Tom
73 Playlists
4,237 followers
1. Swee
2. Tangl
The Sure Thing
23 Tracks
12,456 followers
1,230,003 listens

FIGURE 15c

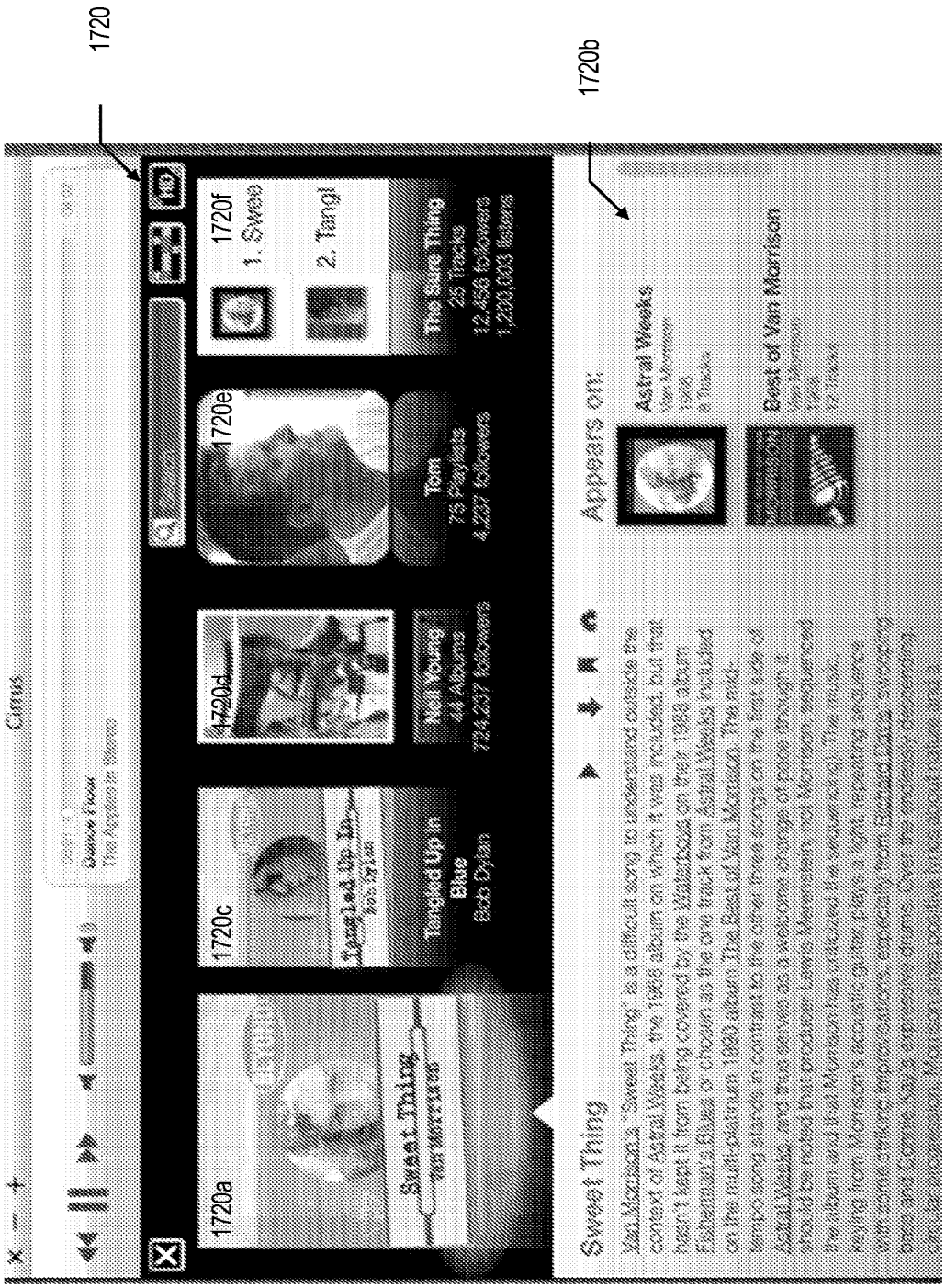

1720
1720b
1720a
1720c
1720d
1720e
1720f
Sweet Thing
Van Morrison
Tangled Up in Blue
Bob Dylan
Appears on:
Astral Weeks
Best of Van Morrison

FIGURE 15d

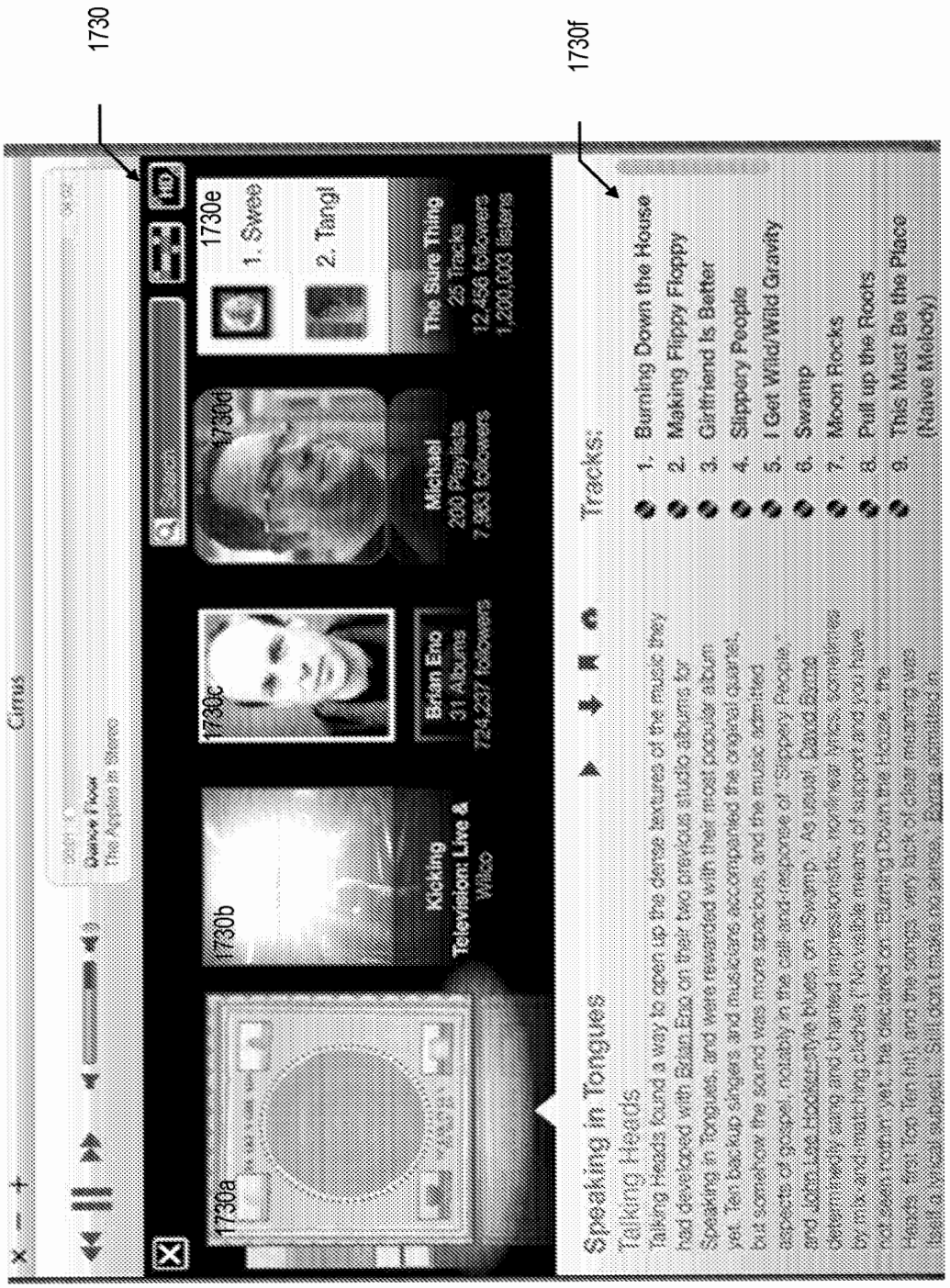

1730
1730f
1730a
1730b
1730c
1730d
1730e
Kicking Television: Live & Wilco
Brian Eno
31 Albums
724,237 followers
Michael
283 Playlists
7,303 followers
The Sure Thing
25 Tracks
12,456 followers
1,200,003 listens
1. Swee
2. Tangl
Speaking in Tongues
Talking Heads
Tracks:
1. Burning Down the House
2. Making Flippy Floppy
3. Girlfriend Is Better
4. Slippery People
5. I Get Wild/Wild Gravity
6. Swamp
7. Moon Rocks
8. Pull up the Roots
9. This Must Be the Place (Naive Melody)

FIGURE 15e

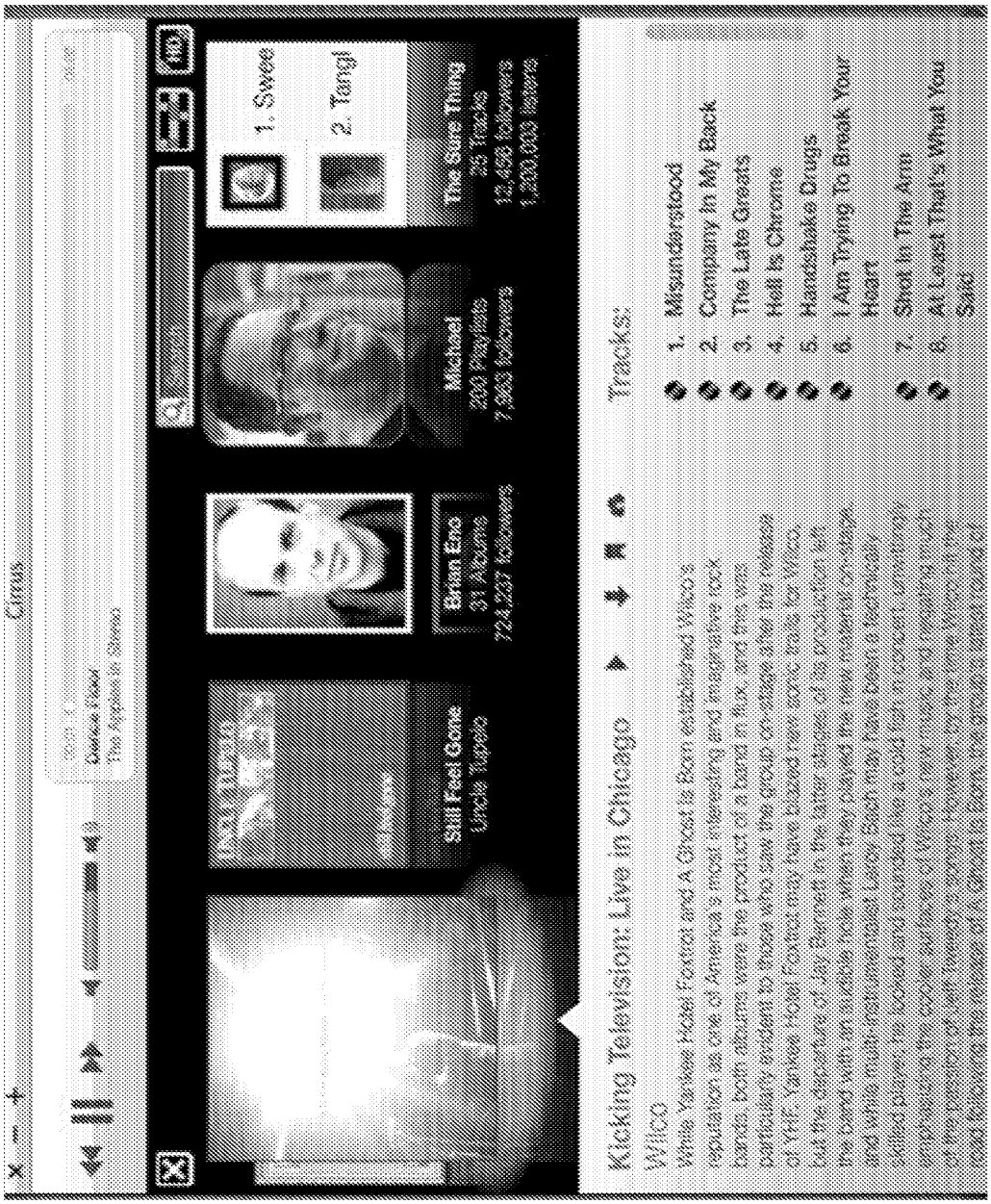

Circus
Still Feel Gone
Uncle Tupelo
Brian Eno
31 Albums
724,237 Followers
Mated
200 Playlists
7,933 Followers
1. Swee
2. Tangl
The Sure Thing
28 Tracks
13,459 Followers
1,230,003 Listens
Kicking Television: Live in Chicago
Wilco
White Yankee Hotel Foxtrot and A Ghost Is Born established Wilco's
reputation as one of America's most interesting and inspirative rock
bands, both albums were the product of a band in flux, and the way
particularly evident to those who saw the group on stage after the release
of YHF. Yankee Hotel Foxtrot may have blazed new sonic trails for Wilco,
but the departure of Jay Bennett is the latter years of its production left
the band with an identity they played the new material on stage.
and with mixed results. Live, Each Night & Everyday
Tracks:
1. Misunderstood
2. Company In My Back
3. The Late Greats
4. Hell Is Chrome
5. Handshake Drugs
6. I Am Trying To Break Your Heart
7. Shot In The Arm
8. At Least That's What You Said

FIGURE 15f

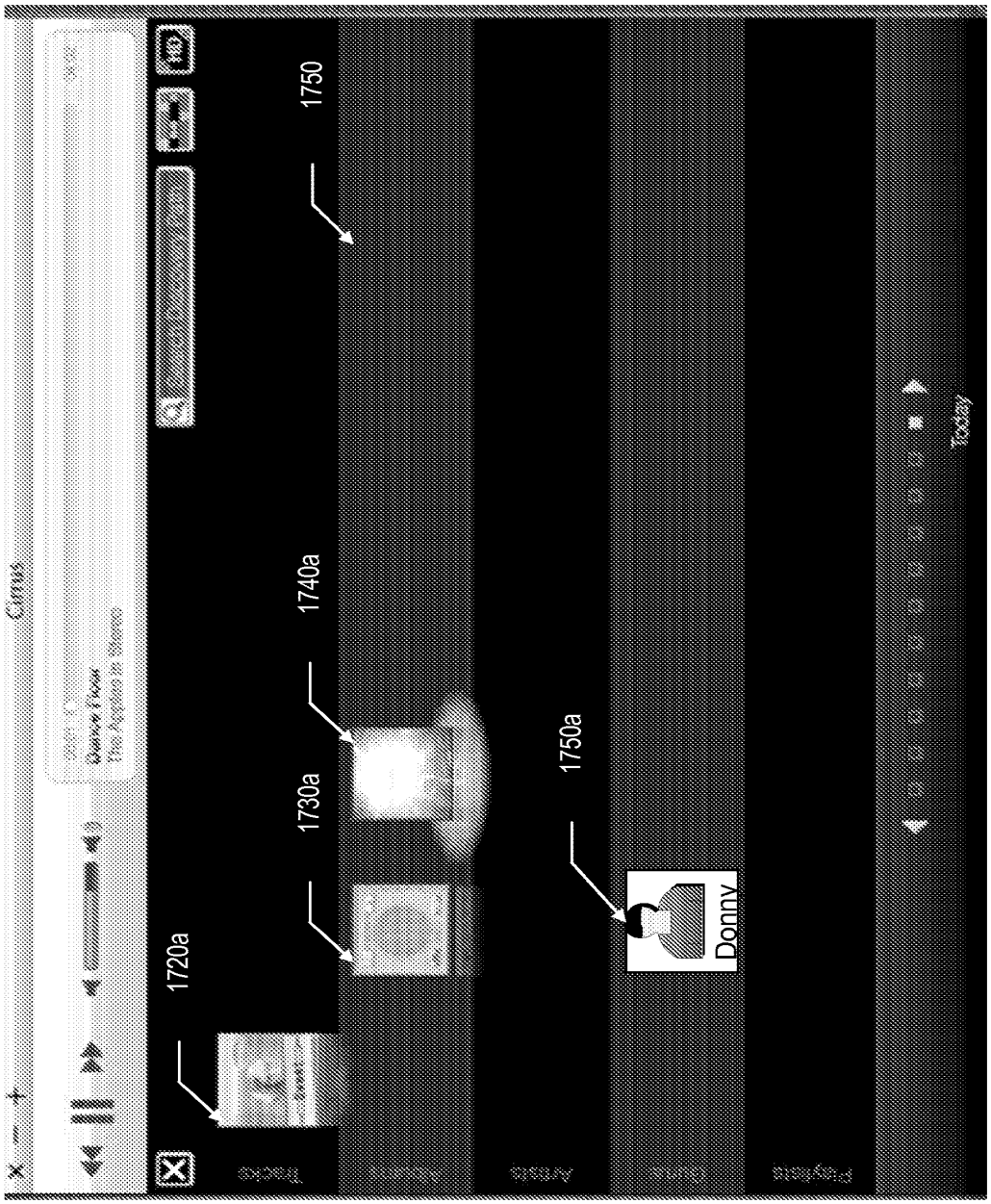


FIGURE 15g



FIGURE 16a

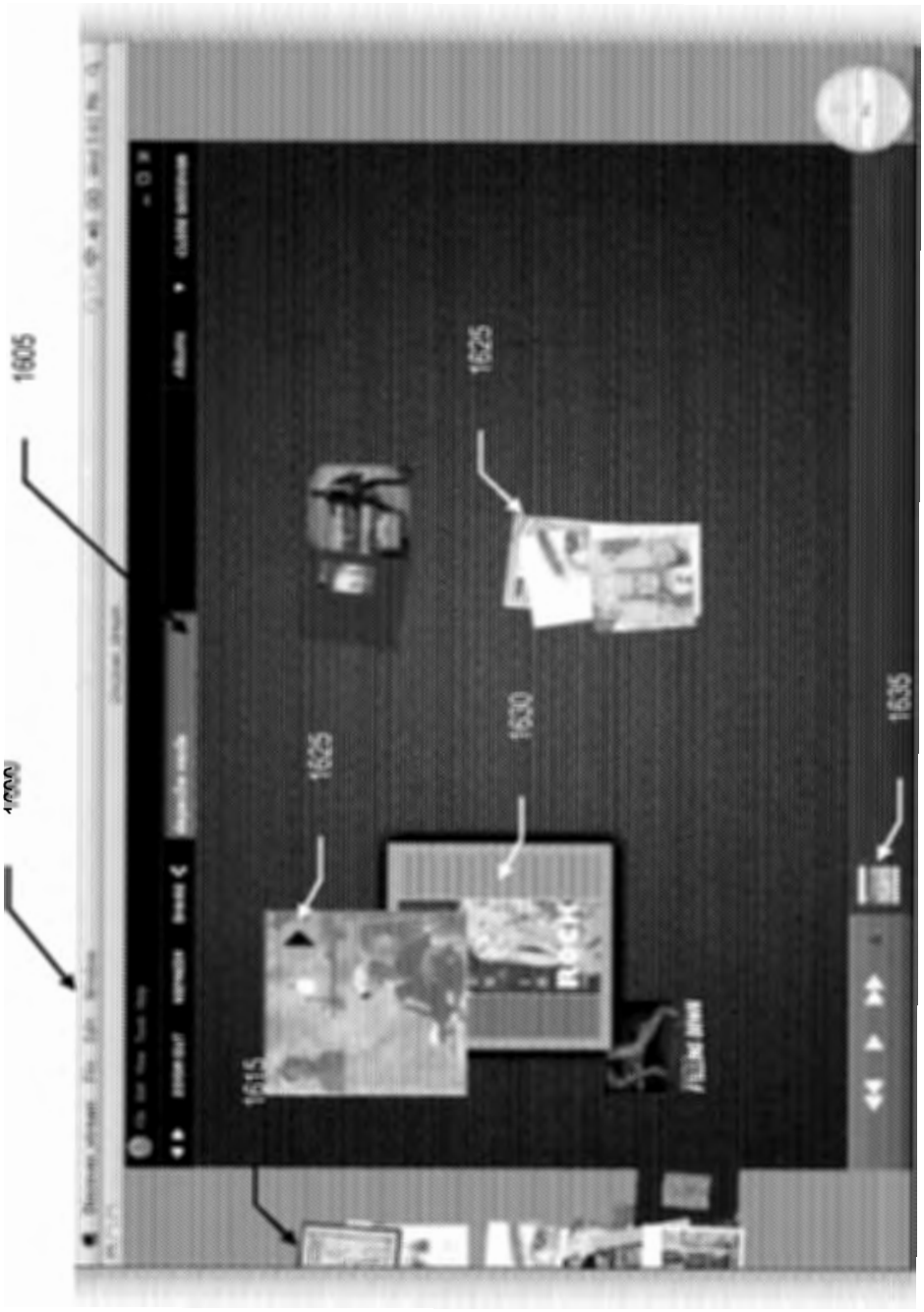


FIGURE 16b



FIGURE 16c

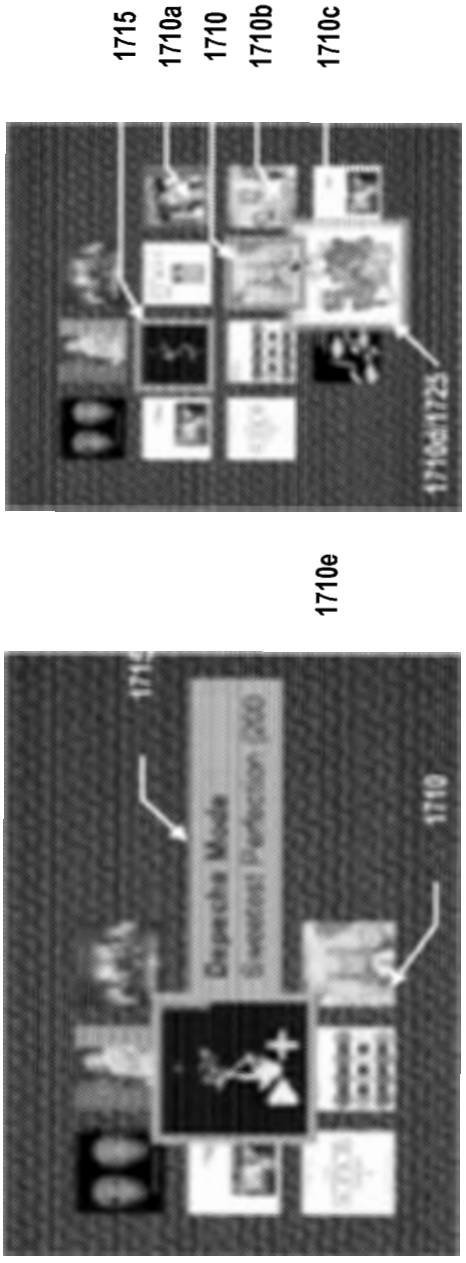


FIGURE 17a

FIGURE 17b

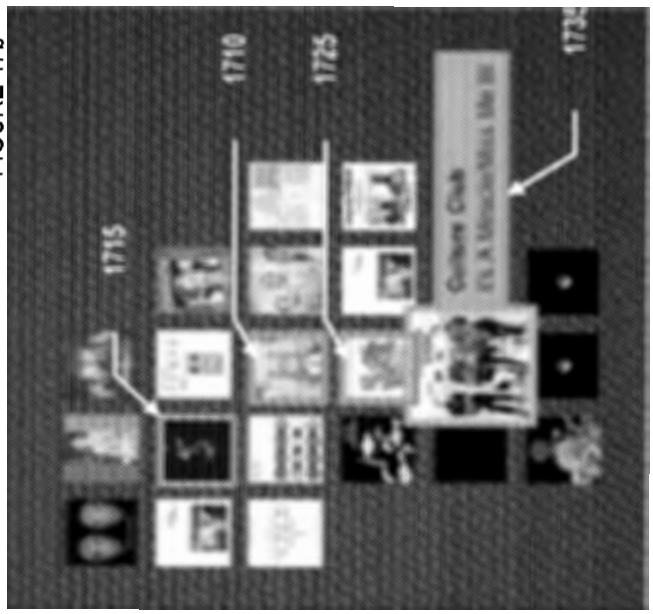


FIGURE 17c

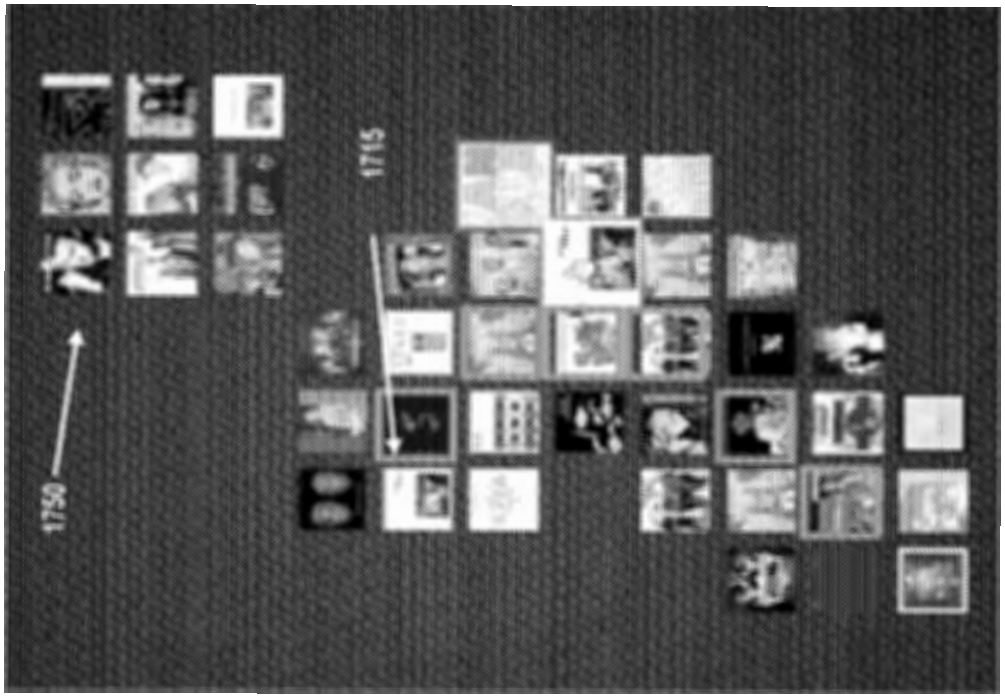


FIGURE 17e

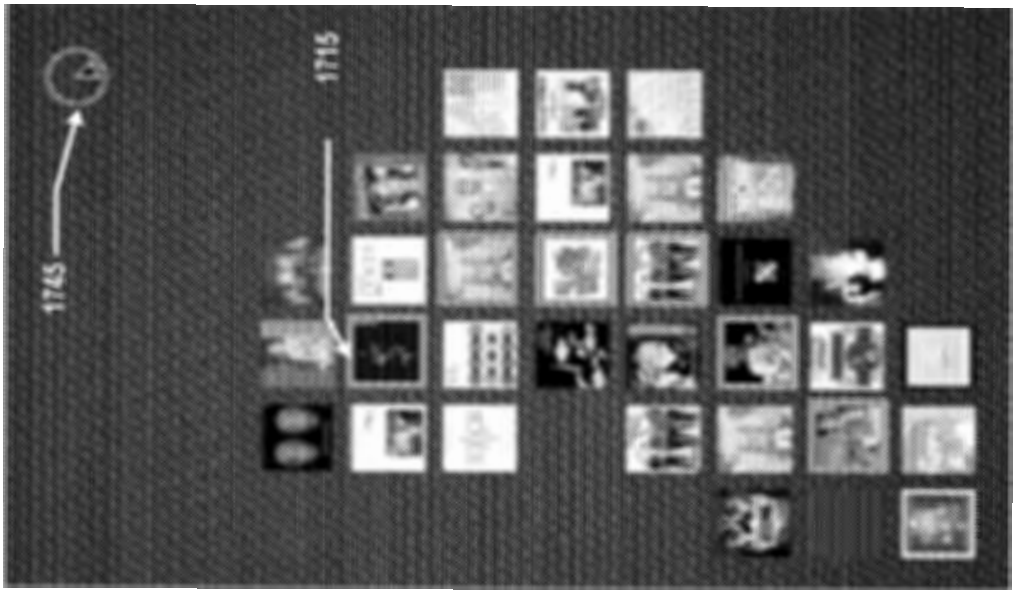


FIGURE 17d