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Donian et al.

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(54) **ADAPTIVE DIGITAL MEDIA CONTENT PRESENTATION AND CONTROL PLATFORM**

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(73) Assignee: **Piranha Media Distribution, Inc.**, San Francisco, CA (US)

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(22) Filed: **Apr. 19, 2021**

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US 2021/0368220 A1 Nov. 25, 2021

Related U.S. Application Data

(63) Continuation of application No. 10/606,729, filed on Jun. 26, 2003, now Pat. No. 10,986,403.

(Continued)

(51) **Int. Cl.**

H04N 21/81	(2011.01)
H04N 21/442	(2011.01)
H04N 21/45	(2011.01)
H04N 21/4627	(2011.01)
G06F 21/10	(2013.01)
H04N 21/44	(2011.01)
H04N 21/482	(2011.01)

(Continued)

(52) **U.S. Cl.**

CPC ***H04N 21/44204*** (2013.01); ***G06F 21/10*** (2013.01); ***G06Q 30/02*** (2013.01); ***H04L 65/612*** (2022.05); ***H04N 7/17318*** (2013.01); ***H04N 21/23424*** (2013.01); ***H04N 21/2541*** (2013.01); ***H04N 21/25891*** (2013.01); ***H04N 21/4147*** (2013.01); ***H04N 21/4312*** (2013.01); ***H04N 21/4314*** (2013.01); ***H04N 21/44016*** (2013.01); ***H04N 21/454*** (2013.01); ***H04N 21/458*** (2013.01); ***H04N 21/4532*** (2013.01); ***H04N 21/4627*** (2013.01); ***H04N 21/4667*** (2013.01); ***H04N 21/4788*** (2013.01); ***H04N 21/47202*** (2013.01); ***H04N 21/482*** (2013.01); ***H04N 21/4825*** (2013.01); ***H04N 21/6582*** (2013.01); ***H04N 21/812*** (2013.01);

(Continued)

(58) **Field of Classification Search**

CPC H04N 21/812

See application file for complete search history.

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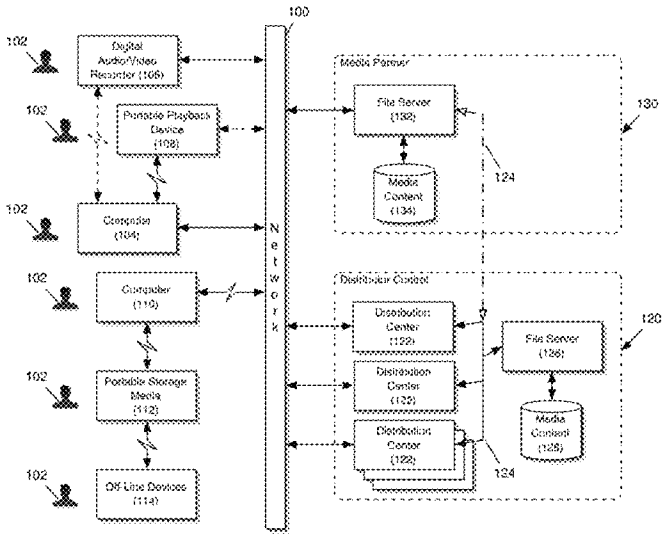
Primary Examiner — Michael H Hong

(74) *Attorney, Agent, or Firm* — Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C

(57) **ABSTRACT**

A system and method for displaying digital media files is disclosed. In one embodiment, the system includes a user interface, a media file decryptor, an ad manager, an intersplicer, and a media player. The user interface receives input from a user indicating the selection of media files to be presented. The media file decryptor receives and decrypts the selected media files. The ad manager receives and manages ad files from an ad file source. The intersplicer combines the media files with the ad files by providing control signals to the media player, causing the media player to present the ad files with the selected media files.

34 Claims, 18 Drawing Sheets



Related U.S. Application Data

(60) Provisional application No. 60/393,193, filed on Jun. 27, 2002, provisional application No. 60/392,232, filed on Jun. 27, 2002.

(51) **Int. Cl.**

H04N 21/258	(2011.01)
H04N 21/254	(2011.01)
H04N 21/4147	(2011.01)
H04N 21/458	(2011.01)
H04N 21/4788	(2011.01)
H04N 21/234	(2011.01)
H04N 21/845	(2011.01)
H04N 21/472	(2011.01)
H04N 21/8355	(2011.01)
G06Q 30/02	(2012.01)
H04N 21/431	(2011.01)
H04N 7/173	(2011.01)
H04N 21/658	(2011.01)
H04N 21/466	(2011.01)
H04N 21/454	(2011.01)
H04L 65/612	(2022.01)

(52) **U.S. Cl.**
CPC ***H04N 21/8173*** (2013.01); ***H04N 21/8193*** (2013.01); ***H04N 21/8355*** (2013.01); ***H04N 21/8456*** (2013.01)

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2007/0204310	A1*	8/2007	Hua	H04N 21/812 725/88

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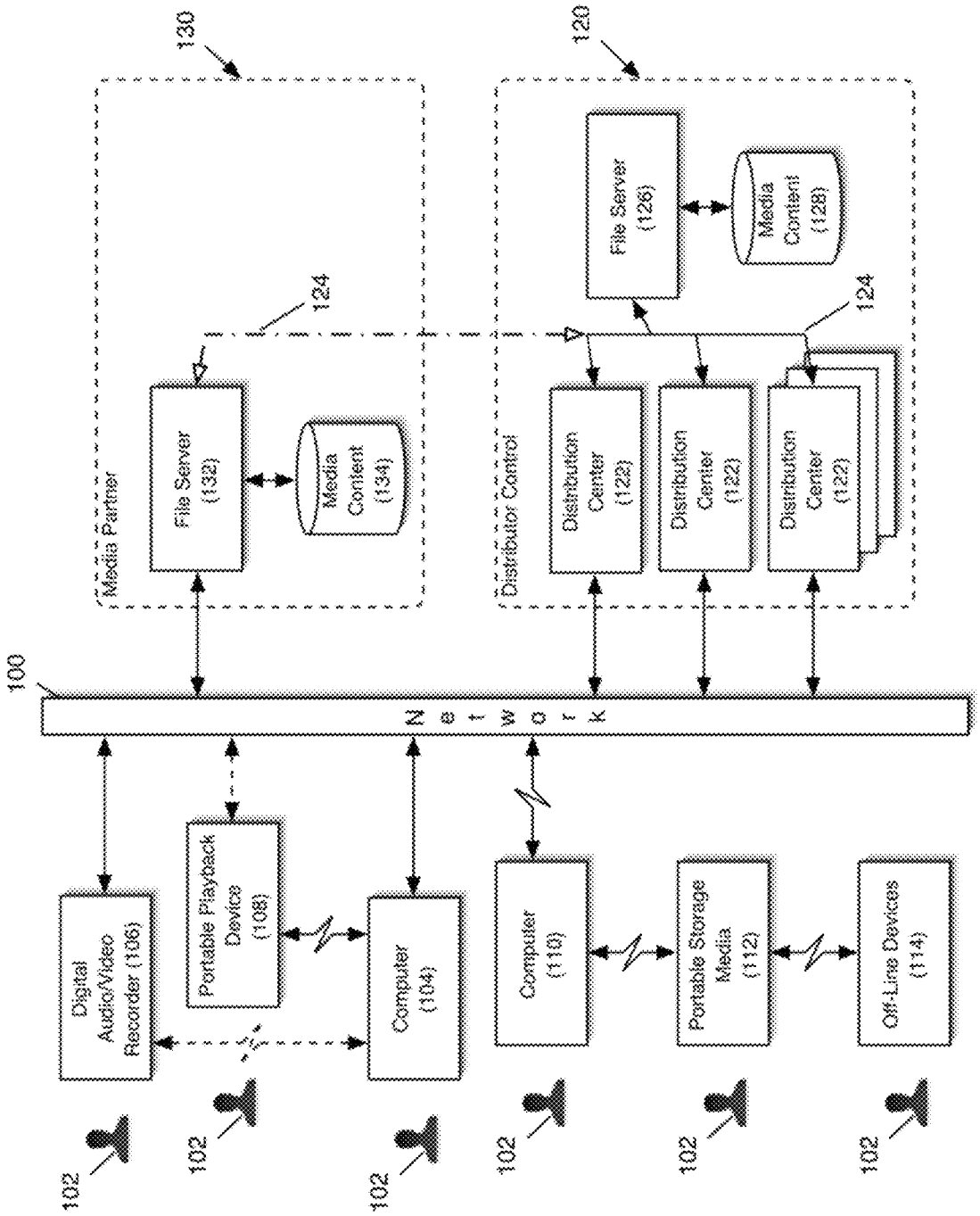

130
120
Media Partner
File Server (132)
Media Content (134)
124
Distributor Control
File Server (126)
Media Content (128)
Distribution Center (122)
Distribution Center (122)
Distribution Center (122)
124
100
Network
Digital Audio/Video Recorder (106)
Portable Playback Device (108)
Computer (104)
Computer (110)
Portable Storage Media (112)
Off-Line Devices (114)
102
102
102
102
102
102

Figure 1

Figure 2

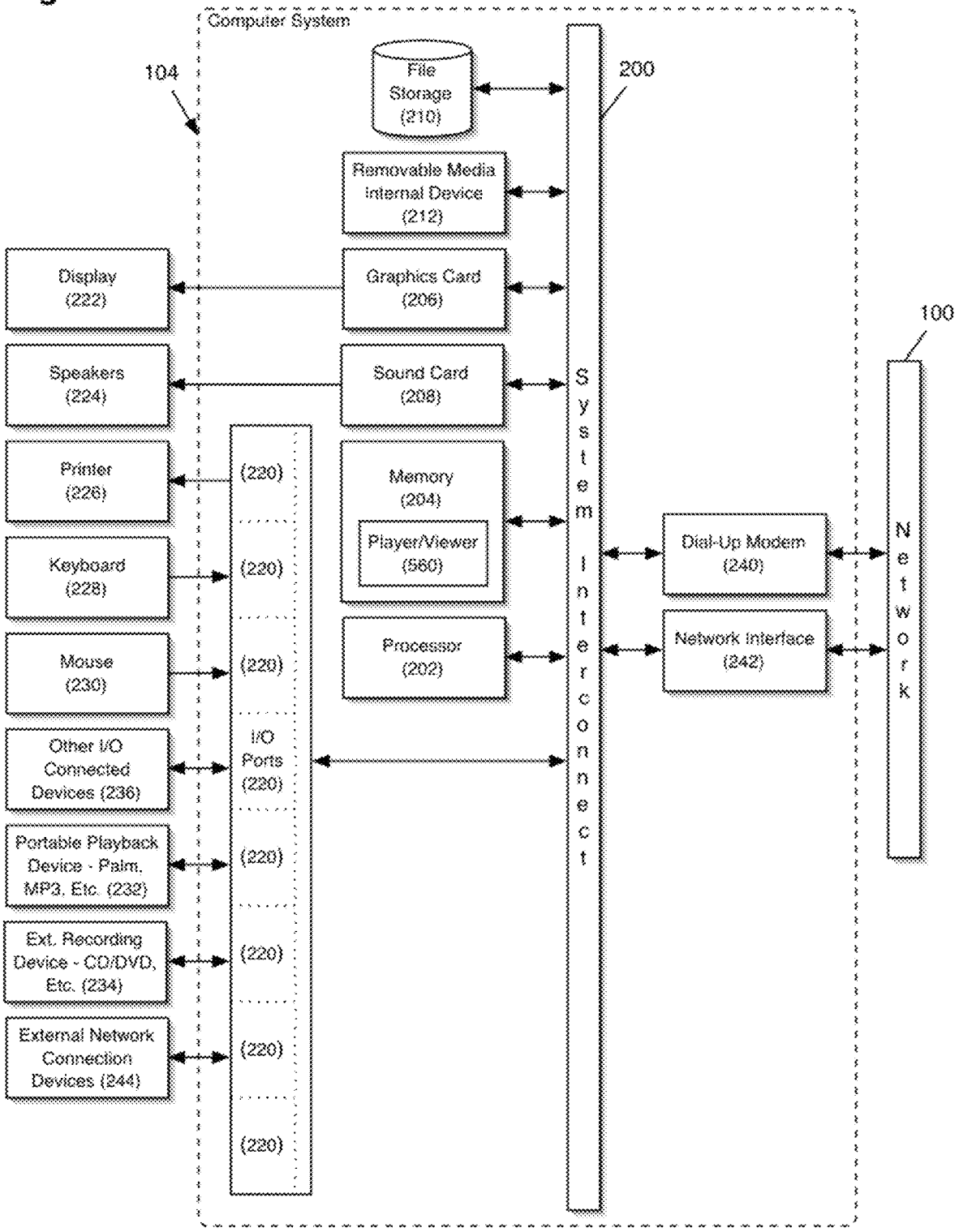

Computer System
104
200
100
File Storage (210)
Removable Media Internal Device (212)
Display (222)
Graphics Card (206)
Speakers (224)
Sound Card (208)
Printer (226)
Memory (204)
Player/Viewer (560)
Keyboard (228)
Mouse (230)
Processor (202)
Other I/O Connected Devices (236)
Portable Playback Device - Palm, MP3, Etc. (232)
Ext. Recording Device - CD/DVD, Etc. (234)
External Network Connection Devices (244)
(220)
I/O Ports (220)
System Interconnect
Dial-Up Modem (240)
Network Interface (242)
Network

Figure 3A

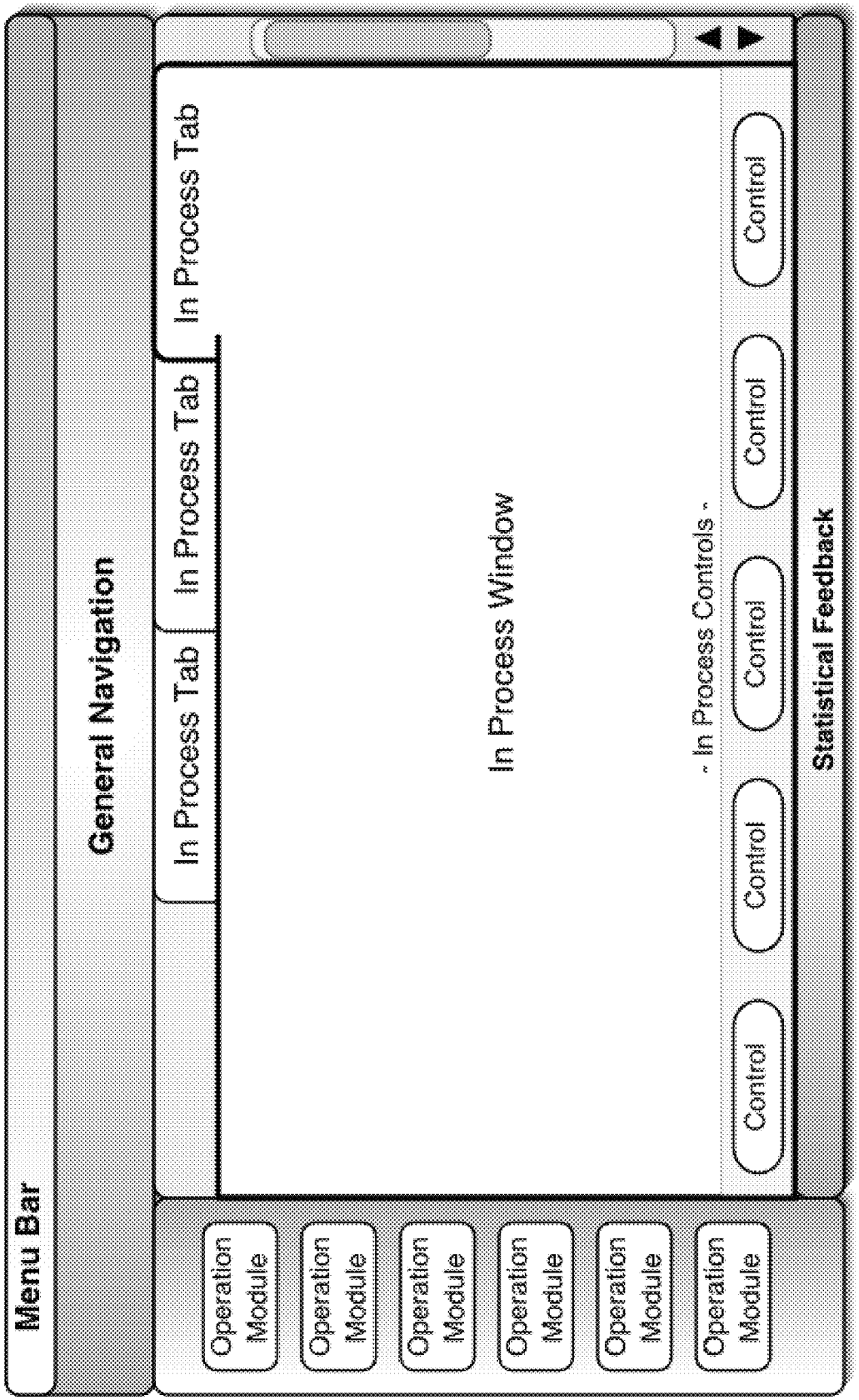

Menu Bar
General Navigation
In Process Tab
In Process Tab
In Process Tab
In Process Window
Operation Module
Operation Module
Operation Module
Operation Module
Operation Module
Operation Module
Control
Control
Control
Control
Control
- In Process Controls -
Statistical Feedback

Figure 3B

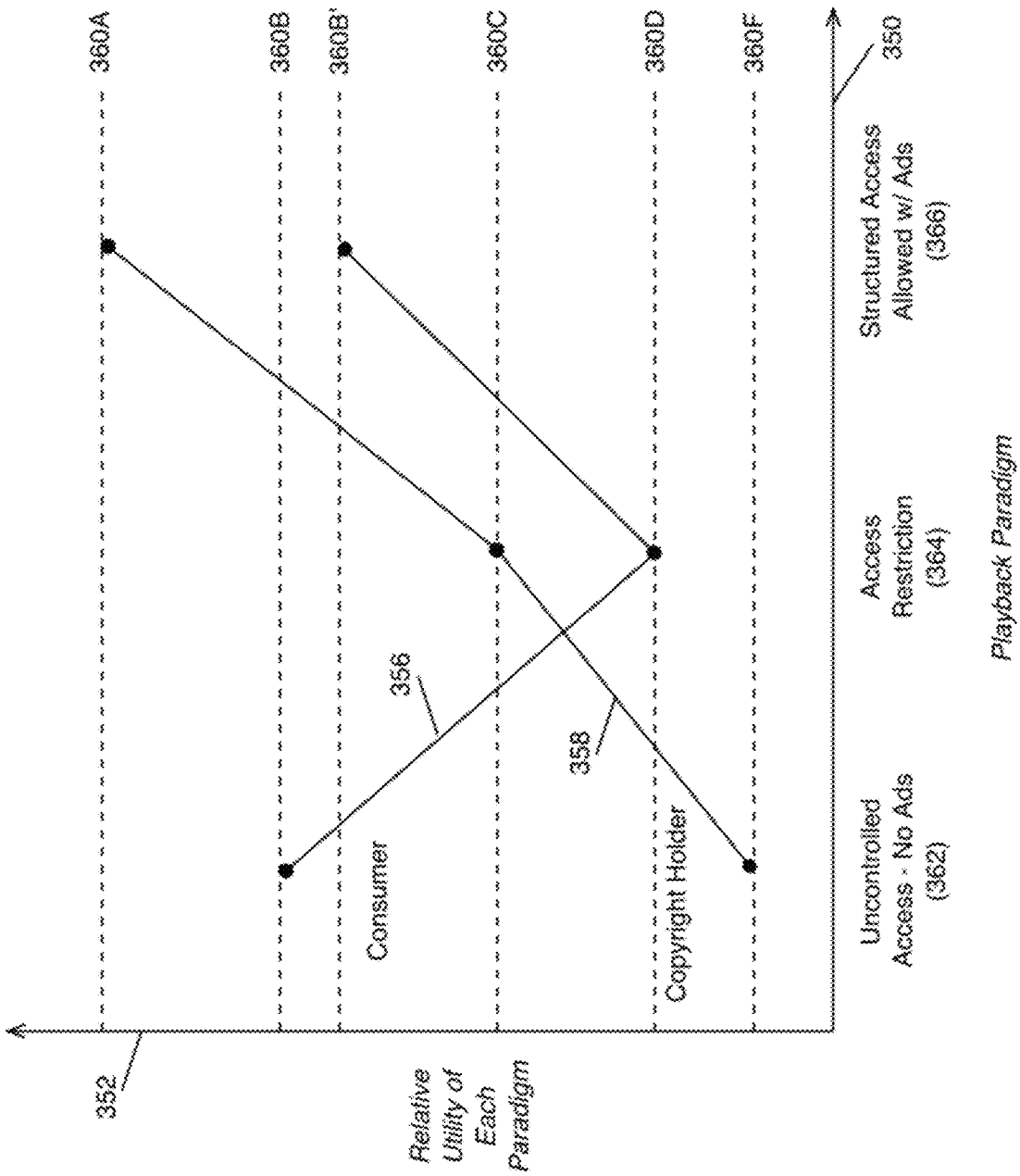
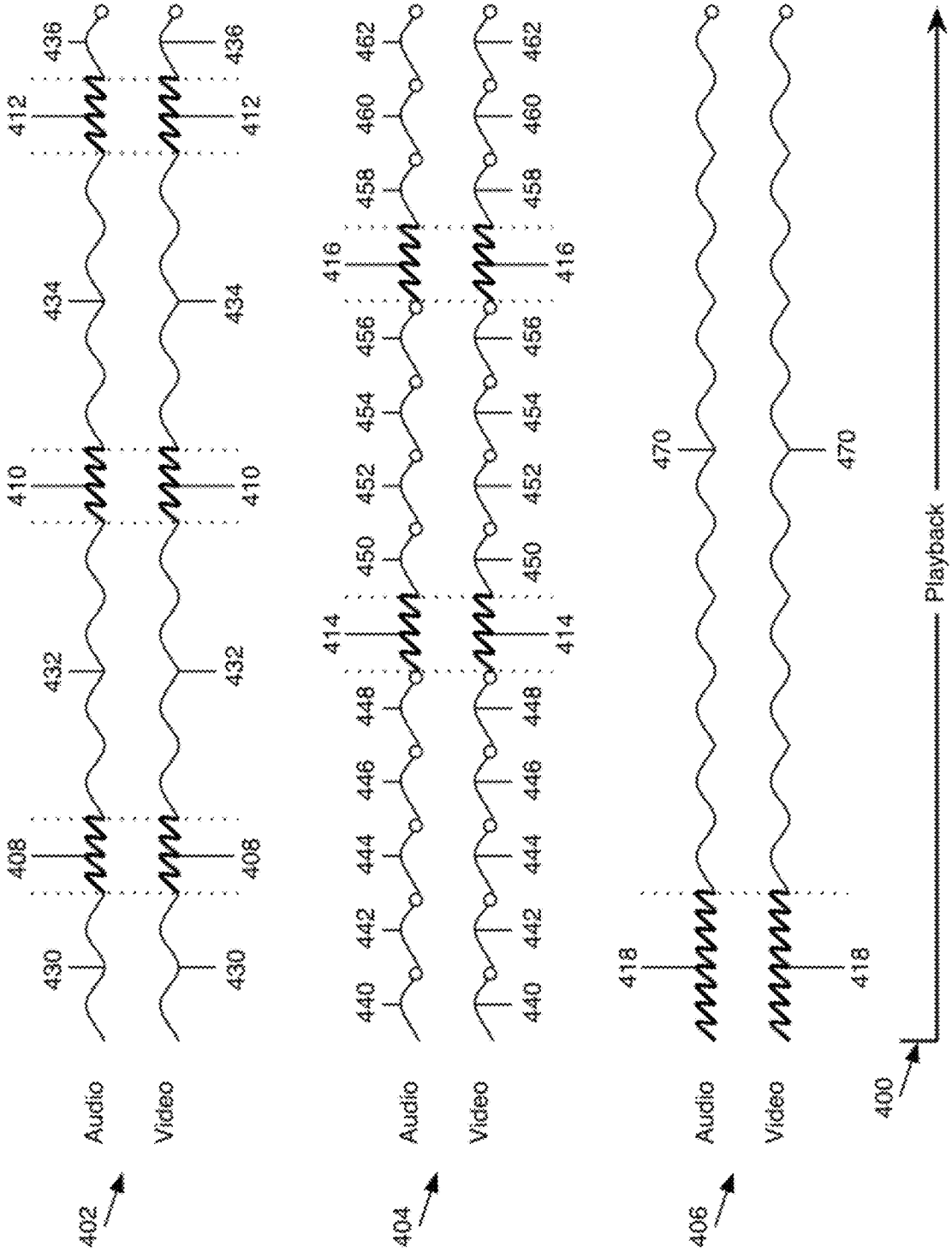

360A
360B
360B'
360C
360D
360F
350
352
Relative Utility of Each Paradigm
Consumer
356
358
Copyright Holder
Uncontrolled Access - No Ads (362)
Access Restriction (364)
Structured Access Allowed w/ Ads (366)
Playback Paradigm

Figure 4A


402
Audio
Video
430
408
432
410
434
412
436
404
440
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444
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448
414
450
452
454
456
416
458
460
462
406
418
470
400
Playback

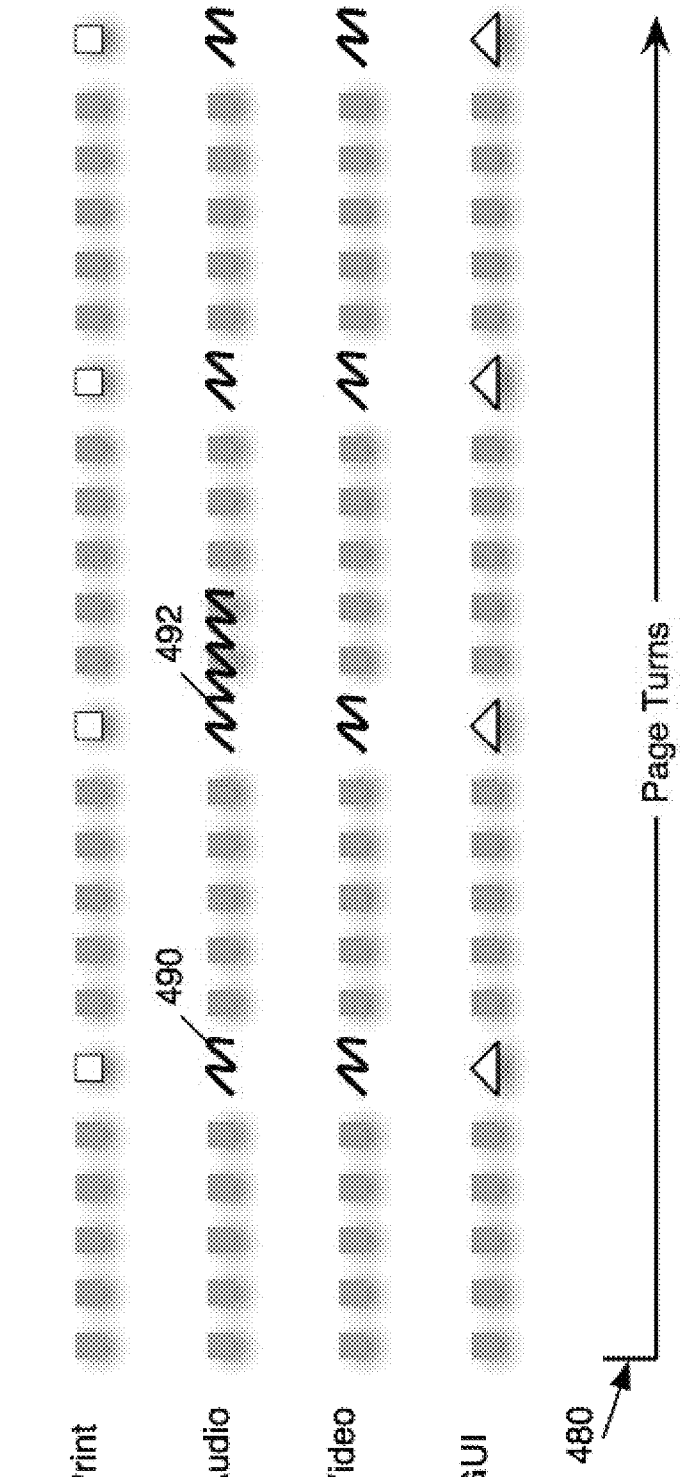
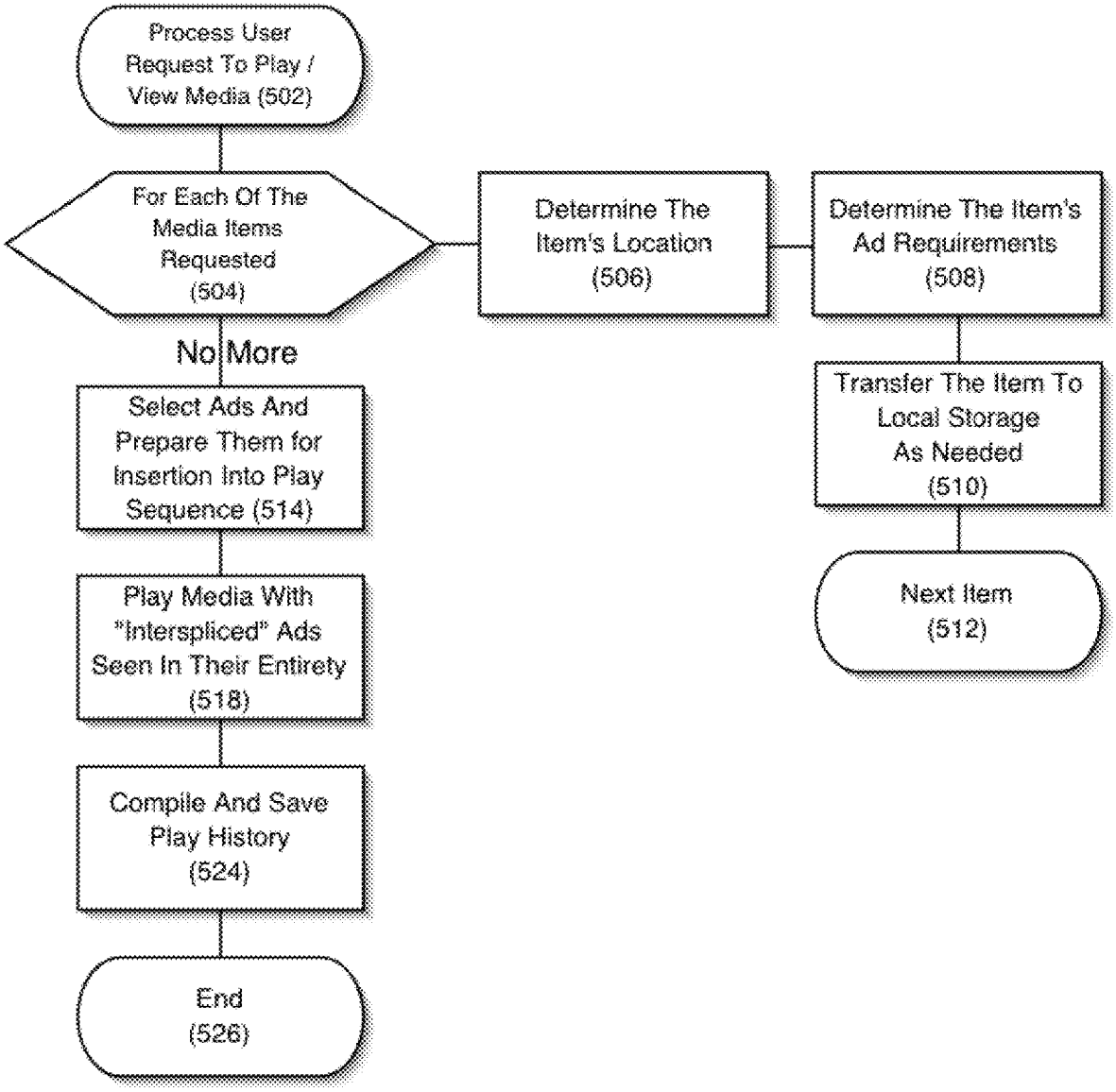


Figure 4B

Figure 5A


Process User Request To Play / View Media (502)
For Each Of The Media Items Requested (504)
Determine The Item's Location (506)
Determine The Item's Ad Requirements (508)
Transfer The Item To Local Storage As Needed (510)
Next Item (512)
No More
Select Ads And Prepare Them for Insertion Into Play Sequence (514)
Play Media With "Interspliced" Ads Seen In Their Entirety (518)
Compile And Save Play History (524)
End (526)

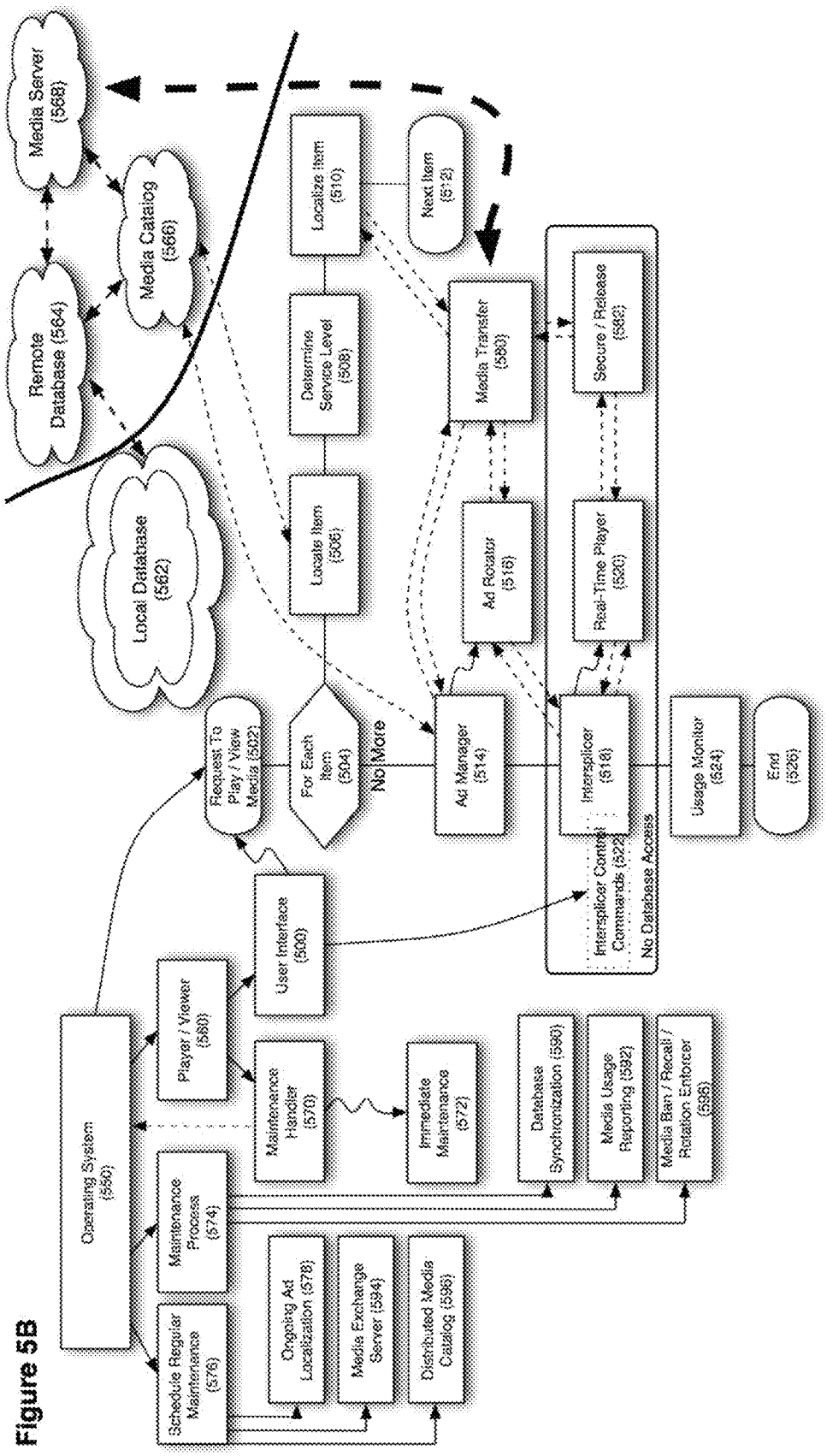

Media Server (568)
Media Catalog (566)
Remote Database (564)
Local Database (562)
Localize Item (510)
Next Item (512)
Determine Service Level (508)
Locate Item (506)
Media Transfer (580)
Secure / Release (582)
Ad Rotator (516)
Real-Time Player (520)
Request To Play / View Media (502)
For Each Item (504)
No More
Ad Manager (514)
Interpolicer (518)
Usage Monitor (524)
End (526)
Interpolicer Control Commands (522)
No Database Access
User Interface (500)
Operating System (550)
Player / Viewer (560)
Maintenance Handler (570)
Immediate Maintenance (572)
Database Synchronization (590)
Media Usage Reporting (592)
Media Ban / Recall / Rotation Enforcer (586)
Maintenance Process (574)
Schedule Regular Maintenance (576)
Ongoing Ad Localization (578)
Media Exchange Server (594)
Distributed Media Catalog (596)

Figure 5B

Figure 6B

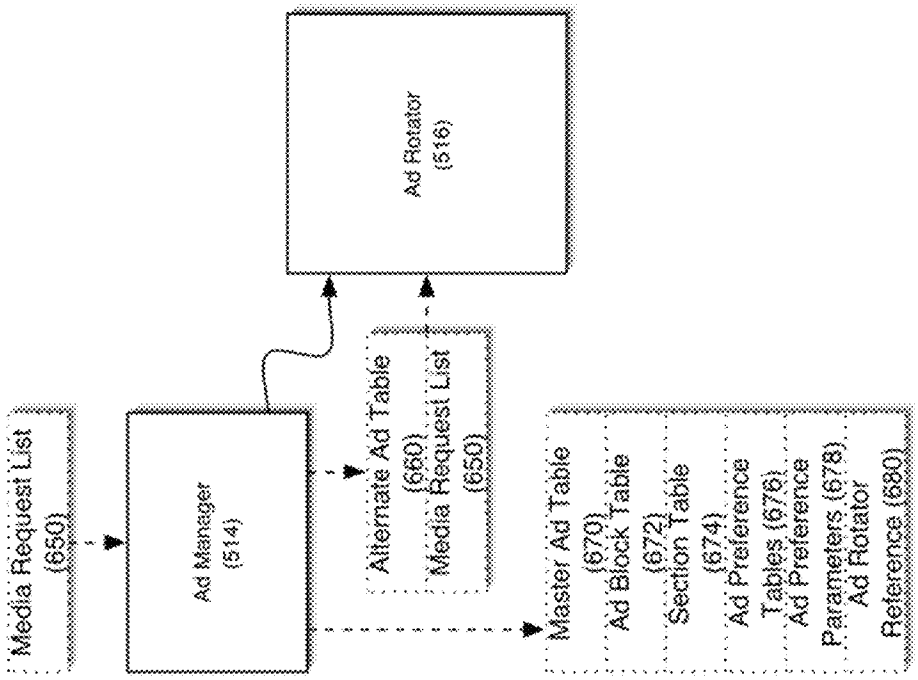


Figure 6A

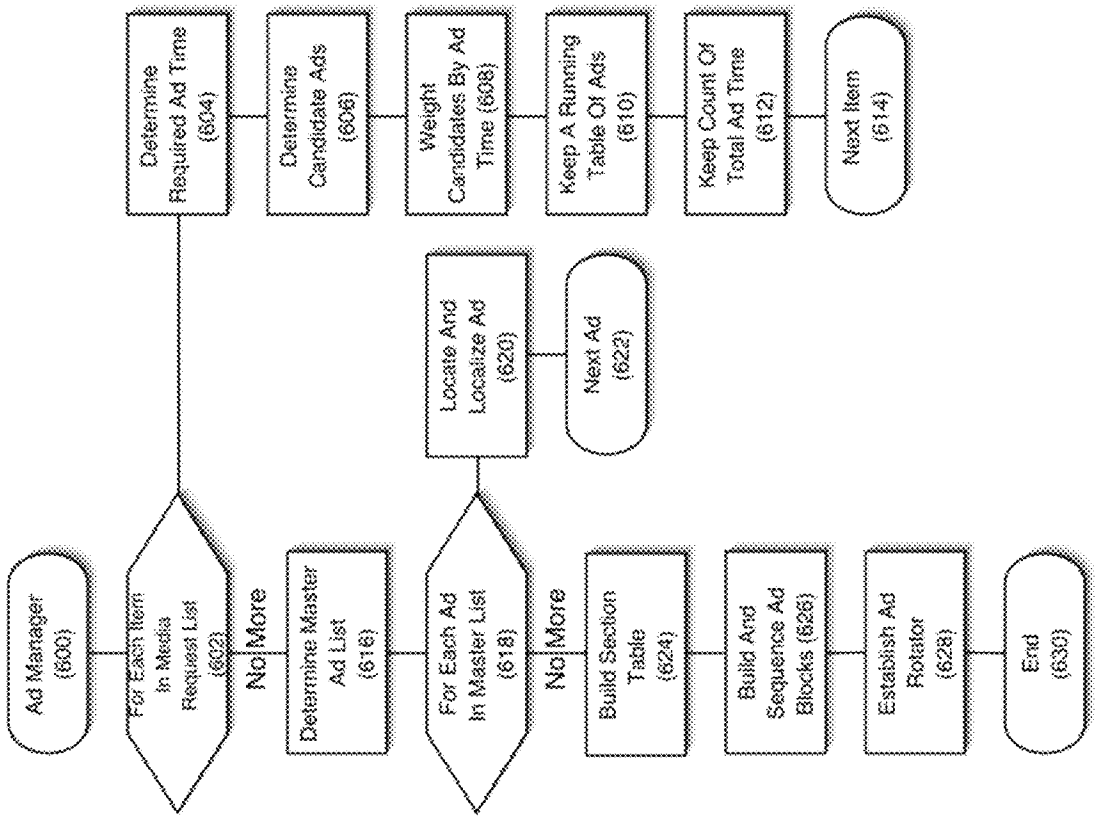


Figure 7B

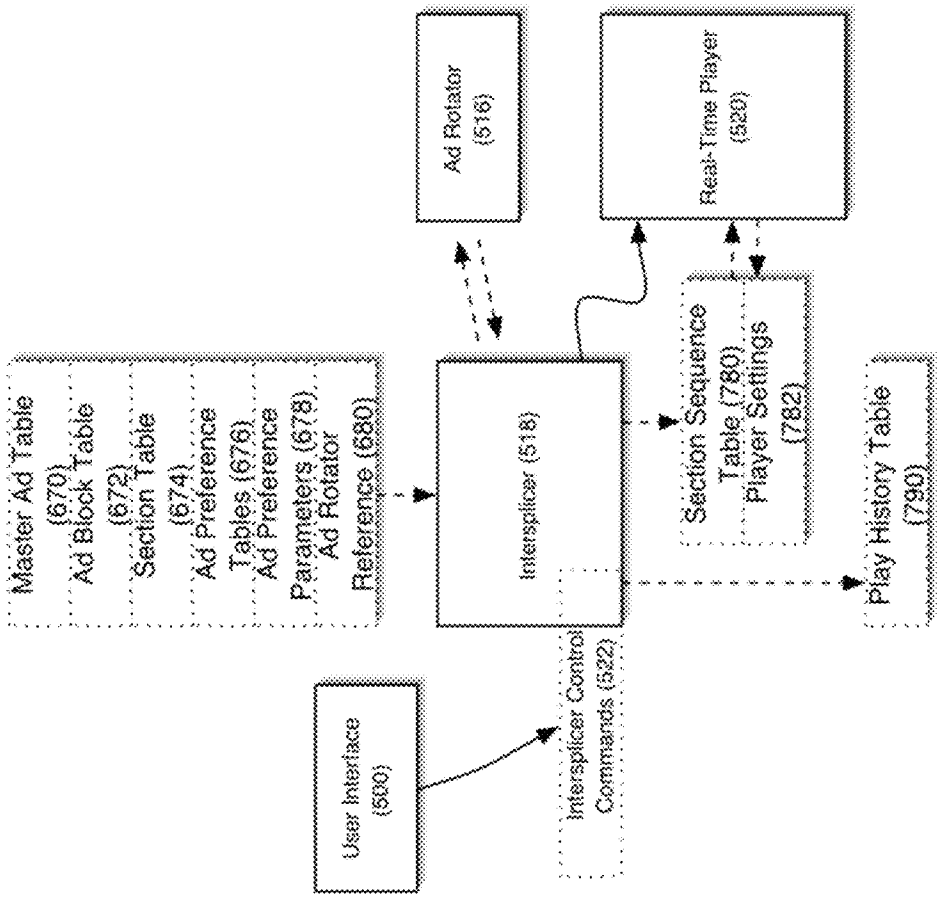


Figure 7A

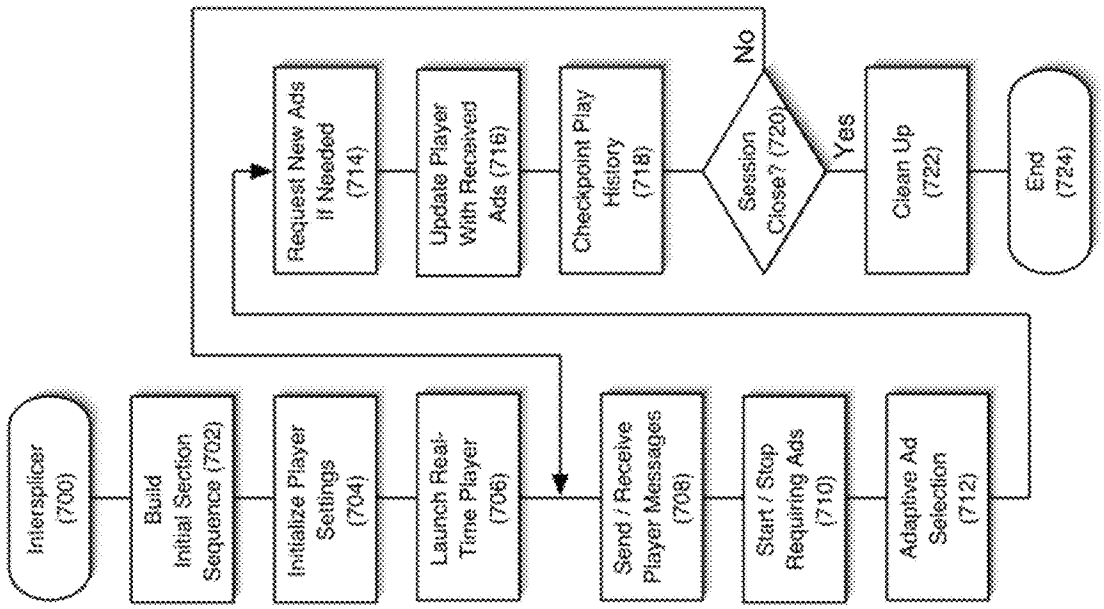


Figure 8B

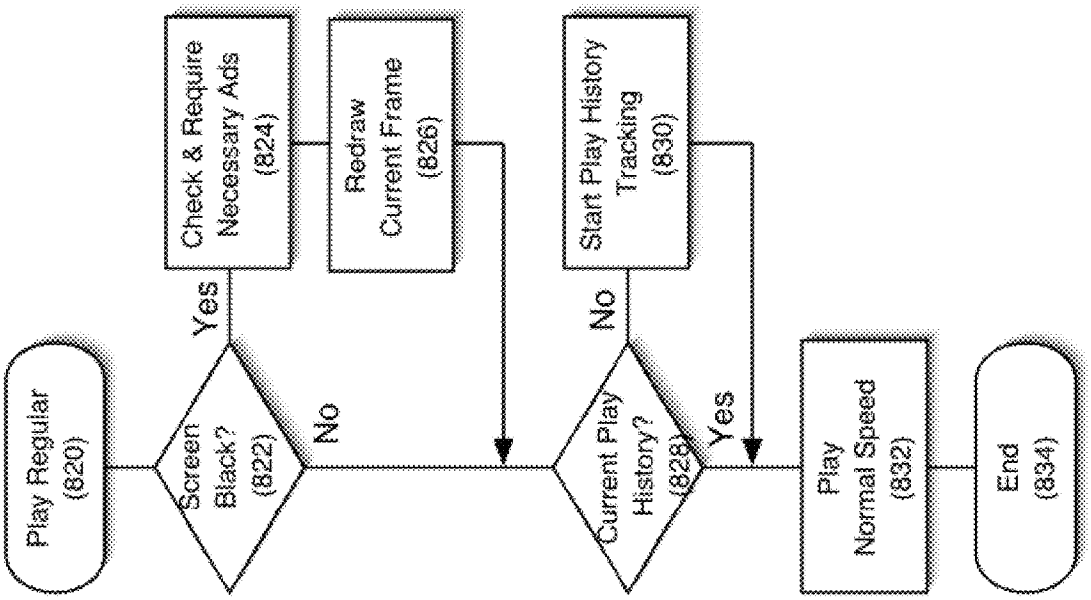
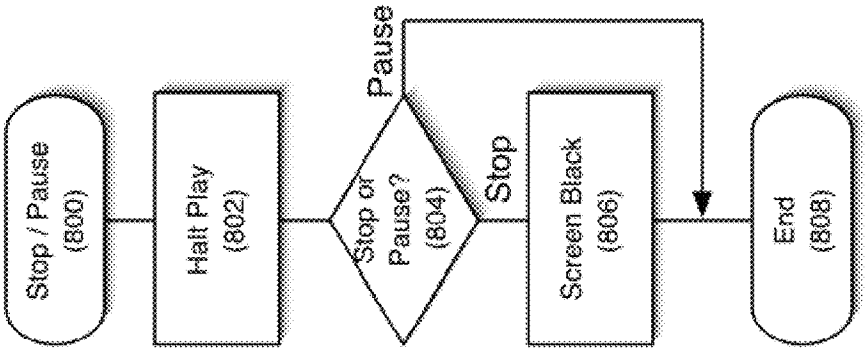


Figure 8A



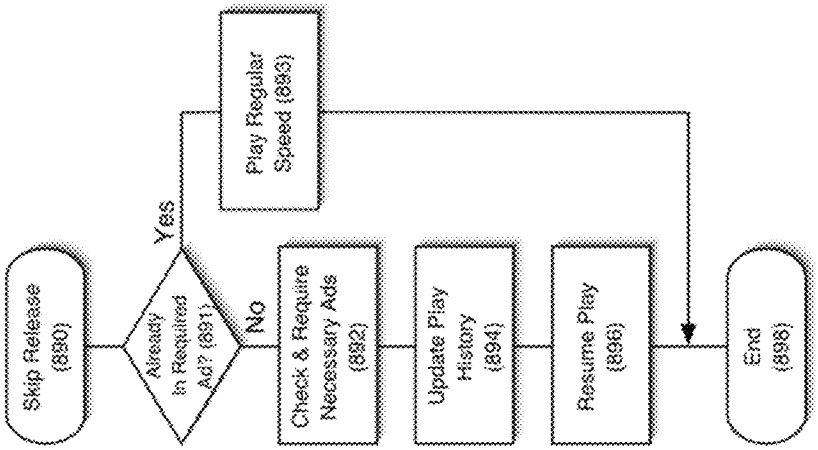


Figure 8D

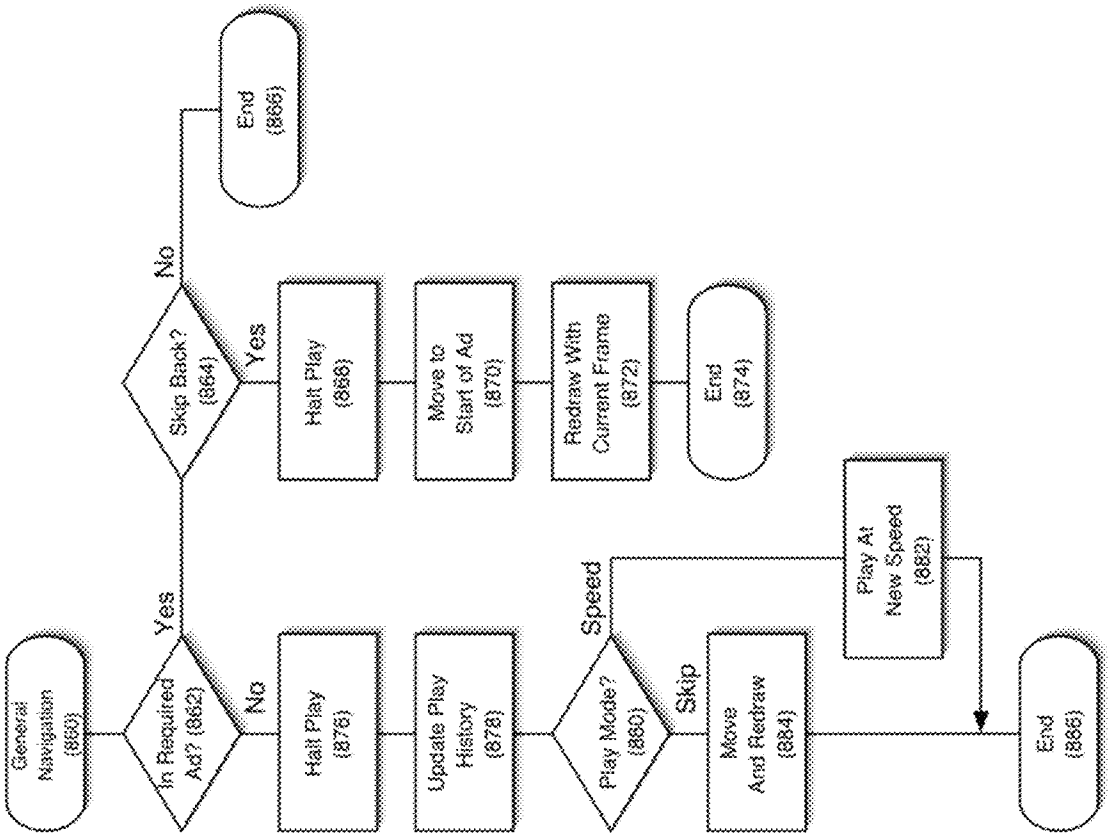


Figure 8C

Figure 9A

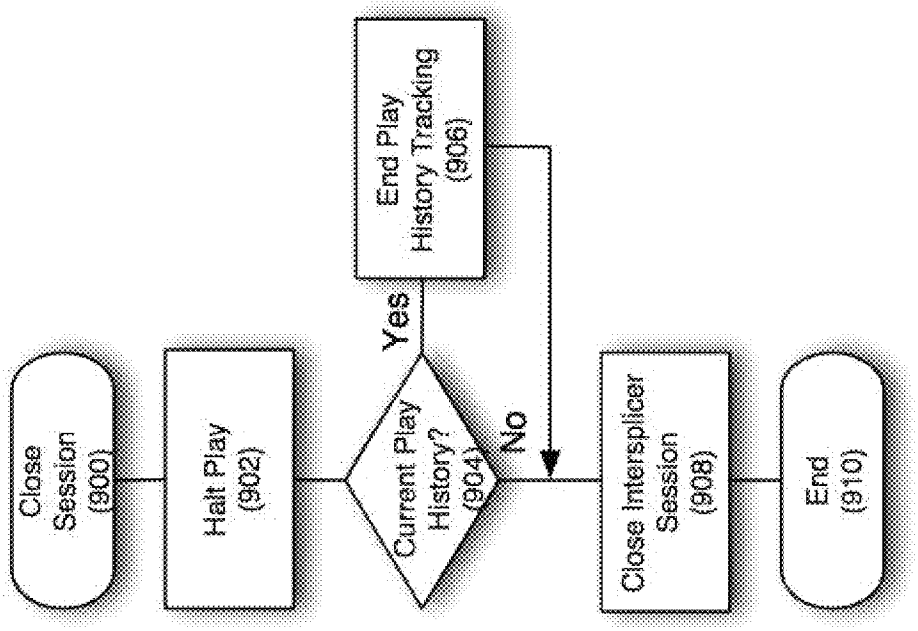


Figure 9B

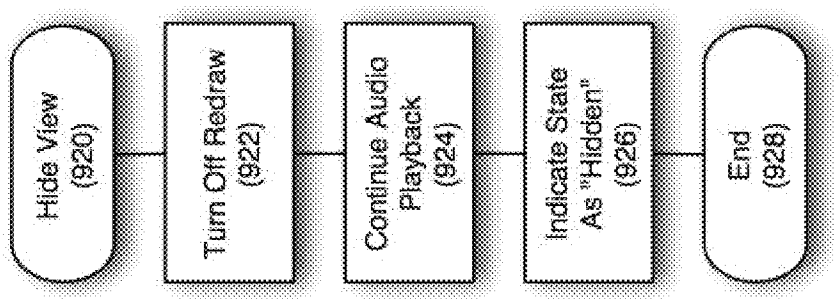


Figure 9C

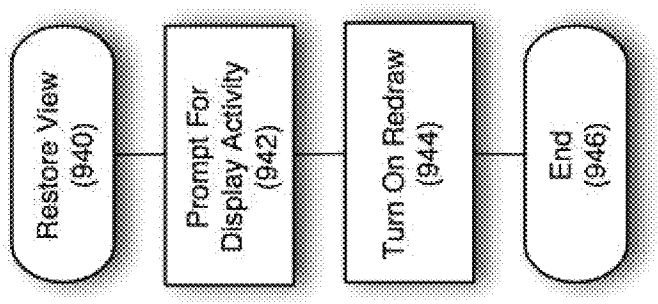


Figure 10A

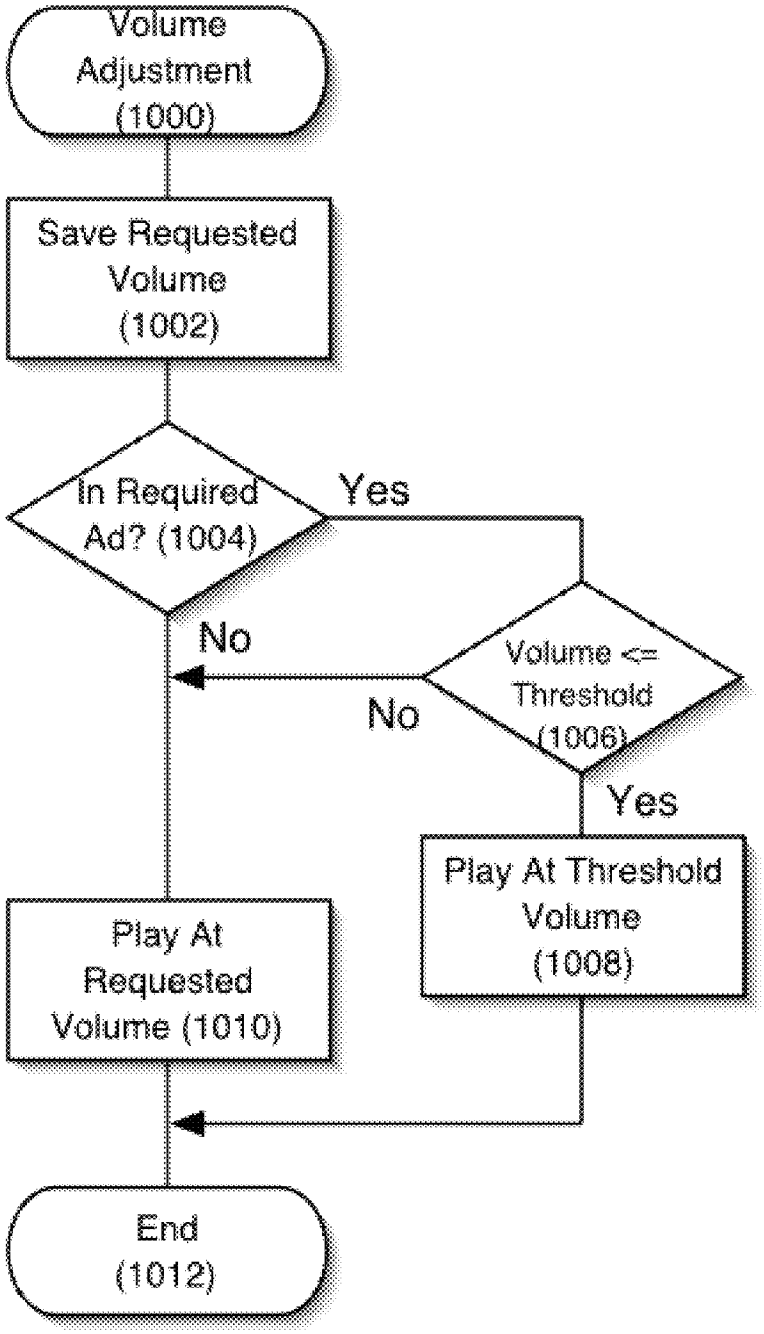
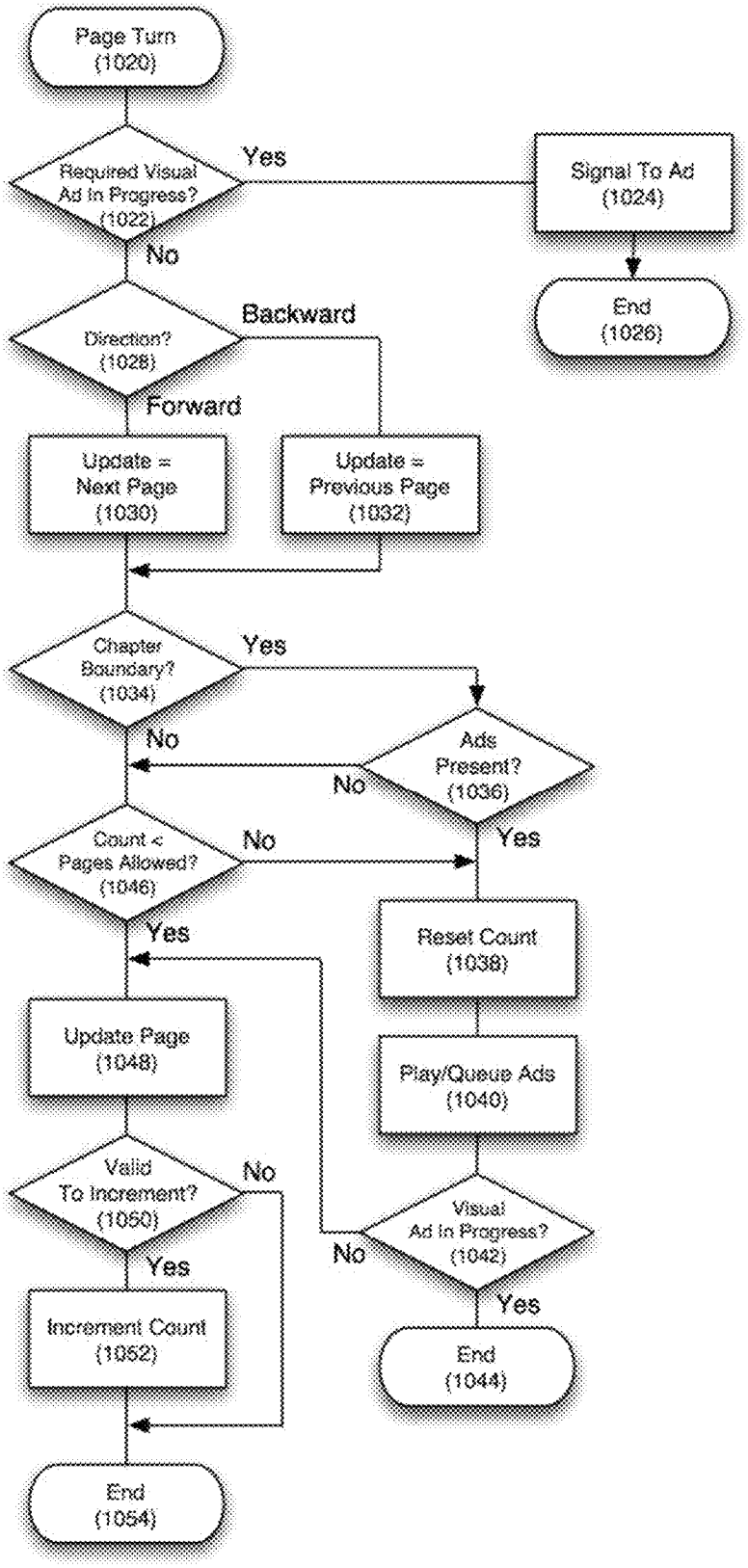

Volume Adjustment (1000)
Save Requested Volume (1002)
In Required Ad? (1004)
Yes
No
Volume <= Threshold (1006)
No
Yes
Play At Threshold Volume (1008)
Play At Requested Volume (1010)
End (1012)

Figure 10B


Page Turn (1020)
Required Visual Ad In Progress? (1022)
Yes
Signal To Ad (1024)
End (1026)
No
Direction? (1028)
Backward
Forward
Update = Next Page (1030)
Update = Previous Page (1032)
Chapter Boundary? (1034)
Yes
No
Ads Present? (1036)
No
Yes
Count < Pages Allowed? (1046)
No
Yes
Reset Count (1038)
Update Page (1048)
Play/Queue Ads (1040)
Valid To Increment? (1050)
No
Yes
Visual Ad In Progress? (1042)
No
Yes
Increment Count (1052)
End (1044)
End (1054)

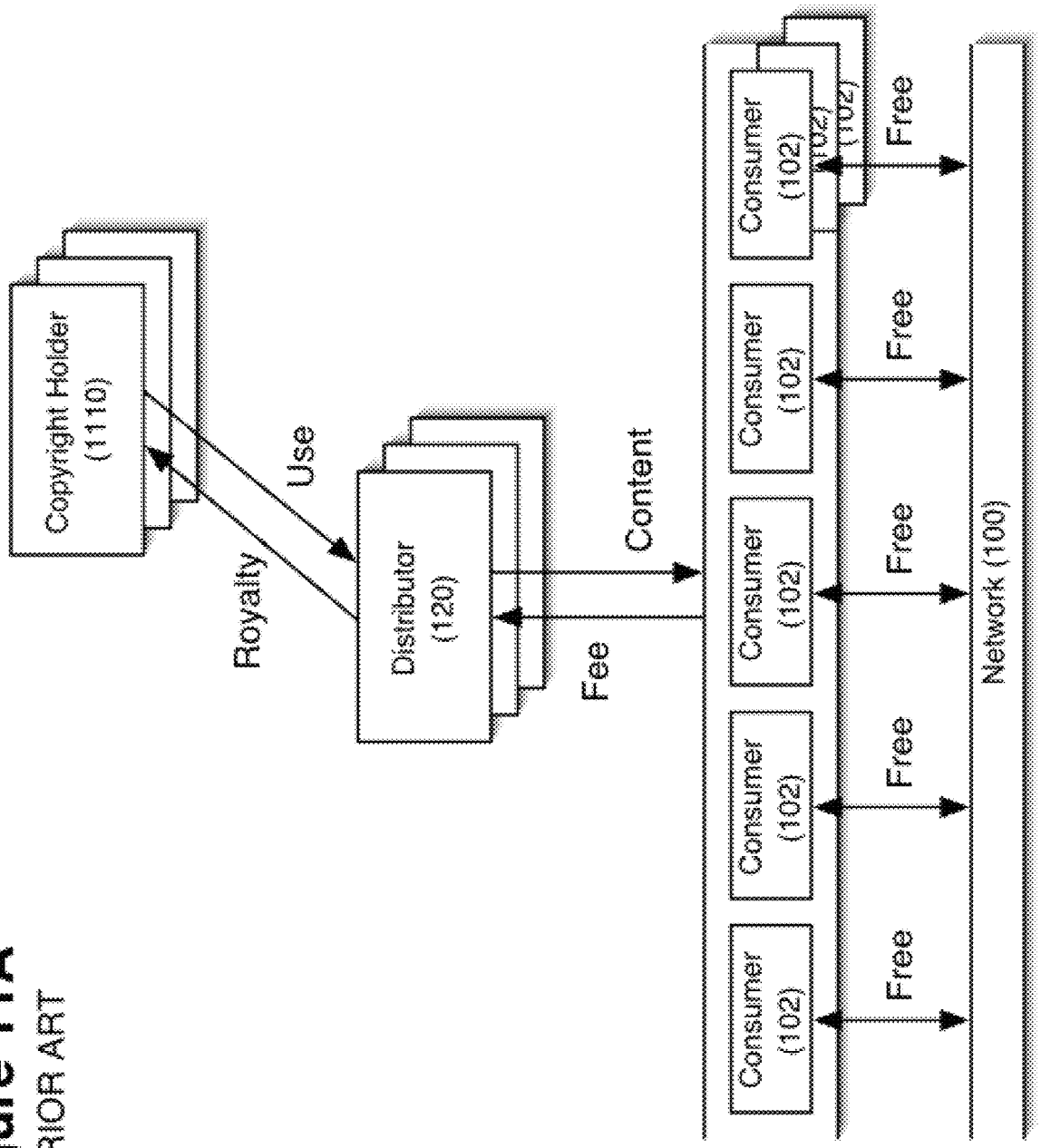


Figure 11A
PRIOR ART

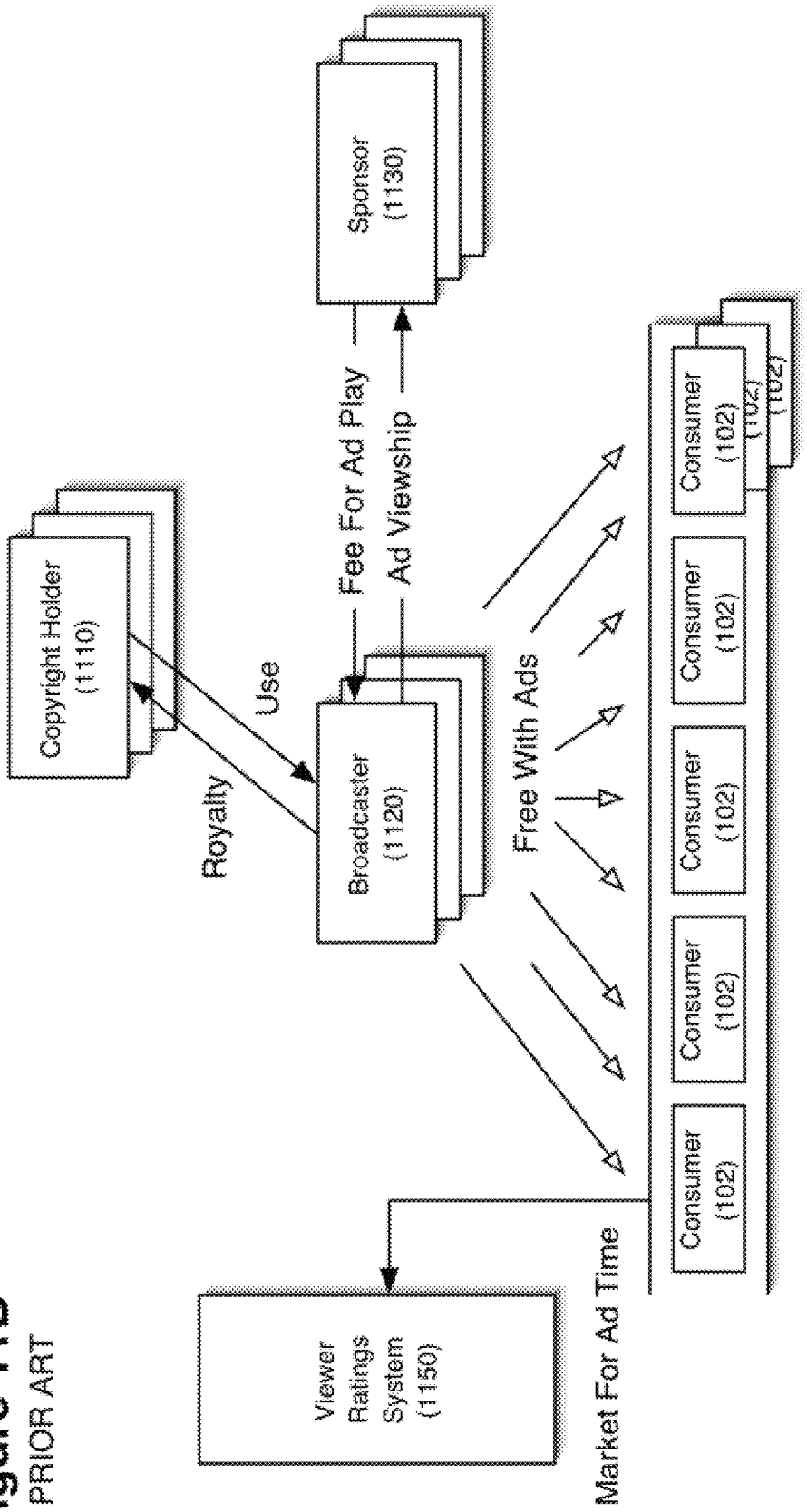


Figure 11B
PRIOR ART

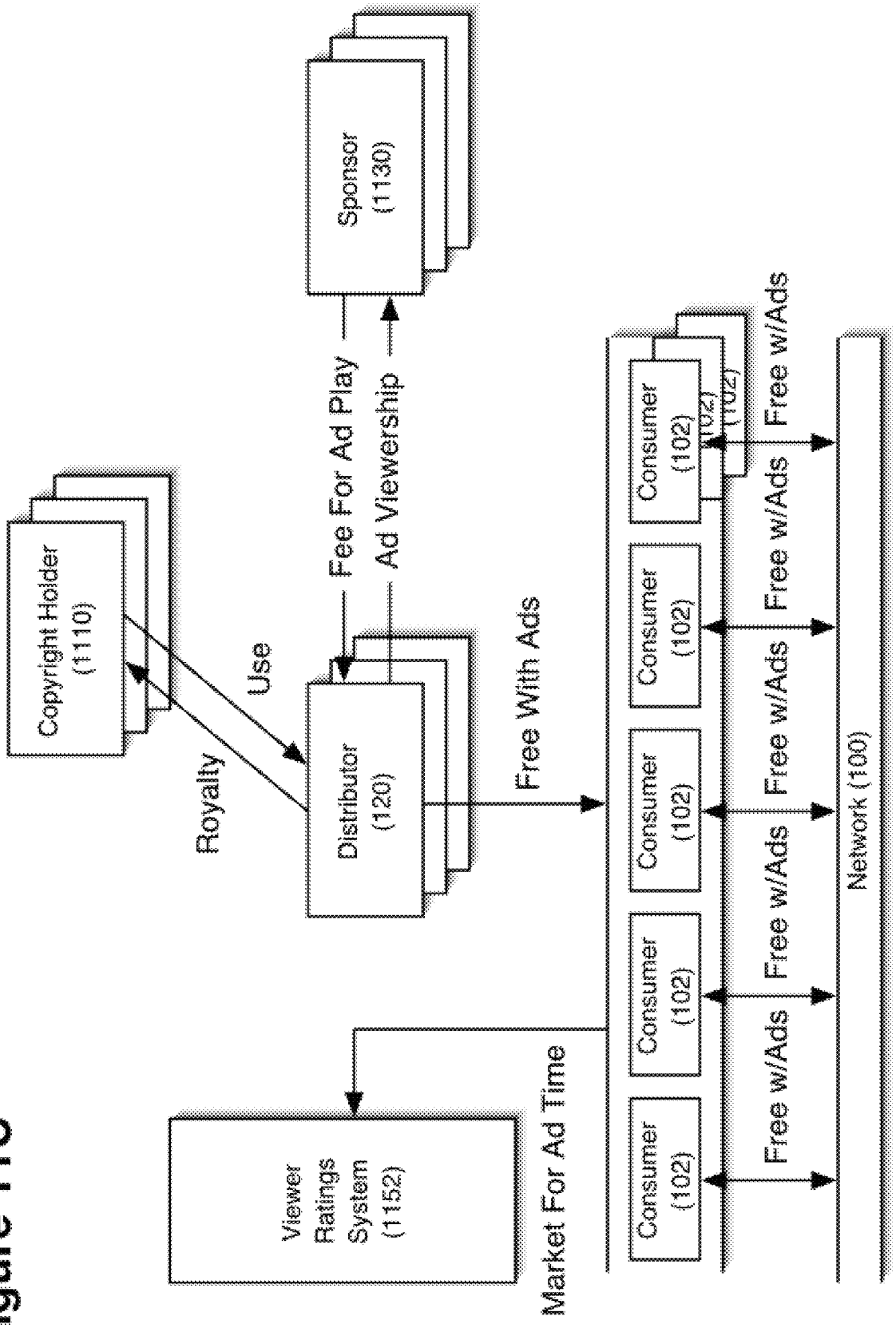

Copyright Holder (1110)
Royalty
Use
Distributor (120)
Fee For Ad Play
Ad Viewership
Sponsor (1130)
Free With Ads
Viewer Ratings System (1152)
Market For Ad Time
Consumer (102)
Consumer (102)
Consumer (102)
Consumer (102)
Consumer (102)
Free w/Ads
Free w/Ads
Free w/Ads
Free w/Ads
Free w/Ads
Network (100)

Figure 11C

ADAPTIVE DIGITAL MEDIA CONTENT PRESENTATION AND CONTROL PLATFORM

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. patent application Ser. No. 10/606,729 filed on Jun. 26, 2003, entitled "INTERACTIVE DIGITAL MEDIA AND ADVERTISING PRESENTATION PLATFORM," now U.S. Pat. No. 10,986,403, which claims priority to U.S. Provisional Application No. 60/393,193 filed on Jun. 27, 2002, and titled "METHOD AND APPARATUS FOR THE FREE GENERAL LICENSING OF DIGITAL MEDIA CONTENT," and U.S. Provisional Application No. 60/392,232, filed on Jun. 27, 2002, and titled "METHOD AND APPARATUS FOR THE FREE GENERAL LICENSING OF DIGITAL MEDIA CONTENT DISTRIBUTED VIA COMPUTER NETWORKS," the entirety of each of which is incorporated by reference herein.

BACKGROUND

Field of the Invention

This invention relates generally to the distribution of audio, video, and print media content via digital replication and delivery channels.

Description of Background Art

The problem of widespread consumer-directed copying and redistribution of licensed material has in recent years become a critical concern for the motion picture, television, and recording industries. In light of this issue, publishing and other print media content providers have also had good reason to be apprehensive about digital delivery of their products.

As it stands now, there is much acrimony between the media copyright holders, distributors, and consumers over how to provide the convenience of digital delivery and replication of licensed material, while maintaining adequate control over its use and redistribution. New technologies to restrict consumer copying and unencumbered use of content have met with opposition and a determination on the part of some consumers to defeat them.

The distributor provides digital audio, video, and/or print media content to consumers, while maintaining the rights of copyright holders under a distribution agreement. Consumers desire to have free selection on demand from a wide range of content, and have grown accustomed to exchanging the media content in their possession in order to defeat the pay-for-use policy of the distributor. Given the nature of modern networked digital devices, the consumers' power to redistribute media files illicitly is formidable.

A number of methods for media distribution and licensing have been put into practice throughout the history of mass media. However, as discussed below the conventional methods and apparatus have inherent drawbacks that make it difficult for them to maintain their limitations to consumer access in the presence of modern digital technology and a consumer culture driven to defeat them in open defiance of the rights of copyright holders.

Broadcast Television, Broadcast Radio

Wide distribution of copyrighted material via broadcast television and radio, provided for free to the consumer

population, uses the value of advertising promotion to generate revenue for the content creation and delivery system. Media broadcasting employs the practice of mixing licensed content with advertisements and other paid announcements in a pre-configured time sequence, then transmitting this sequence asymmetrically over the airwaves to a large number of consumer receivers capable of showing the content in real-time as it is comes in. By virtue of the advertising sponsorship, broadcasters need not be concerned about the large number of consumers who view the content for free, and in fact, they seek the widest audience they can obtain, knowing that greater viewership leads to greater advertising revenue. Broadcasters benefit when their content is played with the commercials intact, and they rely on the real-time nature of this distribution method to uphold this condition.

Cable Television, Cable Radio

Wide distribution of copyrighted material to the consuming population via cable television and cable radio is based on the concept of charging a recurring subscription fee, with select services available for a premium, to generate revenue for the content creation and delivery system. Pre-configured analog or digital media content, with or without commercial advertisement, is conveyed asymmetrically to the consuming population via coaxial cable. Cable is run to every home and other cable ready institution, without concern over the large and increasing size of this viewership, provided that all consumer receivers that get their signal from the cable are valid subscription users, and that select services are provided only to those subscribers who have purchased them.

To avert theft of service, cable delivery systems have employed a variety of signal scrambling methods to act as a form of encryption, providing means to decode the signal only to those subscribers who have paid for a particular premium service. Other technologies support the limited use of two-way signals on the coaxial cable, allowing subscriber verification on a receiver by receiver basis.

Satellite TV, Satellite Radio

Wide distribution of copyrighted material to the consuming population via satellite television and satellite radio is based on the same concept as those employed with cable television and radio, replacing the coaxial cable delivery apparatus with a system of orbital satellites and terrestrial receivers. Many of the subscriber verification and service level determination methods from cable have been facilitated in these systems via smart cards and other certification technologies incorporated into the satellite receiving equipment.

Pay-Per-View

Video On Demand (VOD) services based on user at-will consumption of asymmetrical content delivery is in use by cable, satellite, and internet based media delivery systems. Apparatuses to establish two-way communication enable the consuming population to request that content be delivered for a single use or limited time period, at any time upon request, rather than on an infrequent programming schedule of the delivery system. Pay-Per-View VOD allows for the immediate wide area distribution of live or prerecorded individual content without the delays associated with any physical circulation through retail locations.

Transmission Recording Technologies

All of the distribution methods described so far share a common shortcoming, which is that none of them can prevent the consumer from replicating and redistributing copyrighted material to others. Instead, they rely on the inherent limitations of consumer equipment to provide this control.

As consumer audio and video recording and editing equipment has become more commonplace, this lack of direct control has become a serious problem. New advances in technology reduce the time and labor associated with reconstituting broadcast material into a form that is otherwise available only for a fee, and the rise of digital technology has brought near perfect levels of fidelity and ease of reproduction to this equipment. When such devices are networked, the consumer gains the power to reproduce and disseminate copyrighted material at will, and there is little the copyright holders can do to stop or hold people responsible for this practice if it is widespread.

Retail Purchase of Licensed Media

Consumer retail purchase of copyrighted media is enabled by the availability of portable media storage receptacles, ever increasing in quality and capacity. Copyright holders have their content transferred to this portable media for sale in retail locations, through mail order, over the internet, and elsewhere. This method of distribution provides for high revenue generation while limiting explicit theft, however, once the media is removed from the retail environment, the consuming population has at its disposal multiple apparatus—including tape recorders, video cassette recorders, compact disk burners, digital video disk burners, and computer systems capable of reading the media directly, among others—available for the illicit manipulation, replication, and redistribution of purchased media.

Short Term Rental

Limited use of video cassette and digital video disc portable media is based on the ability of the consuming population to enter into rental agreements with licensed distributors through retail, mail order, internet, and other means. A small rental fee is relinquished in exchange for use of the media for a certain predefined time period. If, on expiration of this time allotment, the rented material is not surrendered to the licensed rental distributor, or is never surrendered, late fees may be accessed in an amount equal to or greater than the actual value of the media, in accordance with the terms of the rental agreement. While less costly than purchase of the media at retail locations, if the consuming population desires to re-use any media title, they must re-rent it, incurring additional rental cost and the added inconvenience of another trip to the rental location (or mail order or internet process).

Print Media (Books, Magazines, Newspapers, Other Periodicals)

eBooks and internet based periodicals have extended the physical print medium into the realm of the digital age by enabling the distribution channel to pare down the prerequisite paper volume and inherent bulk of traditional print media, while providing an efficient means of distribution and consumption. Electronic forms of print media require a computer or other digital device to navigate the representation of their print based content.

As it stands today, most newspapers and magazines in digital format bear little resemblance to their physical counterparts. They are commonly conveyed in a live website design which archives old content while sporadically presenting new subject matter. Given the ease with which audio and video media (which generally have much larger data file sizes) may be redistributed once they reach the consumer, publishers have been hesitant to release their content in a more familiar format, through digital means, for fear of widespread redistribution made possible by their diminutive file sizes.

Digital Video Recorder (TiVo, Replay TV, Ultimate TV)

Advances in home entertainment technology have given rise to a new breed of video recording systems based on the commoditization of components usually reserved for computer and other digital media manipulation devices. Digital Video Recorders (DVRs) record broadcast, cable, or satellite transmissions digitally to internal hard drive storage devices. Refinements to the first DVRs include the ability to eliminate commercial advertisements saved during the recording process and to redistribute recorded media from one DVR to another via an open network, such as the internet.

DVRs emulating this peer-to-peer technology provide an efficient means for consumers to redistribute digital media, but without central administration, they lack the necessary controls to prevent widespread redistribution of licensed media content beyond the level of personal use, to DVR users who don't maintain a license to consume the media.

Media Transfer (Burn CD/DVD, Transfer to Mobile Device)

Portability of media has been a hallmark of the technology revolution since the invention of the record album, and is based on the now usual and customary assignment of rights, allowing a consumer to play back, transfer, copy, and otherwise manipulate licensed media for personal use. Significant improvements in portable storage media over the decades have enabled the near perfect reproduction of media content in larger quantity to smaller storage media and other digital devices.

At present, to facilitate the highest possible reproduction standards, analog or digital content may either be 'burned' to Compact Disc or Digital Video Disc storage media, or transferred to digital devices which store the media on physical hard drives or other non-volatile storage apparatus. Once digital media has been transferred to these storage devices, it can be redistributed at will to others with the same ability to manipulate the media, including those who don't possess a license to do so.

Media Sampling

Pre-sales and pre-broadcast content delivery is based on the marketing principle of using promotion to generate sales and/or viewership. Media sampling turns a small section of a copyrighted content property into a revenue-generating advertisement, and redistribution of the sample adds value for the copyright holder. Sampling takes on many forms depending on the nature of the media, and these forms include listening stations in record stores, movie trailers shown prior to the feature presentation or through broadcast means, and television promos for upcoming shows. Given that media sampling in its current form is little more than promotional advertising, it does little to stem the tide of outlaw distribution.

The Internet (Web Sites, Pop-Up Ads, Redirects, Downloads, Subscription)

The rapid spread of networked computing devices has given rise to the Internet, a system for communication based on its ability to facilitate digital communication of thoughts, ideas, tools, art, and other valuable things, in a new and efficient digital manner. To connect, the consuming population generally enters into service agreements with Internet Service Providers who offer the means to get 'on-line' through computer modem dial-up, always-on cable, and other fixed access lines, as well as other wireless means of connection.

With the explosion of the World Wide Web and Email over the last several years, internet savvy consumers have become accustomed to receiving information on-line, much of it for free, as the world community wrestles with how to mature the Web into a tool for business and economy, rather than just for information distribution and collaboration.

Efforts to defray the costs associated with keeping free content available on the Internet have included the use of banner advertisements on websites, pop-up advertisements, unwanted redirects to partner websites, voyeuristic monitoring of consumer habits for marketing and other data mining purposes, and the creation of stealth networks which invisibly hijack the computing resources of unsuspecting users.

The prevailing free atmosphere surrounding the internet has encouraged many consumers to redistribute licensed intellectual property, including copyrighted print media, picture content, audio media, video media, and software, with open disregard for the use agreements binding upon them. Subscription services have arisen to offer consumers an alternative to the pervasive means by which free websites maintain their support, but they have done little to alter the consumer sentiment that the power to disregard copyright agreements with impunity gives one the right to do so.

Streaming Media (RealPlayer®, QuickTime®, Microsoft Media Player®)

Analogous to the old style nickelodeon movie projectors, streaming media content over open networked systems (i.e. the internet) provides an asymmetrical means by which media content may be delivered to consumers in a manner that strictly controls its use. A user makes a request for media via client software running on a computer or other networked digital device, and distribution occurs through a local software client that receives and presents said streamed media in its intended form only for as long as the streaming session is active. Though it provides significant copyright holder protection benefits, streaming media does not reside locally with the consumer, impeding the usual and customary right of the consumer to personal use applications such as making copies or recording for review at a later date or time.

Peer to Peer Networks (Napster®, Gnutella®, Morpheus®, Kazaa®, LimeWire®, Etc.)

Present peer to peer file distribution systems are based on advances in networking technologies and concepts which allow for the delivery of digital files directly from one member of the peer community to another without the need for central administration. Individual peer members make a request by way of entering search criteria into a local peer client software application, which then contacts other peers on the network as it searches for files matching the request criteria. Once located, such files are transferred directly from peer to peer. Peer to peer networks provide an efficient apparatus for the distribution of digital media, but without central administration, they lack the necessary controls to prevent the widespread redistribution of licensed media content to unlicensed members of the peer community. Several such systems appear to have been designed with this purpose specifically in mind.

Digital Rights Management

Digital Rights Management, or DRM, is a concept rooted in the notion that content owners may wish to maintain control over the digital distribution of their media. While DRM systems tend to vary in their technology and implementation, in general, they allow owners the ability to grant access to particular encrypted content, allow for authorized redistribution, and provide for transfer to portable media storage receptacles (amongst other assignable privileges) on an item-by-item, user-by-user, or some other basis. While DRM may provide a secure means for content owners to control distribution of their media with approval or denial of access to potential users, it has yet to be implemented in a manner consistent with offering a general license option for free use and redistribution.

Portable Media Access Management

Current "copy-lock" technologies are employed to control the method by which certain portable media storage receptacles such as CD's and DVD's can be used. Through methods which may include placing invisible directories or indiscriminant information at the beginning of the storage receptacles, copy-lock seeks to grant access to the media through some devices while restricting access on others which the copyright holder feels may be used to violate its rights. These methods generally allow for the playback of media content through traditional home entertainment devices while limiting their use in digital reproduction devices such as desktop computer systems. While copy-lock technologies may prove an effective means to curb the ease with which consumers at present may redistribute media through a digital network or media transfer process as outlined above, in their current embodiment they seriously limit the usual and customary rights to personal use and can generally be worked around with the aid of fairly ubiquitous analog technology—commonly referred to as the "analog hole."

To the inventor's knowledge, there is currently no conventional digital media distribution method in practice that incorporates the free consumer-directed access and exchange of content with the distributor-directed control of media sequencing after all such exchanges.

SUMMARY

It is an object of the present invention to provide a revenue generating market for the free consumer redistribution of media content, sponsored through paid advertising that a consumer may be required to experience during the course of media playback, provided by means of a system and/or method that offers the benefits of content restriction and controlled playback, working in conjunction with customized, addressable advertising on an individual consumer basis, with monitoring of content use and ad penetration to track audience viewership.

In accordance with the above objects and those that will be mentioned and will become apparent below, one particular embodiment of the digital media distribution method and apparatus in accordance with this invention comprises an interconnected network of computer systems and other digital devices, for use by a multitude of human consumers who access and use media content by way of these networked devices, a distributor who releases media content to consumers over the network, and a software application that imposes limitations on the consumer's use of media content.

The application software functions primarily as a media presentation "player/viewer", capable of running audio, video, and print media content. There is the provision for compatible versions of the player/viewer software to run on most consumer digital device and computer systems. The player/viewer software applies digital rights management techniques to control consumer use of media in a novel way. The player/viewer allows for a "general license", whereby a consumer can obtain free use of a media property, with strict controls enforced during media playback.

These enforced controls amount to the intermittent insertion of paid commercial advertisements and other promotional material into the time sequence of the media content during its course of presentation, along with the temporary disabling of certain user controls to ensure that this material

is presented in its entirety. The consumer gains free use of content in exchange for exposure to these paid advertisements.

Some of the forms these advertisements may take are novel in the realm of digital advertising over open networks. Advertisements may occur in the same media style as the content. That is, in addition to any software-controlled advertising methods in ordinary practice on consumer digital devices, audio ads are inserted into audio content as they have traditionally been heard in radio broadcasts, video ads are spliced into video content as they have traditionally been seen in television broadcasts, and print ads are interspersed with print content as they have traditionally appeared in newspapers and magazines. In addition, for book and other print content, there may be, according to the invention, audio ads played at certain intervals, similar to those traditionally heard over the radio.

Rather than strictly granting or denying access to secured content, one particular method of the invention provides for unlimited redistribution and free use under general license, enforced by the player/viewer software. This is a new use of digital rights management practices, and it provides improved security by diminishing incentive on the part of the consumer to breach the system, since the desired content is already available free-of-charge from within it.

The player/viewer software has the means to assemble a new, customized sequence of requested content, interspliced with promotional material every time it runs, selecting appropriate ads on demand from a greater repository. Ads are selected on the basis of requested content and other specific information that the system maintains about consumers and their media/ad play histories, and new ads may be chosen even when reusing the same content.

Where demographic, geographic, or other relevant user and/or system information is available, the player/viewer software can apply targeted marketing in the ad selection process. Targeted marketing takes the form of addressable advertising, which not only identifies a select advertising candidate list, but additionally verifies that individual ads were received and consumed by the intended recipient. This custom-selection of advertisements, addressable to unique users, conducted by software running on the consumer's device, is a novel use of new and existing technologies.

In the course of playing or viewing media content, the application software automatically edits the selected advertisements into the presentation stream. The novel "inter-splicer" module providing this functionality enforces the conveyance of required ads in their entirety at least once, by disabling certain user playback controls while the ads are running. This module also has the power to adaptively select and re-sequence the ads to be shown in response to the user's navigational actions throughout the content, and keeps a history of all the content and advertising material that is presented.

After monitoring content use and ad penetration in the course of running media, the software provides a usage monitor that compiles this data after a play/view session is finished, possibly reporting it back to the distributor. Where such reporting occurs, this functionality gives the distributor the power to measure audience viewership of media content and advertisement penetration, provide for ad rotation, and generate valuable ad usage statistics. For media, the data records provide a detailed profile indicating the number of repeated times that each part of the content is consumed. This novel improvement allows the distribution system to derive greater value from media that is redistributed to a wide audience, through better knowledge of viewership patterns on an item by item basis.

The player/viewer software may employ a distributor-controlled licensing database, allowing the system to track a variety of service types by which a particular user could license a particular media property. Such a database also gives the distributor complete control over the system, providing the player/viewer the ability to grant or deny service altogether, depending on the property and/or the user. In this way, the present invention endows the distributor with the complete power to limit consumer use as directed by the copyright holder, on a property by property basis, and to adjust the amount of required advertising as needed. Local mirrors of this database on consumer-accessible devices are secured via digital rights management, so that the consumer cannot access them outside the running player/viewer software.

The software may also make use of a distributed media catalog for the purpose of locating particular media content throughout the distributor's system, and a hybrid central server and peer-to-peer media transfer system, by which secured media files are delivered to a consumer system upon request. When a centrally administered database for digital rights management is employed in conjunction with peer-to-peer file exchange of secured media content, in a distribution system that provides multiple service levels and types, including a general license to allow free viewing with ads, carried out by player/viewer application software running on the consumer device, there is a new and improved use of these technologies.

Through this software apparatus running on individual consumer systems, the present invention functions as a new use of the traditional broadcasting business model, which acts as an improvement by adding value to freely exchanged copies of media, distributed over a digital network. By coupling the long-standing broadcast media practice of commercial advertisement sponsorship with the appeal of select, on-demand, consumer-level redistribution over a digital network, the consumer gets the conveniences of virtually unlimited free media selection, instant access, and unrestricted sharing, while the copyright holder gains a tangible value from the increased viewership that results, through an apparatus that makes it possible to maintain explicit control over media use throughout.

The consumer is free to select and program any desired sequence of content, and the player/viewer software has the ability to present this material with ads inserted, while it monitors and measures all use of media and ad content, including repeated use of the same material. Through its use of paid advertising and sophisticated audience monitoring, the invention improves on current digital media distribution practices by creating an advertising-based market for unlimited free consumer use and exchange of media content over a digital network. The content use restrictions resulting from this distribution method and apparatus are an improvement over currently practiced methods, in that they benefit both consumers and copyright holders.

BRIEF DESCRIPTION OF THE DRAWINGS

Further features and advantages will become apparent from the following and more particular description of particular embodiments of the invention, as illustrated in the accompanying drawings, wherein like referenced characters generally refer to the same or similar parts or elements throughout the views, and in which:

FIG. **1** illustrates a networked computer system for the wide distribution of digital media content, according to one embodiment of the invention;

FIG. **2** illustrates a consumer computer system, according to one embodiment of the invention;

FIG. **3**A illustrates the player/viewer software graphical user interface, according to one embodiment of the invention;

FIG. **3**B illustrates an economic value comparison of existing digital media distribution practices against one particular method and apparatus of the invention;

FIG. **4**A is a schematic diagram illustrating the sequence of play for common audio/video media use sessions, according to one embodiment of the invention;

FIG. **4**B is a schematic diagram illustrating the sequence of viewing for a typical print media use session, according to one embodiment of the invention;

FIG. **5**A is a flowchart illustration of software operation in response to a user request to run media content, according to one embodiment of the invention;

FIG. **5**B is a block diagram illustrating certain software components that operate together to carry out the method of FIG. **5**A, according to one embodiment of the invention;

FIG. **6**A is a flowchart illustrating one particular method for performing the ad selection operation of FIG. **5**A, according to one embodiment of the invention;

FIG. **6**B is a block diagram illustrating in more detail the flow of data between certain software components operating in FIG. **6**A, according to one embodiment of the invention;

FIG. **7**A is a flowchart illustrating one particular method for performing the intersplicing operation of FIG. **5**A, according to one embodiment of the invention;

FIG. **7**B is a block diagram illustrating in more detail the flow of data between certain software components operating in FIG. **7**A, according to one embodiment of the invention;

FIGS. **8**A-**8**D are flowchart illustrations of software operation in response to user-generated playback control events, according to one embodiment of the invention;

FIGS. **9**A-**9**C are flowchart illustrations of software operation in response to user-generated display control events during playback, according to one embodiment of the invention;

FIG. **10**A is a flowchart illustration of software operation in response to user-generated audio-level control events during playback, according to one embodiment of the invention;

FIG. **10**B is a flowchart illustration of software operation in response to user-generated print media viewing control events, according to one embodiment of the invention;

FIGS. **11**A-**11**B are schematic illustrations of prior art business models employed for the purpose of media content distribution; and

FIG. **11**C is a schematic illustration of one particular business model capable of implementation with various methods and apparatus of the invention.

DETAILED DESCRIPTION

Referring now to FIG. **1**, there is shown a diagram of a networked computer system for the wide distribution of digital media content over at least one public or private telecommunications network **100**, such as the Internet. The system supports both client-server and peer-to-peer network communication architecture models, as well as any other networking methodology that can operate according to the invention.

A multitude of consumers **102** use their individual computer systems **104** and **110** or other digital device systems **106**, **108**, and **114** to play and view a variety of media content. Any consumer-used computer device **110**, digital device **114**, or storage medium device **112** that is capable of a temporary or ongoing digital transfer connection to any of the networked systems **104**, **106**, **108**, and **110**, either directly or indirectly, is also to be considered as part of network **100** if the device ever stores or runs any media that is an original or copy of content distributed by way of the present invention.

For instance, at a time when computer **110** is connected to network **100**, consumer **102** may via the method of the invention obtain media that is then stored on the hard drive of computer **110**, in order to use it at a later time when the connection is not available. If this media data is copied to or used with device **114** via removable storage medium **112**, then device **114** is to be considered as part of network **100** according to the invention.

A distributor **120**, shown in the figure as a box, is a person or business entity employing or participating in the method of the invention to release digital media content titles and tracks to consumers **102**. A "title" refers to an individual stock keeping unit, as managed by the distributor. A "track" is a self-contained portion of a title that a consumer may specifically order separately.

Titles and tracks are media content, occurring in any combination of video, audio, and print forms, or any other media format now known or later developed. Video refers to any media that consists of moving pictures, with or without sound, in a page-free context, including, without limitation, a film, television show, documentary, short subject, or music video. When audio accompanies video, the content is still classified as video. Audio refers to any media that contains audio only, in a page-free context, including, without limitation, a short musical track, such as a rock or popular song, a long musical piece such as a symphony or rave music track, or an audio program, such as a lecture, speech, radio drama, or book on tape.

Print media forms include any static or software-driven content that employs text and/or images laid out into pages, including, without limitation, a newspaper, magazine, book, reference material, or user-interactive hypermedia document. Print media may contain audio and/or video material, but if the primary value of the content involves page layout, it is classified as print media. However, when page-based operations take place within a single video area, and are subsidiary in value to accompanying video content, the media is video. For instance, the page-based menus on a DVD count as part of video media content, even though they involve text, menus, and pages.

Any audio, video, or print media content may also include extra application software code and/or document data as a part of it. Such code/data provides the player/viewer with specific logic functionality to accompany the content. The menus and text that accompany DVD format movies are a prime example of this kind of code/data.

Distributor systems **122**, **126** are those computers and devices on network **100** that are secured under strict control of the distributor **120**. Apart from these distributor systems, there may be a very large number of "consumer systems"—a term to denote any computer or other digital device under unrestricted consumer control and having either direct or indirect access to the network **100**. Such a consumer system may be, among other things, a computer system, a digital audio/video recorder, a portable playback device such as a palm-top computer or MP3 player, or a removable storage

media device such as a computer with a read/write CD/DVD drive or a standalone CD/DVD player.

Distributor systems **122** act as media distribution centers, using a software firewall or other means to secure them from unauthorized consumer access, and allowing consumer systems to interact with them for the purpose of exchanging media and/or data according to the invention. Distributor systems **122** may be interconnected on an isolated or otherwise secure extended network **124**, or possibly through a software-secured layer on open network **100**. The media distribution centers **122** coordinate their activities and maintain consistent databases via network **124**.

Also on the distributor's network **124** is a file server **126**, which handles the transfer of media content **128** to the media distribution centers **122** as needed. Though not shown, different distribution centers **122** may be connected to different open distribution networks, to facilitate distribution over multiple networks. Also, a number of media provider organizations **130** doing business with the distributor may facilitate the transfer of media content **134** to either consumer systems **104**, **110** or distribution centers **122** via one or more of their file servers **132**, which may either act through the open network **100**, or be connected to the distributor's network **124**.

The distributor is free to employ any database and file server design to suit the needs of the distribution network, provided it operates in compliance with the invention. For instance, the design might involve a secured, distributed database, administered to maintain a catalog of all media titles, the service types offered for each title, user profile and billing information, user demographic information, user/software registration data, user/title licensing data, security keys, a catalog of advertisements, user/ad viewership history, title/audience viewership history, and other statistics. Alternatively, a minimal database might maintain nothing more than a catalog of titles and advertisements, providing distributor **120** with a much lower amount of control over the system.

Acting as a server, each distribution center **122** may operate with any number of consumer-use computer systems **104**, **110** or web-enabled devices **106**, **108** over the network **100**. It is also possible, according to the invention, for consumer systems **104**, **110** and devices **106**, **108** to exchange media over shared network **100** on a peer-to-peer basis. For instance, when it has network access, consumer system **110** may direct another consumer system **104** to deliver particular media content to it. Media files exchanged in this way are secured from the consumer through digital rights management practices.

In the peer-to-peer context, a consumer system may act as either a client or a server. In the previous example, computer **110** acts as a client when requesting the media from computer **104**, which acts as a server to handle the request. If peer-to-peer functionality is indicated, the player/viewer software described below includes peer-to-peer server control logic, which it may run or launch as a background maintenance task or process, or alternatively have the system launch automatically from time to time by modifying the system's startup or operating environment.

In one embodiment, the invention employs a distributed database, operating as a centrally administered digital rights management server on one or more media distribution centers **122**, working in conjunction with an open peer-to-peer distribution system of secured media content, in a manner that offers the licensing of possibly multiple service types, while including at least one service type intended to allow widespread free viewing of distributed content on the part of the consumer, while still upholding value of use for the media copyright-holder. Under this scenario, the peer-to-peer functionality may be transparent to the consumer. In particular, when computer **110** requests media from distributor systems **122**, distributor **120** may instruct computer **104** to act as a server to handle some part, or all of the delivery of the media request in place of distributor systems **122**, giving the appearance that the media request is being fulfilled by the distributor. When database management, file exchange, and digital rights management technologies are used together in this novel way, in conjunction with the application software described below, there is a new and improved use of these technologies.

To achieve this improvement, the apparatus and method of the invention employ a new use of a traditional business model on a client-by-client basis over a digital network, through the use of novel media player/viewer software running on individual consumer systems to act as an apparatus for carrying out this model, as embodied in the parts of the software described in detail herein.

Referring now to FIG. **2**, there is shown a more detailed diagram view of a representative consumer computer system **104** (FIG. **1**), to illustrate some of the hardware components which, when controlled by the method implemented in the novel player/viewer application software, comprise one aspect of the invention. The distribution network and method described in FIG. **1** work in conjunction with the software application described below, which operates on ordinary consumer computer and other digital device systems, such as the one described here.

Computer system **104** has a conventional architecture, which includes a processor **202** and volatile RAM memory **204** coupled to processor **202** through an interconnect **200**. Memory block **204** includes an ad-intersplicing player/viewer **560**. While player/viewer **560** is shown as a complete functional block within memory **204**, it should be understood that player/viewer **560** includes stored code (e.g., on file storage **210**), portions of which may be transferred into and out of RAM memory **204** as needed. Interconnect **200** may be a system bus or any other apparatus that is employed to connect components such as these in a consumer-grade computer system.

Also coupled to interconnect **200** are internal peripheral hardware devices, such as file storage **210**, which may be a hard drive or other persistent storage peripheral, and removable media internal device **212**, which may be a floppy drive, ZIP drive, CD-ROM or DVD drive, CD/DVD read/write drive, or any other removable media drive.

Internal peripheral devices connected to interconnect **200** also include those for the generation of physical sounds, such as sound card **208** and speakers **224**, those for the real-time display of graphics, such as graphics card **206** and computer display **222**, and those to communicate over networks, such as network interface adapter **242** and dial-up modem **240**.

Interconnect **200** also serves a number of common I/O ports **220**, including those for keyboard **228**, mouse **230**, other connected I/O devices **236**, printer **226** for persistent output, and any external I/O ports **220** that are available to connect system **104** to other, external peripheral devices, such as portable playback device **232**, external recording device **234**, or external network connection device **244**. External recording device **234** may be, among other things, a CD player/burner or a DVD player/burner.

Computer display **222** is any type of volatile computer display device including without limitation a cathode ray tube (CRT), a light-emitting diode (LED) display, or a liquid

crystal display (LCD). The other connected user I/O devices **236** may include any type of user input or output devices including, without limitation, a numeric keypad, a pointing device such as a trackball, light-pen, touch-sensitive pad, digitizing tablet, thumb wheels, or joystick, or a non-standard display device or printer.

Network interface circuitry **242** couples computer system **104** to open computer network **100** (FIG. **1**). Where high-bandwidth network service is absent, modem circuitry **240** allows the system to connect to network **100** by dial-up over ordinary telephone lines. It is also possible to connect to network **100** through alternative means by way of an external network connection device **244**, which connects to network **100** directly and transfers network data to system **104** by way of an I/O port **220**.

The invention applies to these and any other hardware components that may be employed in a consumer-grade computer system or other digital device to carry out the ends of the media player/viewer software described herein, whether or not they resemble or perform the same specific functions as those components shown in FIG. **2**.

The Player/Viewer Application Software

Media titles and tracks that the distributor **120** (FIG. **1**) releases, either by streaming broadcast delivery or by copy on demand, over digital network **100** (FIG. **1**) are to be seen and heard primarily through the use of program software applying the method set forth herein, on consumer media device systems supporting the use of such software. Different device/computer hardware platforms and operating systems, including embedded devices, may require custom versions of the software, and each such version is to carry out the method of this invention to the best of all practical ability within the constraints of its operating environment.

This software generally provides the functionality to run audio, video, and print media, as defined above, to the extent that the specific device on which it is running supports each of these media forms. On platforms that support graphical user interfaces and multitasking or multithreading, the software is implemented as a full-fledged "media player/viewer", offering multiple panels and/or windows to switch between any number of user-initiated media presentations.

Referring now to FIG. **3**A, there is shown a diagram of the player/viewer software's graphical user interface, as it might appear on computer system **104** (FIGS. **1** & **2**). It provides the ordinary functionality commonly found in typical media player software applications, and the software design methodology behind its implementation, delivery, and installation may be ordinary or new, as long as they result in software that behaves as specified in this description. For sake of further discussion, the term "user" will be taken to be synonymous with consumer **102**, from this point forward.

Installation of the software on computer system **104** (FIG. **2**) or any other consumer device system stores the player/viewer program code appropriate to the specific system somewhere on its persistent file storage **210**, or possibly in read-only memory (ROM) depending on the device. Installation may also modify the operating system to launch maintenance and server programs as background processes, either at startup or at some other specified time interval. Consumers **102** may carry out the installation process on their own systems, while other systems may ship with the software pre-installed as they are manufactured.

The player/viewer's user interface (FIG. **3**A) takes direction from a consumer by appearing on the consumer's display device **222** and giving audio and/or visual feedback to the input actions of its user. The functional style in which this player/viewer appears to the user may follow ordinary practice in the design of such interfaces, or it may involve a different and possibly new look and feel, as shown in the figure.

Such a player/viewer may also offer functionality through panels and/or windows for any of a wide variety of other conventional services, including without limitation internet browsing, internet chat, networked video gaming and tournaments, video conferencing, content aggregation, office productivity, email, secure business document distribution, and special interfaces for online auctions, event schedules, and ticket purchasing for movies, concerts, operas, ballets, sporting, and other events. Additionally, the player/viewer may provide integrated control over other ordinary network procedures, such as exchanging media content between users, ordering media and services from the distributor, and viewing system broadcast messages.

As it runs, the player/viewer software conveys video, visual effects to accompany audio, and print-based media content in an operating area of display **222**. There also are one or more control areas through which a consumer **102** may take specific actions pertinent to the associated media presentation. The consumer hears audio media content as sound emanating from the system speakers **224**, and sees video and print media content on the computer display **222**, either in conjunction with audio or not.

According to the invention, to prevent unlicensed consumer use of media content, persistent copies of media titles and tracks are retained as encrypted data on consumer devices. The player/viewer software uses a digital rights management approach to conceal the algorithm or key for removal of this encryption from the consumer. By way of this approach, the information for encryption removal is granted only to media player/viewer software that complies with the present invention in maintaining restriction and control over media use, while enforcing digital rights management on its secured data.

Novelty arises in the player/viewer software's particular ability to control use of media content while providing the means for unlimited free viewing of requested media, through a general licensing process that is transparent to the user. Unlike conventional digital rights management enforcing software, which primarily offer the choices of either granting or refusing access to particular material, the player/viewer software of the present invention can allow for unlimited free viewing of content, while still preserving the value of such use, by implementing the methods of traditional broadcast media business practices as a new use with digital media distribution, carried out by a software apparatus, the player/viewer present on each consumer system.

Along these lines, according to the invention, the player/viewer has logic to allow consumer **102** the free and unlimited use of secured media content, by offering a free general license for use of the content with paid commercial advertisements and other promotional material inserted into the content stream at certain intervals. The player/viewer may also have the power to select which ads are best suited for a particular consumer **102** given information the distributor **120** maintains in its central database about each consumer, applied in conjunction with each specific media title or track request.

No matter how it selects the ads, the invention provides a means to sequence these ads into appropriate blocks that are initially chosen and scheduled into the content stream by a novel "advertisement manager" module of the player/viewer software. There is a novel "intersplicer" module in the player viewer software that launches, communicates with, and strictly controls a digital rights management enabled

real-time player module, while the player module handles the actual playback and viewing of the media content through the player/viewer software.

In this way, the invention has the ability to strictly enforce the insertion of advertisements into the content stream. Furthermore, whenever the player/viewer is running any ads, it has the power to ensure that the consumer **102** using it will experience the advertisements in their entirety. In this particular embodiment of the invention, the player/viewer accomplishes this end by disabling any user interface command that the consumer could possibly use to skip, back out of, or speed through the promotional material, including the ability to lower the sound volume beneath a pre-determined threshold level. The intersplicer also has the ability to adaptively re-group and re-sequence the insertion of ad blocks extemporaneously (i.e. "on the fly"), in response to the consumer's arbitrary direction of the playback within the requested content, by means of playback controls.

By enforcing the insertion and conveyance of promotional material into media titles and tracks that the distributor **120** releases openly and freely, without charging the consumer **102** a fee to run it in this manner, the invention preserves the value of content use to the copyright holder while making it widely available on demand to the consuming public.

Essential to safeguarding the digital rights management measures that the player/viewer employs is the lack of a ready means to save media content to persistent storage in a format ordinary media player software can directly use. However, in certain instances the invention does allow for the use of such media content outside of the player/viewer.

Distributor **120** is free to permit this kind of use on a case by case basis. In this event, the distributor ensures that some mechanism exists to satisfactorily prevent unlimited copying and redistribution of the media outside of the player/viewer, unless the content in question is available for free release. Other software applications may also be permitted such use if they strictly adhere to solid digital rights management practices in securing the same data and content as the player/viewer of this invention, and provided the distributor deems acceptable their use of the media content.

Additionally, the player/viewer may provide for outside use of content by supporting its export onto removable media intended for hardware devices that have little capacity to generate reproductions, such as standalone CD and DVD players found in home entertainment systems. Through such a provision, a consumer **102** using the player/viewer has the power to use network distributed content on ordinary audio/video equipment, for instance, by burning a CD or DVD for use with such a device.

However, in this event the player/viewer typically employs some form of "digital copy-lock" technology on the removable media, to prevent any widespread redistribution outside the method of the present invention. This copy-lock technology flags the physical storage medium in such a way that a consumer may use it on a standalone device, but when inserted into a computer or other digital reproduction ready device, it will not function except through a running instance of the player/viewer software of the invention, if at all.

Direct export may also occur by transfer to other digital devices, such as mobile audio MP3 players. Ideally, such devices would employ digital rights management and other measures similar to those just described, to prevent redistribution of content exported in this way.

The player/viewer may also provide for the direct import of content from a number of conventional media formats, if the distributor **120** chooses to accommodate such a service. With direct import, any consumer **102** may transfer raw content already in their possession to player/viewer media for local storage, or may choose to circulate this content through the distribution system. The process begins with the player/viewer requesting information necessary for initial screening from the user. It then adds a player/viewer format encrypted copy to the user's system, prompts the user to keep or delete the original media file (if the option exists to do so), and optionally takes action to identify media titles and tracks through an automated process, making the results available to the user for application to the imported media. Initially, the new local copy is tagged as banned for redistribution, granting access only to the user who imported it. If the content is to be circulated through the system, the player/viewer may send a copy of the content to a media distribution center **122** for more detailed scanning and review necessary to prepare it for distribution.

If imported content matches an already-existing title or track, the player/viewer gives the user a choice to replace the import with an official copy, bring it into the system for distribution as a new title or track in the event that it differs from the original in some artistic or other valid way, or use it as is without replacement. If the user elects to use it as is, the copy maintains its status as banned for redistribution. If the user elects to replace it, the local copy is replaced with an official distribution copy of the title or track. In the event that the user chooses to distribute the content as a new title or track, or if the initial processing found it to be new material, the media distribution center finishes processing the content for distribution, possibly requesting more information from the user via the player/viewer over a period of time as it validates the content for general release. Once the title has released, the player/viewer automatically upgrades the user's banned copy to an official copy appropriate for redistribution.

In this way, the distribution system of the invention may allow individual consumers **102** to provide new titles and tracks for distribution. To the extent that this feature serves the role of a public access forum for media distribution, the player/viewer user interface may include logic for any additional functionality that is signaled whenever it detects that it is running this class of media. For instance, it can have a control button that reads "Click here to support this . . . " appear automatically at some point during the content's use session. When a user presses this button, a dialog or other interface appears, providing a direct way for the user to enter a donation amount and have it charged to a credit card or other type of billing account, perhaps one that is already on file for the particular user in the distributor's central database, all at the click of a button. At the discretion of the distributor, part or all of this donation amount may be credited to the user account of the individual consumer **102** who imported the new title or track for distribution.

When media is imported from a consumer, there is the possibility that invalid content may make it past the initial review process. If user-contributed content is distributed through the system, then later found to be equivalent to a copyright-holder provided title, the distributor can provide for the automatic replacement of such secondary content with the version approved for distribution. This process is known as "media rotation". Similarly, if a copyright-holder identifies invalid content and does not wish to have it further distributed, the content may be either banned for redistribution or recalled entirely, having all existing copies removed from the system.

Referring now to FIG. **3**B, there is shown a diagram depicting the economic aspects of the distribution method that this player/viewer software enables according to the

invention, to better illustrate the nature of its improvement. Three different playback control paradigms are considered along a horizontal axis **350**, and a vertical axis **352** measures the relative utility of each paradigm to either an average consumer **102** or an average copyright-holder. Plot **356** is the utility to the consumer for each playback paradigm, and plot **358** is the utility to the copyright-holder for each playback paradigm.

In playback paradigm **362**, consumers freely redistribute copyrighted content amongst themselves, and a consumer who obtains such a copy has complete control over the use of it. This situation has high utility level **360**B for the consumer, who is getting something of value without paying for it, and it has the lowest indicated utility **360**F for the rights-holder, who loses large amounts of revenue and control as the consumers freely redistribute the copyrighted content in droves for unlimited use, with many of them never paying the rights-holder. This scenario has arisen in recent times as a result of the technological developments described in the background.

With an ordinary digital rights management (DRM) or copy-lock system in force, playback paradigm **364** applies. In this case the distribution system strictly denies all consumers who have not licensed a particular media content title from access to it. The paradigm enforces a strict control of use policy on the part of the distributor, without a facility for a free general use allowance, and in the process, maintains a price for use status quo, where digital media content is licensed to consumers for a fee.

With paradigm **364**, the utility for the rights-holder has moved up to level **360**C, and the utility for the consumer has dropped to level **360**D. Following the paradigm, the rights-holder can enforce a strict grant of use policy on all consumers who use media content under such a paradigm. However, relative to paradigm **362**, the consumer loses the ability to request media content on demand and use it for free, which is a considerable drop from level **360**B. Also lost to paradigm **364** is the right to make unlimited copies for personal use. Given the extent of this drop, some consumers are strongly motivated to use any means at their disposal to obtain free access to content, and there is a large economic force driving these consumers to break such DRM-based distribution systems, producing a constant effort on the part of consumers to establish and maintain paradigm **362**.

Furthermore, it is believed that media content has a very large potential market and a high price elasticity of demand. That is, the viewership of a particular media property increases dramatically as the price for use drops, even in the presence of advertisements. As a result, the potential for revenue from ad sponsorship is all the higher.

Playback paradigm **366** is facilitated by the method of the present invention, and enforced by the player/viewer software as described above. Media content is distributed to consumers freely and on-demand, however, through its use of a highly controlled playback apparatus, the method of the present invention has the power to require and enforce the presentation of paid advertisements inserted at regular intervals within the requested media content, whenever a consumer uses any media for free under the general license.

In this system, the consumers utility level has now risen to **360**B', which is much closer to level **360**B than to level **360**D, by the reason that a consumer would much rather bear commercials in exchange for free use of media content than not have free use of any sort. Meanwhile, the copyright-holder's utility has also increased greatly to level **360**A, because more viewing of paid ads by a much wider audience produces a greater source of revenue than a considerably smaller number of direct sales.

The system is an improvement over conventional digital rights management systems because it offers benefits to both the copyright holders and the consumers. From the consumer's standpoint, the drop from utility levels **360**B to **360**B' is much smaller than that from levels **360**B to **360**D, so there is much less incentive on the part of the consumer to engage in piracy and other attempts to circumvent the digital rights security put in place according to the invention.

Advertisement Sequencing Styles

Referring now to FIGS. **4**A and **4**B, there is shown a schematic diagram depicting some representative player/viewer media use sessions as they run over time. FIG. **4**A illustrates three primary styles of advertisement sequencing that may occur in combination over a playback sequence of requested audio or video media content, as defined previously above. FIG. **4**B illustrates the general style of ad sequencing that occurs in the process of viewing and browsing print media content, as defined previously above.

Media content exists in the form of titles and tracks, as defined previously above, and the user can have the player/viewer run any combination of available titles and tracks in any possible order. If a long-playing title has no tracks, or if a single track runs excessively long, the distributor may specify the division of the title or track into a series of contiguous segments. A title or track that contains more than one segment is a segmented title/track, in contrast with an unsegmented title/track consisting of one single segment. The distributor **120** assigns segment divisions on an item-by-item basis, and throughout distribution, these division locations accompany their associated title/track, in a fashion similar to the way the locations of all tracks on a title accompany the title when it is delivered as a single unit.

Segments would not ordinarily be ordered separately from the distributor, but the player/viewer's saved play-lists may contain individual segments. One purpose of segment divisions in a track or title is to indicate appropriate points within the material for the player/viewer to intersplice ads in the course of presenting the content. By this definition, a title may contain segments, or tracks, or possibly segments within tracks, but not tracks within a segment.

In FIG. **4**A, the passage of time over the course of playback is represented as a horizontal timeline **400**. There are shown three example sequences of audio or video media playback **402**, **404**, and **406**, each of them conveying content interspliced with advertisement blocks.

These sequences are shown as video with audio, but the following discussion applies just as well to silent video or audio-only media. Using ordinary methods, the player/viewer can convey either of these styles just as well by leaving the video blank or the audio silent, or it may alternatively employ some other logic to fill in for blank video or silent audio with its own images or sounds.

As described above, the player/viewer has the power to intersplice paid commercial ads into the presentation stream intermittently over time throughout the course of playing an audio or video sequence. The media style of these ads may include some combination of audio, video, and/or print-based components, excluding the trivial case of no presentation at all. However, from these possibilities, there is typically only one such choice that strictly matches the media style of the content in play, and at most two in the event that different media component styles occur in the content immediately before and immediately after the interspliced break.

In the case where the media component style remains the same before and after the ad break, there is a unique choice of ad media style to match content media style. For instance, in the midst of audio-only content, it is an audio-only ad. In the midst of video with audio content, it is a video with audio ad, and so on. The player/viewer's advertisement manager has the power to call for this specific style of advertising to suit whatever content style is in progress, and this particular methodology of matching content media style with advertisement style, for the purpose of programmatically interrupting the same media stream conveying the content with ads taking the same form, is novel in the realm of digital media players.

Applied to video and audio, this advertising methodology is a new use of the advertising style familiar to audiences through ordinary television and radio broadcasts. However, in the present invention, these advertisements are sequenced together and inserted into the content stream extemporaneously (i.e. "on the fly") by software running independently on each consumer's device, in response to the consumer's particular media requests and interactions with the specific content session running on each device. In an alternate embodiment of the invention, which may be employed for example in satellite radio or digital cable television receivers, targeted advertisements may be interspliced into an original broadcast presentation in real-time, thereby providing broadcast programming with promotional material tailored to the preferences, demographics, or other relevant criteria of individual users, in addition to and/or in place of those ads specifically associated with the broadcast media.

These ads are not required to appear in the same media form as the user-selected content, though in many cases, they do. According to the invention, it is even possible for an advertisement or media content segment to contain special tags and program logic to signal the player/browser to produce specific software-controlled actions, such as special buttons in the interface, displays, or user interactions. For example, at some point in the playback of a video title, the player/viewer can display a pop-up dialog or flash a control in its user interface that reads "Click here to buy this . . . ", with logic to take appropriate action if the user responds. This same feature provides a mechanism to supply interactive user polling in the midst of the media stream, or in place of ads, by presenting hypertext data input forms and delivering the user responses back to the distributor **120**.

Referring back to the figure, play sequence **402** contains both segmented audio/video content, shown throughout FIG. **4**A as wavy lines, and blocks of audio/video commercials, which are shown throughout as saw-toothed lines. Content segments **430**, **432**, **434**, and **436** comprise the media title the user has requested for play, and each of advertisement blocks **408**, **410**, and **412** is a group of at least one or more ads and/or other promotional material that the player/viewer software has automatically assembled and inserted into the sequence.

In the course of direct play, without any user-directed skipping from one point to another or performing other navigation throughout the content, sequence **402** begins with content segment **430**. Segment **430** immediately proceeds into advertisement block **408**, which is followed by content segment **432**, ad block **410**, content segment **434**, ad block **412**, and content segment **436**.

Play sequence **402** is typical for a segmented title/track, by the definition of segmented media given above. With segmented media, the player/viewer holds a sense of particular ad blocks retaining their own sense of place in the sequence, with the ads chosen to go along with a predetermined portion of the content. If the consumer elects to skip around during the course of playing a segmented title, the same block of ads plays with a particular portion of the content as the user skips back and forth through different parts of the title, over a predetermined period of time and/or number of viewings. If the predetermined limit is exceeded, the player/viewer rotates in new ad blocks automatically.

Segmented titles are sequenced like television programs, in that ad breaks tend to occur at particular scheduled places in the content. The first time through viewing any particular segmented content with ads, each block is shown before or after its associated content, and the player/viewer requires the ads to be run in their entirety. After that, when ad blocks that have been seen already are encountered again through a user-directed repeat of a sequence in a single request session, the player/viewer may allow the user to navigate out of the ad, or possibly omit it altogether.

For example, if the user of sequence **402** jumps right into segment **434** as segment **430** is just starting, the player/viewer will begin segment **434** at its point of entry, followed at its end by ad block **412**. Wherever possible, the ad block chosen for play at the end of a segment will be the one most appropriate to the actual part of the content that has played since the latest preceding ad block.

In some cases, there may be a need to insert an ad block just before resuming play after a user-directed skip. For instance, if the user has watched 80% of segment **432**, and then jumps into the middle of segment **434**, ad block **410** plays immediately, and when it is finished, content play resumes at the point selected in segment **434**.

Generally, the ad blocks presented during segment play occur either at the start of a segment, immediately following the end of a segment, or if necessary, just before resuming play after a user-directed skip. Logic in the player/viewer determines which of these are necessary as a result of the consumer's most recent viewing, and selects the most appropriate of the predefined blocks to insert at that point. If the same block is repeated excessively, the player/viewer has the power to rotate new ads into play at some point.

Play sequence **404** results when the user chooses a series of individual tracks for play. Common tracks include short songs and music videos, where each item is an individually-named short work. In this particular case, the consumer has selected to a play list of content tracks, **440**-**462**, and the player/viewer automatically inserts advertisement blocks **414** and **416** into the play sequence. These individual tracks were selected haphazardly from among several different titles.

With tracks, the location of advertising blocks is determined by the player/viewer's program logic, which upholds an average content play time, an allowance based on the number of tracks, or possibly some combination of these or other approaches on a case-by-case basis, to determine where it inserts the ad blocks. Whatever method it uses, it places the ad blocks between individual tracks, or runs them just before resuming play upon a user-directed skip into the middle of a track.

During the course of regular play without skipping around or other navigation, sequence **404** begins by playing tracks **440**, **442**, **444**, **446**, and **448** in series, followed by ad block **414**, and then tracks **450**, **452**, **454**, and **456**. After track **456** comes commercial ad block **416**, followed by tracks **458**, **460**, and **462**.

Tracked titles are sequenced like radio programming, in that the ad breaks tend to occur after a certain number of songs are played, after a certain amount of playback time has elapsed, or at song breaks nearest to particular times of the

hour. In the case of the player/viewer, the user can sequence any combination of tracks together, and the ads chosen may in part reflect the specific tracks used. This has a direct implication when the consumer jumps around haphazardly in a requested play-list, or chooses to repeat a small subset of the tracks in the requested sequence.

For example, in sequence **404**, consider a case where the program is using a track allowance method for ad placement, with an initial allowance of 5 tracks per ad block. If the user decides to play track **446** and then track **456**, the program does not insert ad block **416** immediately after track **456**. Instead, play goes directly into track **458**, because the allowance is 5 tracks. If the user plays through most of track **458**, then jumps to the beginning of track **442** and plays it, there is still allowance for one more track after that, since only four tracks (**446**, **456**, **458**, and **442**) have played so far. If the user then jumps to track **452**, an ad block will play immediately after track **452** completes, or if the user attempts to leave track **452** after hearing most of it but before it completes, because it is the fifth track. This ad block will be assembled extemporaneously to go with the five tracks that were played, and there is no retained sense of recurring blocks falling at specific points when the user skips around between tracks in a play-list. Typically, ad blocks inter-spliced in this way require full play with each occurrence, and the player/viewer manages its adaptive ad selection to present new ads every time, to a certain extent.

It is also possible for long-playing material to be completely unsegmented, as is the case in sequence **406**. With unsegmented content, a large ad block **418** is inserted at the very beginning of the program. The ads play in sequence, and when they are finished, the content **470** plays in an uninterrupted fashion. Even when a title or a lengthy track has segments, the player/viewer may elect to run it in this unsegmented fashion in response to instructions from the distributor **120**.

Referring now to FIG. **4**B, there is shown a schematic diagram of an ad-sponsored print media session. The consumer views the print media one page at a time by issuing page turn commands. Under a page allowance ad placement mechanism, an ad or block of ads is run after a set number of page turns (**5** in this case). When paging through print media in this fashion, moving either forward or backward in the material may be counted against the page allowance, or the mechanism may count only turns to pages that haven't been viewed within a limited time period, such as in the last five minutes, for instance. In addition to page allowance triggered ads, ad blocks may also be inserted at the end of each "chapter" or other appropriate section division in the print media. Chapters in print media are equivalent to audio/video segments, and the software handles them both in the same manner.

As noted in FIG. **4**A above, these ads are not required to appear in the same media form as the user-selected content, though in many cases they do, and the same possibility for an advertisement or media content segment to contain special tags and program logic to signal the player/browser to produce specific software-controlled actions exists. In general, page allowance triggered ads will be print based ads, such that the user may briefly be exposed to an advertisement, then can quickly page out of the ad or ad block, and return to the print content so as not to lose their train of thought while reading.

The timeline measure for print media is the number of user-activated page turns **480**, and ads are sequenced according to a page-turn allowance, as described above. Ads may also occur at the boundaries of chapters, which are the print media equivalent to segments, discussed above. Print based media involves any combination of print **482**, which encompasses many forms of page-based text and image layout, audio **484**, video **486**, and user-software interaction **488**, in the fashion of hypertext applications. When the player/viewer inserts an ad block into print media, the ads may also employ any combination of these means (**482**, **484**, **486**, and **488**) to convey their message, though as noted they tend to be in the same style as print advertising where print ads are interspersed with print content as they have traditionally appeared in newspapers and magazines.

For the print ad containing audio **490**, the audio and any associated visual advertising content complete at the same time. When a visual aspect of a print ad is in progress, user-activated page turns are disabled, unless the ad itself includes specific logic to handle them. When all in process visual aspects of the ad have finished, or when none are present to begin with, the user may resume paging. In the case of a print ad **492**, with an audio message continuing beyond all of the ad's visual aspects, the user may turn pages while the audio is still in progress. Below, FIG. **10**B explains in detail the player/viewer's logic to convey ads with print media.

Referring now to FIG. **5**A, there is shown a flowchart to illustrate the logic by which the player/viewer software processes a user request **502** to play or view some media, according to the invention. Request **502** may arise from, among other things, a direct file open operation, a selection from a remote media catalog or local media database, a selection of a user-defined play-list, a result of a media search engine or other web-based service, or some other user-driven command in the player/viewer. For example, in order to compile a user defined play-list from which a request **502** can be initiated, a user might acquire media files through any means available, including, but not limited to, browsing for a selection from a media repository, catalog, or library (e.g., as a part of, or in conjunction with, media catalog **566** described below), or via a peer-to-peer transfer.

Generally, the operation will begin with a list of one or more requested content items, the "media request list", which has an entry for each track, title, or in some cases, individual segment of a local track or title, chosen for play in the user-requested order. Segments are generally not released individually, but once a title is local, a play-list may have the option to sequence individual segments into a play session.

Once the media request list is established, the list is then populated in a process loop **504**. First, in step **506**, the program identifies the item and determines the location of the most conveniently accessible stored copy of it, either locally or over the network, relative to the processor **202** (FIG. **2**) running the program. The program accesses the item to verify its location and to extract any relevant internal data tags stored within or alongside it. As this step finishes, the program expands the item's entry in the media request list to include fields for its identification, verified location, and certain data tags containing information or access keys. This has the effect of turning the media request list into a table of data records, which for sake of continuity, retains the name "media request list" in the ongoing description.

In step **508**, the program determines the ad requirements called for by the item, by checking if any specially granted or restricted service levels apply on the content's use. If the distribution system does not provide for this determination, the player/browser may apply a "general license" that allows for free use of the item with the enforced intermittent insertion of paid ads into the content stream. Otherwise, the

player/browser employs these means to retrieve or compute any specifically applicable service level and access key parameters, which are then added to the item's entry in the media request list. Without loss of generality, this determination may occur through direct use of any tags obtained as described in step **506**, possibly in conjunction with a local, distributed, central, or other database.

To enforce security, a database that functions in this capacity employs data encryption and other digital rights management practices, to bar the consumer from any direct access to this information. When such a database is used, the running player/viewer is typically the only component of the consumer's system with the power to access it, thereby maintaining it under the distributor's exclusive control on all such systems.

In step **510**, the media item is transferred into local storage in accordance with a preset or predetermined localization policy. That is, if the item's verified location is too remote for direct playback, the program transfers the item to a more local destination and updates any pertinent data, such as the verified location, in the item's media request list entry. The media transfer logic has the option to re-register the item during the course of this transfer, which may further affect the item's media request list entry.

This finishes the processing of the item in loop **504**. In step **512**, the program returns to step **504** to process the next item through the loop. When the program has finished processing all the requested items, the loop exits, passing control to step **514**.

In step **514**, the program selects appropriate ads to go with the media request list and prepares them for insertion into the content play/view sequence. It selects which ads, if any, are to interrupt the requested content during the course of play, and then it localizes them. It groups the content into play sections, and it groups individual ads into blocks for insertion into the content. It also determines the rules and parameters by which step **518** adaptively selects and groups ads extemporaneously in response to user actions during playback, and provides an ongoing maintenance service to rotate ads into and out of play as needed during the course of the session. Given the nature of its operation, step **514**, and the logic it comprises, is referred to herein as the "ad manager".

In step **518**, the program plays (or for print content, displays) the requested media with ads, each of which can be forced to run in its entirety, interspliced into the content play sequence. Adhering to the selections of ad manager **514**, the program sets up a play sequence of individual content segments interspliced with blocks of ads, and it coordinates the real-time conveyance of the interspliced content/ad play sequence to the user in real-time, by way of the system's video display **206**, **222** (FIG. **2**) and audio output **208**, **224** (FIG. **2**) hardware. Given the nature of its operation, step **514**, and the logic it comprises, is referred to herein as the "intersplicer".

The program's behavior in step **518** is directly influenced by certain user interface commands that enable the user to make arbitrary navigational choices through the requested content's playback. The main job of the program in step **518** is to adaptively select and re-sequence ads extemporaneously in response to these user choices. In this process, the program maintains a history of the playback it has performed, which is a direct record of the user's navigational actions through the content and the program's own ad choice and sequencing decisions. While in step **518**, the program occasionally saves a persistent checkpoint of this play history, which it can recover later in the event of, for example, a system failure.

According to this particular embodiment of the invention, the program disallows user actions that alter the course of playback while a required advertisement is running. The logic for this behavior lies in step **518**, which keeps settings in memory to indicate the current state of play, including a value to indicate whether or not a required ad or ad block is in progress. Commands to alter play from the user interface are influenced by these settings, and in turn update them to modify playback (FIGS. **8**A-**8**D, **9**A-**9**C, **10**A, and **10**B). The program remains in step **518** until an appropriate user command or system maintenance action signals it to end.

In step **524**, the program compiles and saves the play history retained from step **518** into records on media usage and ad penetration, for each particular title and advertisement that ran during the course of the session. Media title usage records retain a detailed profile of the user's navigation throughout the content. Ad penetration records retain the number of times the ad was run, the track or segment associated with each run, the ad selection criteria behind each run, and other parameters. These records are saved to persistent storage, where they influence future ad management decisions and may eventually be sent back to the distributor to determine viewership ratings and for additional analysis/review.

Program control proceeds from step **524** to step **526**. In step **526**, processing of the user's request to play/view media ends, and the session is done.

Referring now to FIG. **5**B, there is shown a block diagram to illustrate how the logical components of the player/viewer operate together in carrying out the logic described with reference to FIG. **5**A. Where numbers coincide between FIG. **5**A and FIG. **5**B, the numbered component in FIG. **5**B carries out the corresponding logical step in FIG. **5**A.

The operation begins from operating system **550**, running on the consumer's computer **104** or other device. To use the player/viewer application **560**, the user interacts with the operating system **550** to either launch player/viewer **560** directly or to open a media file that brings about its launch with an immediate request to play media **502**.

As player/viewer **560** begins, it starts its user interface **500**, which either waits for the user to make a request **502** through it, or starts with request **502** initiated by operating system **550** to launch request **502** as soon as it brings up user interface **500**. Player/viewer **560** also launches a maintenance handler **570**, running concurrently with user interface **500**, to handle any internal maintenance that player/viewer **560** ordinarily runs during its course of operation.

The player/viewer **560** uses concurrent software design practices, and this description of the invention generally applies the term thread to indicate each conceptual program step or process operating in parallel by way of a software design practice that implements concurrency, even if the practice does not employ threads specifically. By way of concurrency, player/viewer **560** may have a number of requests **502** to play/view media running simultaneously, though as a rule only one of them has user focus at a time, and typically only one is visible at a time as well.

Maintenance handler **570** serves a variety of maintenance purposes. Aside from performing program maintenance itself, it may directly launch other immediate maintenance **572**, direct the operating system to run another program as a background maintenance process **574** that persists after the player/viewer **560** program has exited, or possibly direct the operating system to persistently schedule a regular mainte-

nance job **576**, a job which then starts automatically either at system startup or at some regular time, even when there is no running player/viewer. Maintenance handler **570** may also provide coordination services to other operations establishing maintenance tasks of their own, such as ad manager **514**.

One service that the player/viewer maintains is local database interface **562**. This database serves as the program's store of user information and preferences, which may include without limitation, local media locations and registration data, content and advertisement viewing history, security keys, availability and locations of local ads, and other system maintenance data. Most logical operations in the program access the local database **562** in some way. Specific connections to database **562** are not all shown explicitly, so as not to unnecessarily obscure the drawing. If it is designed to contain sensitive information, this database is maintained under strict distributor control, using digital rights management practices.

Local database **562** may be self-contained in persistent files on the consumer's device, or it may extend over network **100** to a remote central or distributed database **564**, which is controlled by the distributor **120** (FIG. **1**). Another remote service that the program may use is a central or distributed media catalog **566**, by which the player/viewer **560** may acquire information about any existing media titles or tracks, including but not limited to location, description, reviews, and available licensing options, among other things. The program may also use a service which employs a central or distributed protocol for media delivery, conceptually acting as a single media server **568**. Where present, services **564**, **566**, and **568** communicate with one another, and each one may consult either of the other services to handle a particular request.

The Network Administered Services Embodiment

According to the invention, there is a particular embodiment with additional features and different advantages, as supported through the apparatus and method of this invention as discussed up to now. The following discussion expands on the earlier discussion of these same steps in reference to FIG. **5**A, specifically in the context of this particular embodiment, which is called the "network administered services embodiment".

The network administered services embodiment uses local database **562**, working in part as a locally relevant mirror of central/distributed remote database **564**, which is administered centrally by one or more of the distributor's media distribution centers **122**, and secured under strict control of distributor **102**, in all consumer-accessible places, by means of digital rights management methods, according to the invention. Such data is also secured while in transit over network **100**, via a software-secured layer or other security mechanism.

The network administered services embodiment also provides a media catalog **566**, which may involve one or more media distribution centers **122** (FIG. **1**) acting as central servers, a peer to peer network of distributed media catalog servers **596** running on consumer systems, or some other configuration.

To deliver media to consumers, the network administered services embodiment provides both a centrally administered system with media distribution centers **122** (FIG. **1**) serving transfer requests from consumer client systems, and a peer-to-peer network of media exchange servers **594** running on consumer systems to provide a means for these systems to negotiate and conduct media transfer directly from one to another. This embodiment employs ordinary and new practices to optimize bandwidth utilization throughout its media delivery system, which is the apparatus providing media service **568** to player/viewer **560**.

Bearing these services in mind, there is shown an indication of the inter-operational communications that take place in the course of the logic discussed in FIG. **5**A. The beginning of a request to play media occurs at step **502**, and step **504** is a loop over each item in the media request list.

In step **506**, the program identifies a media content item on the basis of a unique universal identifier stored in any number of locations, including, but not limited to, local database **562** and/or the media file itself. The program then uses the identifier to locate the item by first going to local database **562**, and if not found, to media catalog **566**. It verifies that a requested content item is available, either locally or via the distribution network, through a test access in which data tags that may be present in local database **562** and/or the media file are extracted. If the user selected the item as a local file or archive, the program may get some or all of the information it needs directly from the file, as opposed to checking local database **562**, to determine the item's location. In any case, it makes sure the content is available at the specified location, and if it finds a problem, it may seek assistance from the user, perform an additional local search, or if possible, go directly to remote sources to locate a copy of the item.

In step **508**, service level determination goes first to data held in memory in the media request list, from step **506**, and then to local database **562**, which consults remote database **564** as needed. The distribution network maintains a full-fledged extranet for the purpose of media licensing, and the step of service level determination **508** becomes one of license verification in this embodiment. Each individual consumer gets a password-protected user account, and zero or more specific installations of the player/viewer software are registered to each user.

This embodiment provides for many user services administered via network **100**, including but not limited to those noted here. There may be user profile sharing, by which a user can access on a temporary basis, from a system or device other than their own, media that has previously been licensed to them. There may be multiple ratings systems provided, by which the consumer may choose to evaluate the quality and appropriateness of particular media based on any number of different criteria, including content ratings and critic and user reviews. There may be child accounts and media restriction controls, by which a primary account-holder can set up dependent accounts and limit the content viewable by dependent account-holders. In this instance, media may be restricted or allowed on any number of different criteria, including its level in any of the provided ratings systems, or by specific title or track.

Through user registration, this embodiment also provides for targeted advertising choices, conducted by the ad manager in the course of selecting ads, on the basis of user demographics, preferences, and other consumer specific criteria, on a session by session basis. This also applies to streaming audio and video, for which the intersplicer mechanism described below can allow for the user-targeted adaptive insertion of specific ads into a digital broadcast media stream at times signaled from the media stream. In this case the player/viewer software will run maintenance to localize appropriate ads for each streaming broadcast. In the absence of localized ads for a broadcast stream, the player/viewer may run a general ad that is broadcast with the stream.

The licensing/registration database is maintained centrally on the media distribution centers **122**, with local mirrors on each consumer system providing immediate and constant access to all of a specific user's licensing data. Individual media titles and tracks are licensed on a user-by-user basis, and digital rights management methods are employed to maintain the integrity of this system. When a consumer device is not connected to the network, the local database mirror contains enough information to run any content that the user has expressly licensed.

This license verification system offers and keeps track of a wide variety of service types, which ultimately affect the service level determination result. For instance, on a user-by-user basis, each title may be offered and licensed as free for use with commercial interruptions, free for use without commercial interruptions but with requested user support, included (with or without ads) as part of a specific subscription package, specifically purchased for uninterrupted use on a short-term basis (fixed time period or total number of uses), and/or purchased outright for permanent uninterrupted use. With such a system, the distributor maintains absolute control over what services are offered with each piece of media, and through it, the copyright-holder can choose to offer or withhold any of these service types on a title-by-title basis.

There are several other functions through which this license verification system offers the distributor **120** even more control. For instance, a media file can be tagged as "banned for redistribution," and the system will prohibit any user except the one to whom it is registered from being able to use it. In extreme cases, the system can enforce a "full recall" of any content that a copyright-holder has deemed to be on the system without their proper consent, and the system will automatically remove all copies of it from circulation.

Once an item's service level is determined, whether it be through full-fledged license verification or any simpler process, the player/viewer attaches the result to the item's entry in the media request list. In the event that the item has a service level that prohibits any use of it whatsoever, which occurs for example in the situation where a particular user has not made a special licensing arrangement and a free general license service type is not available for the item, the player/viewer will warn the user and possibly suggest any other options that may exist to enable its use. If none of these are offered or taken, then the item is removed from the request list.

Aside from either calling for ads or not, the service level may include one or more advertising requirement parameters, such as the relative ratio of content material to promotional material, the frequency of interruptions, or some other metric. It may also specify the removal of particular segments of the content from the play stream through one or more content-filtering parameters. The nature and count of these service level parameters is determined by the distinctions that the distributor chooses to provide. This completes step **508**.

In step **510**, the media item, if determined as valid from step **508**, is localized. Localization of media takes place through the operational logic of media transfer **580**. Player/viewer program operations that transfer media content to or from a consumer device's local storage go through this logic. The player/viewer transfers the content from the valid location determined in step **506**, by means of media transfer **580**, which acts through media server **568** to localize the media, using the most appropriate central server, peer-to-peer, or other network configuration provided by the distribution system.

In step **580**, during the course of media transfer, the player/browser **560** may elect to release the media from its secured form and then secure it again according to a new key, as it stores the item to a persistent local destination. This operation involves the secure/release logic component **582**, and it has the effect of re-registering the media to its new owner. The media transfer process also updates any tags that are stored with the content to reflect any registration aspects that may be maintained there, and changes to any security keying data are saved in the media request list, for eventual inclusion into local database **562**.

Step **512** goes to the next item in the request list until all of them have been processed, and control passes to the ad manager **514**.

Ad manager **514** first consults the information available to it in program memory in the media request list. Then, it goes to local database **562**, operating consistently with remote database **564**, when available, to apply its data on the specific user's demographic information, advertising preferences, system location, media usage, ad viewership history, and other criteria, in conjunction with general data on the title/track requested and the preferences of sponsors regarding the use of their ads, to determine a list of candidate ads.

Once the ad manager **514** has determined which ads it will select to go with the request, it goes through a locate and localize step for each ad, similar to those in steps **506** and **510**. The locate step first uses the media request list in memory and local database **562** in conjunction with other local resources, and then it may go to media catalog **566** to locate specific advertisements on the network. The localize step goes through media transfer **580**, to bring the ads onto the device.

Ad manager **514** also establishes a concurrent ad rotator **516**. The ad manager may start a new thread for this purpose, or it may communicate with maintenance **570** to assign it a new or already-existing ad rotator thread **516**. Either way, the ad rotator thread **516** gets associated with the thread of request **502**. As different request threads **502** are hidden or made visible via user interaction, maintenance **570** may re-assign an ad rotator **516** from one media request thread **502** to another, or different ad rotator threads may exist for multiple requests **502**.

Ad rotator **516** handles requests for new ads from an intersplicer **518** by selecting and localizing appropriate ads, grouping them into blocks if so requested, and sending the result back to requesting intersplicer **518**. The ad rotator **516** is equipped to handle requests to replace individual ads, entire ad blocks, or the entire set of ads and blocks associated with intersplicer **518**, without having to interrupt playback. Just like ad manager **514**, it may use the logic of the media transfer component **580** for this purpose. Ad rotator **516** may also need to consult media catalog **566** to locate new ads, but this step is typically avoided through the ad manager **514**, which pre-locates alternative ads and passes this information along to ad rotator **516**. Ad rotator **516** also synchronizes the final media request list with local database **562**.

Intersplicer **518** launches a new concurrent real-time player thread **520**, charged with the computationally demanding task of real-time play/view performance, and it directs real-time player **520** in the sequence and manner in which to run. Playback starts from an initial section sequence table indicating how content is to be intersplicd

with ads, and is modified in response to intersplicer control commands **522** that the user issues with actions from user interface **500**. The intersplicer maintains a history of all the playback it has instructed player **520** to perform, and it selects and re-sequences ads extemporaneously in response to the user's arbitrary navigational choices through the requested content playback.

Where intersplicer **518** sequences playback, real-time player **520** handles the playback of any arbitrary sequence of content sections and ad blocks that intersplicer **518** orders. In the process, step **520** maintains file descriptors, file pointers, and buffers. It secures its buffers, decodes compressed media, and releases for use any media content that has been secured through encryption, through the logic of secure/release **582**. All of this happens extemporaneously in the course of real-time playback. Intersplicer **518** communicates often with its associated real-time player **520**, to direct playback and follow what's playing. Intersplicer **518** also communicates with ad rotator **516** to request and receive new ads for its own adaptive local ad selection.

Intersplicer **518** finishes when either a user action or a timeout after program completion instructs it to end. In response to this instruction, it signals an end to real-time player **520** and ad rotator **516**. Upon this signal, real-time player **520** ends itself and ad rotator **516** either ends or releases itself from intersplicer **518** and continues running to attach later to another media play/view request **502**. In the meantime, ad rotator **516** may involve itself with ad localization or some other maintenance activity. Once the real-time player and ad rotator have removed themselves, intersplicer **518** ends.

Since intersplicer **518**, real-time player **520**, and secure/restore **582** are more time-sensitive than other components, the design of the player/viewer software generally has play request **502** conduct any necessary access of local database **562**, which may invoke remote database **564**, through other threads, while intersplicer **518**, player **520**, and secure/restore **582** are running in the request thread **502**. This is a design choice, and the invention applies just as well to other software designs that function according to the invention.

The media and ad usage monitor **524** compiles the play history data from intersplicer **518** and incorporates it into local database **562**, which ultimately synchronizes back to remote database **564**, or otherwise communicates it back to media distribution center **122** (FIG. **1**). This data is important, as it provides the basis for a sophisticated viewership ratings system, which the network administered services distributor **120** maintains as a direct or statistically-based compilation of media usage data gathered from every consumer **102** on the system, as well as providing ad penetration statistics for tracking the viewership of each ad, and a basis for future ad selection choices, delegated from remote database **564** in step **514**, the ad manager.

In addition to the basic media use request operation that begins in step **502**, there are several common maintenance tasks that occur regularly in the course of running the player/viewer software **560**. Regular management of program resources may be handled by maintenance handler **570**, or as a separate immediate maintenance thread **572**.

There are also distribution-related maintenance tasks, which may be managed on an ongoing basis, either as an immediate maintenance **572**, a maintenance process **574**, or a scheduled regular maintenance **576**. These may without limitation include ongoing ad localization **578**, database synchronization **590** between local database **562** and remote database **564**, any special media usage reporting **592** that is not included as part of regular database synchronization **590**, the provision of a media exchange server **594** to handle peer-to-peer and other direct consumer-to-consumer media transfer aspects of general media server **568**, the provision of a distributed media catalog server **596** to act as a component of media catalog **566**, and the enforcement of distributor media recalls, bans, and rotations **598** as described above with license verification in step **508**.

Detailed Operation of the Invention

Referring now to FIGS. **6**A and **6**B, there is shown in FIG. **6**A a more detailed flowchart of the operation of step **514**, the ad manager. In FIG. **6**B, there is a block diagram that indicates the data stored in memory and exchanged in association with the logic of steps **514** and **516**.

Referring now to FIG. **6**A, there is shown a flowchart illustrating in more detail the method by which the ad manager, step **514** (FIG. **5**A), operates according to this particular embodiment of the invention. The ad manager begins in step **600** with a media request list **650** already stored in memory. In step **602**, it enters a loop to process each item in media request list **650**, one at a time. This processing proceeds to step **604**, where the ad manager determines an optimum amount of advertising time required by the item, based on information saved earlier in the media request list **650**. The resulting ad requirement is an arbitrary function that can depend on, without limitation, one or more of the following: the item's running time; the number of segments it contains; and/or its advertising requirement parameters, determined with its service level in step **508**.

In step **606**, the ad manager produces a list of candidate ads specifically tailored to the media track/title in question. This candidate ad list may derive directly from data and/or advertisements embedded with the content in a file or archive, or it may be the result of a query to a local or remote distributor's database. Generally speaking, the resulting list will be a function of the specific media title, its parameters from media request list **650**, available data on the user's previous advertising and media usage history, recent ad localizer maintenance downloads, user preference settings that may be in effect on the player/viewer, user advertising preferences, and relevant user demographic information.

Except when the result of step **604** is zero by way of a privileged license, the resulting list contains at least one ad, and it will include enough advertising to cover some multiple of the item's optimum ad time determined above, with the multiple ranging from at least one to at most one hundred. Associated with each ad in the list are a number of attached parameters and weighting coefficients that specify each ad's relative appropriateness to the particular content item in question, with separate coefficients to cover multiple selection criteria, possibly including, but not limited to, the specific title/track of the item, the item's genre, demographic information about the user, and/or the geographic location of the system or device running the player/viewer. Other returned parameters may include ad running time, an overall ad preference rating, the type of product being advertised, some preferential ad block positioning, or other relevant usage rules associated with the ad. The ad manager uses these parameters in step **616**, described further below.

Block positioning and other rules may be quite specific. For instance, there may be rules instructing a particular ad to be played in the block associated with a specific segment of a title, at a specific position within a block, or tied to another ad, such as two ads linked either at the beginning and end of a block, or in separate blocks that run after successive segments in a title.

In step **608**, the ad manager weights this candidate ad list by the ad time determined in step **604**, to scale its influence on the ultimate choice of ads by the amount of required ad play time it contributes to the entire session. In step **610**, this list is merged into the ad manager's internal ad table, which maintains each advertisement's parameters, preference ratings, and time weightings, on an item-by-item basis, as it combines ads that are common to multiple items. In step **612**, the result from step **604** is added to a count of total ad time for the entire media request, to serve later in choosing the size of the master ad table. The loop then returns in step **614** to process the next item in media request list **650**.

After loop **602** is finished, the ad manager goes to step **616**, in which it processes the internal ad table into a preliminary master ad table **670**. Using the total resulting length of required ad time from step **612**, it selects enough ads from the internal table to have a running time greater than or equal to this result, giving preference according to the weighted sum total, determined for each ad in the table, of the metrics determined above. Then, it processes its internal table to yield a set of ad preference tables **676**, which have been inverted to map ad selection criteria to a ranked list of candidate ads taken from those in the master ad table. This inversion allows the weighting coefficients and preference ratings, which are indexed by ad in the internal table, to be indexed by title, genre, demographic, or other selection criterion in each of the ad preference tables. The intersplicer uses these tables later to perform adaptive ad selection and sequencing in response to user actions.

After computing the preliminary master ad table **670**, step **616** removes all the ads so chosen from its internal table, and maintains the result as an alternate ad table **660**, which provides specific ad indications and selection criteria to make substitutions into the master ad table **670** as needed. When this is done, the ad manager proceeds to step **618**, which loops through the master ad table, one ad at a time. In the loop, step **620** locates and localizes each ad.

In step **620**, the ad manager determines the nearest location of the ad in question and verifies its presence there, potentially through the use of remote media catalog **566** (FIG. **5**B). Once it locates the necessary ad, it may elect to transfer the ad to local storage if such an operation will complete in a reasonable amount of time, or it may elect to replace this particular item in master ad table **670** with a more accessible one from alternate ad table **660**. Should this happen, it removes the replacement ad from alternate ad table **660** and merges the ad's selection criteria into ad preference tables **674**. Once the ad has been either localized or replaced, the loop returns for the next ad in step **622**.

Loop **618** terminates when every ad in the final master ad table **670**, after any replacements have occurred, is present in a nearby location, either on local storage, or somewhere else where the available speed of access is determined to be fast enough for real-time play. If there is no way to localize enough advertisements to fulfill the requirements of master ad table **670**, the player/viewer notifies the user of the situation and suggests connecting to the network or other appropriate alternative. If after this attempt, the estimated amount of time required to transfer the ads is prohibitive, the player/viewer notifies the user of the delay with a prompt to await transfer, continue now, or abort playback. If there is still no means available for transfer, or the user has chosen to continue now, and there aren't enough advertisements on the system to support the requested media, the player/viewer will offer to abort the request or play only a limited portion of it.

In step **624**, the ad manager checks for media titles that contain segments, and builds a section table **674** of all individual segments and tracks comprising the content of the request, in preparation for the insertion of ad blocks at arbitrary points in the list. In this step, data from the media request list, such as title identification, access keys, file location, endpoint times, and genre of title, may be included with each entry in the section table **674**. The main purpose of segments in a media track or title is to indicate appropriate points for commercial interruptions, and the ad manager has the power to decide which segments are run back-to-back, and which ones are to have ad blocks inserted after them. In many cases, every single segment in a track or title gets an ad block. In segmented items, the section groupings and ad insertion points set here are not altered by the intersplicer.

In step **626**, the ad manager builds and sequences ad blocks into the requested content, according to the rules it has from various content, database, and ad sources. To do this, it first estimates the desired average ad block running time, possibly through the application of ad requirement parameters from the media request list, and the total running time of the content. From these results, it computes a desired average time between interruptions. It then uses section table **674** in conjunction with any ad requirement parameters from the media request list **650**, which may call for the lengthening or shortening of ad block duration or interruption frequency associated with specific content segments, to build a preliminary list of ad blocks and sequence them into appropriate points in the section table, attempting to match the desired parameters as optimally as possible.

Next, it assembles ads from the master ad table into a set of blocks that optimally match the preliminary block times, possibly in consultation with a local or remote database to provide additional usage history and system data to aid in this process. For instance, when the user quits a request session during the play of a required ad, the system keeps track of this through the usage monitor **524** (FIG. **5**B), and it may at this point in the logic set up an ad or ad block to run at the very beginning of a session. With these complete, the section table **674** and ad block table **672** are finalized.

Step **626** concludes with a determination of ad preference parameters **678** for track media. These parameters are computed from the ad requirement and other parameters described above. They may include a track allowance, for adaptive ad scheduling on the basis of allowed tracks, and a preference weighting, to apply to track allowance scheduling against time allotment scheduling. Other ad preference parameters may include relative weightings for title based, genre based, demographic based, location based, and/or other bases for ad selection that are provided in the ad preference tables.

Next, in step **628**, the ad manager either launches a new thread or requests the maintenance handler to issue it an already existing maintenance thread. Either way, a concurrent ad rotator **516** is associated with the main request thread of ad manager **514**. In the course of establishing ad rotator **516**, ad manager **514** passes its alternate ad table **660** and media request list **650** to ad rotator **516**, which retains them to handle requests for new ads. The first action taken by ad rotator **516** is to synchronize local database **562** with any updated information found in media request list **650**, which may include file locations and security keys, among other things. After ad rotator **516** has modified local database **562**, it waits for new ad requests from the intersplicer **518**, handling them accordingly. Ad rotator **516** may also take it upon itself to act as an ongoing ad localizer, transferring new ad content to the local system to keep a steady supply of ads

available for use. In this manner, future media play requests **502** can avoid the delays associated with ad transfer. Upon establishing ad rotator **516**, ad manager **514** receives an ad rotator reference through which the play/view request **502** thread can continue to communicate with it.

In step **630**, the ad manager ends, and the request that called it passes control on to intersplicer **518**. The ad manager passes its master ad table **670**, ad block table **672**, content play section table **674**, adaptive preference rules, which include ad preference tables **676** and ad preference parameters **678**, and the ad rotator reference **680**, to the intersplicer **518** (FIG. **5**A), which retains them for its own use.

Referring now to FIGS. **7**A and **7**B, there is shown in FIG. **7**A a more detailed flowchart of the operation of step **518**, the intersplicer. In FIG. **7**B, there is a block diagram that indicates the data stored in memory and exchanged in association with the logic of steps **518**, **520**, and **516**.

Referring now to FIG. **7**A, there is shown a flowchart illustrating in detail an example of one particular method of the operation of the intersplicer. The intersplicer begins in step **700**, where it receives in memory a master ad table **670**, an ad block table **672**, a content section table **674**, ad preference tables **676**, ad preference parameters **678**, and ad rotator reference **680**.

Master ad table **670** contains location and other data about every ad that has been selected to run with the session. Ad block table **672** contains a series of ad blocks, each of which is a series of references to individual ads in master ad table **670**. Section table **674** is a list of content sections with indications for any pre-programmed ad breaks, and information about the location of each media section, along with start and end time offsets. Ad preference tables **676** and parameters **678** are rules by which the intersplicer can perform adaptive ad selection and sequencing extemporaneously, determining and running new ad combinations in response to user navigation actions throughout the session. Ad rotator reference **680** is the point of communication for intersplicer **518** to contact ad rotator **516** to request ad rotation and other services from it.

In step **702**, the intersplicer uses the content section table, master ad table, and block list table to build a raw section sequence table **780** of ordered sections. These sections may possibly include indicator flags through which the running real-time player **520** may identify the boundaries between content and required ads, or the program may rely on the intersplicer to check the player settings on a regular basis and determine on its own when required ads are in progress. The section sequence serves as a map from a time point in the overall sequenced session to a time point in a particular content or ad item, along with the identity of that item.

Next, in step **704**, the intersplicer **518** initializes a set of player settings **782**, which directly control how playback proceeds. It initializes player settings **782** for standard play starting at the beginning of the sequence determined in step **702**, and it prepares all data pertaining to the play section sequence **780** and the player settings **782** for shared use with real-time player **520**. Without limitation, player settings **782** may include the media mode (audio, video, or print), direction of play, play rate, video frame rate, audio sampling rate, sound volume, current media frame/location, redraw mode (update, no update, or black), and next media switch.

In step **706**, intersplicer **518** launches real-time player **520** as a concurrent thread, maintaining the means to exchange section sequencing **780** and player settings **782** back and forth between itself and real-time player **520**. After step **706**, the real-time media player **520** runs on its own and communicates back and forth with intersplicer **518**, either through a block of common memory, a system of message passing, or any other appropriate means. Real-time player **520** runs whatever media is in its section sequence **780**, according to its player settings **782**, and all alterations in playback arrive to the player as data exchanged from intersplicer **518**. Furthermore, real-time player **520** signals back to intersplicer **518** whenever it starts or finishes playing an advertisement block.

The real-time player is responsible for physically running the media content in context of the player/viewer, and running ads wherever the intersplicer has sequenced them into the material, as well as releasing for use any media content that has been secured through encryption, through the logic of secure/release **582**.

The real-time player **520**, monitors the section sequence table at regular intervals to adjust the way it buffers media content from local storage to memory, prepares to open and close files, and selects which specific timing and sequence of frames and/or audio samples to extract from storage and display/play. These operations occur in conjunction with a real-time clock or other interrupt signal that is employed to enhance communication with the audio and graphics hardware, to provide the smoothest and most pleasing display appearance and/or audio possible.

In step **708**, the intersplicer communicates with the real-time player for the purposes noted above. When the intersplicer detects the start of an ad block, it checks to see if the ad block is required. When an ad block is required, the player/viewer disables playback-altering functionality that the user could apply to circumvent the running of these advertisements in their entirety. That is, any user command to alter the rate of play or skip in the forward direction is disabled, along with muting or reducing the sound volume beneath a certain minimum threshold. Initially, each ad and ad block is required, but once an individual ad and its current ad block have played completely through, the logic of the player/viewer may indicate that enforced regular-speed play is no longer necessary for the particular ad or ad block in question. When an ad or ad block is not required, it may be handled in the same way as part of the content, or skipped entirely.

The player/viewer maintains a persistent memory of each ad block and ad in the master list. However, track allowance based ad blocks are assembled extemporaneously by the intersplicer in response to the number of tracks or pages that the user has received, possibly operating in conjunction with some sense of timing based on the clock. Typically, these blocks are new every time, and only certain ads within them may be skipped, if skipping in this instance is to be allowed all.

In step **710**, the intersplicer takes special actions if it detects that a required ad section is starting or ending. At the start of a required ad section, a copy of the current player settings is saved, and the parameters are set to regular speed play at a volume no less than a particular threshold level. Also, if user-interface functionality is to be disabled directly during required ad play, this takes place here. There is logic provided through intersplicer control commands **522** to handle the enforced viewing of ads according to the invention without resorting to disabling controls at the interface level, but the option exists to do so instead or in addition. If user interface controls are not disabled directly, they can check the current ad state of the intersplicer through a special intersplicer command and use this result in their own operations. If step **710** detects the finish of a required ad block, it will restore the player settings that were saved as

the required ad block was entered, subject to any intersplicer control commands **522** that may have altered the saved settings.

In step **712**, the intersplicer performs any necessary adaptive ad selection. If an unsegmented title or track is currently in progress, the adaptive logic keeps track of the number of tracks played, and the time passed since the last ad ended. Depending on values in the ad selection parameters, the intersplicer will apply some combination of track count-based and elapsed time-based logic (or any other desirable criteria) to decide when to call for a commercial break. When it decides to insert a break, it uses the data in the ad preference parameters **678** and the ad preference tables **676** to select individual ads from the master ad table **670** to put into the block, and orders them in the way that best fits the preference parameters of all the ads in the block.

In step **714**, the intersplicer consults the local data it is keeping in memory on ad usage, in conjunction with any special messages it may have received from the adaptive ad selector about having trouble finding ads. If it finds one or more ads and or blocks that have either shown too many times or been held in the list for too long a period of time, it makes a maintenance request for local ad rotation. The intersplicer contacts its ad rotator and sends it a list of ads and ad blocks in any combination, which are to be replaced, or it may request an entire new set of ads to replace all the current ones.

The ad rotator may choose to consult the alternate ad table or run the equivalent of a whole new ad manager session to replace the ads and/or ad blocks requested by the intersplicer. When it has finished it's task, it informs the intersplicer that new ads are ready, and the intersplicer **518** receives the result and swaps the new ads/ad blocks in place of the old ones when it finds an appropriate time, keeping usage data from the old ads to be used later to compute ad penetration.

As the user arbitrarily controls the playback, intersplicer **518** keeps an account of its entire user-directed play history, including which ad blocks have been seen, the number of times each individual ad has run, and the ad selection criteria behind each of these runs. In response to this history, the intersplicer dynamically selects ads from its available pool to group into new blocks and sequences them into the playback at appropriate points. In this way, the ads run are customized to the consumer's actual use of the content.

In step **718**, the intersplicer may elect to checkpoint any data it is maintaining about the media and ads that have played in order to compile usage records, and to maintain an in-process snapshot of this information to be recovered in the event of a system failure.

The ability of the player/viewer software to adaptively select, sequence, and re-sequence ads that are shown on the basis of user navigation through a self-selected series of media content is a novel feature for media players, and it is also novel in the field of media distribution, in that software running on a consumer system is presenting same-media style ads that are sequenced on the basis of the user's particular choices of content and playback. Also novel is the on-demand selection of appropriate ads from a greater repository, performed by software running centrally or on a consumer's machine, to custom-select and assemble the ads shown on the basis of the consumer's choice of content, as well as demographic and other consumer information on file.

In step **720**, the intersplicer checks to see if any user action or system timeout has requested to close the session, and if not, it loops back to step **708** to continue processing user, player, and ad rotator interactions. In the event a session close has been indicated, control passes to step **722**, which signals the playback session to end. This signal causes the real-time player **520** to stop and close itself out, a process in which it closes open files, cleans out its buffers, and ends. Once it has closed real-time player **520**, the intersplicer releases ad rotator **516** and cleans up after itself, finishing step **722** and moving on to its end, in step **724**.

In step **708**, the intersplicer communicates with the real-time player to maintain certain playback parameters, which affect the control of playback. The player/viewer maintains a sense of the currently active intersplicer in the course of managing its GUI frames and panels. When a user takes any action on a graphical object in the play control area of the interface, the user interface **500** calls one or more appropriate intersplicer control command methods **522** belonging to the focused intersplicer.

These intersplicer control methods **522** alter certain player settings in memory, causing the real-time player **520** to alter playback upon discovering the change.

User commands that communicate with the intersplicer in this manner include the common playback controls of play, stop, pause/continue, reverse, rewind, fast-forward, slow-motion, track advance, frame-by-frame advance, go direct to point or page in sequence, and shuttle knob. They also include any sound controls, such as volume and mute, and for print media, the display control operations of forward and backward page turns and chapter advances and returns.

According to the invention, the real-time player **520** deciphers media files as it runs through the logic of secure/release **582**, playing or showing content directly to the user through volatile sound and display devices, and managing any needed buffers in the process. Where non-volatile memory or other storage is used for buffering of copyrighted content during the course of playback, provisions available to the computer system to limit access to these areas from outside the program may be employed, and the intersplicer may include in its clean-up tasks the job of explicitly writing over any areas that contain unencrypted content. In addition, the intersplicer may use a rough encryption algorithm on these buffer areas to further hide them from the user.

The intersplicer handles user generated requests to alter the speed of playback or skip around throughout the requested material. It keeps track of all the particular segments of the content and advertisements that have run through its play history, including a count of the number of times for each of them. As any single ad or block of ads is presented multiple times throughout the course of the session, the intersplicer may call for new ads and/or ad blocks as it deems they are needed, and a maintenance process will see to it that the requested ads are replaced. When the user or the player/viewer application signals that the requested session is ready to close, the intersplicer closes out playback and passes its raw data on media use and ad penetration along to step **524**, the usage monitor.

Other than the controls to navigate through audio/video playback and print viewing, there are also intersplicer methods to handle user interface manipulation on the part of the user. As multiple requests to play/view **502** are running concurrently, there are actions that close a running request, those that hide an individual play/view presentation, and others that restore the view of a hidden presentation.

FIGS. **8**A-**8**D, **9**A-**9**C, **10**A, and **10**B are flowcharts to illustrate the operation of the primary intersplicer control commands **522** (FIGS. **5**A, **7**A). These operations are the essential elements of the user controls listed above, and one of many important novelties of the invention is its ability to

ensure the viewing of promotional ad material when the service level calls for it, whether through these controls or by some other approach. As these commands alter the course of play, they are also responsible for gathering user play history data, effectively keeping track of the user's entire navigation history throughout the material, as shown in the following figures. The commands illustrated in these figures are those that pertain to the operation of the intersplicer. The user actions which invoke these commands may involve additional operations not shown, to manage other appearance and behavior aspects of the user interface.

Referring now to FIG. **8**A, there is shown a flowchart depicting an intersplicer control command to stop or pause playback, beginning at step **800**. In step **802**, it issues an intersplicer player setting to signal the player to halt. In step **804**, it makes a decision based upon whether the initiating user action is a "stop" or a "pause". In the event of a "stop", step **806** issues a player setting to put up a black screen, rather than to display the current frame. In the event of a "pause", control skips past step **806**, directly to the end **808** of the command.

Referring now to FIB. **8**B, there is shown a flowchart illustrating the operation of an intersplicer control method to play forward at regular speed, beginning at step **820**. The player setting for "current frame" reflects the print page or video frame (for video content or audio content with corresponding visual feedback) at the point in the media sequence being presented, along with any audio sample corresponding to the start of the frame. The current frame changes in response to playback progression and user navigation through the content.

In step **822**, the method checks on the condition of the screen to see if it is black. If the screen is not black, control proceeds directly to step **828**. Otherwise, control proceeds to step **824**. In step **824**, the intersplicer checks to see if any ads are immediately necessary as a result of user navigation taken while the screen was black, and waits for the intersplicer to run any such ads in their entirety, before passing control to step **826**. In step **826**, the method redraws the current frame and passes control to step **828**.

In step **828**, the method checks if there is a current session play history for the content. If there is no existing play history, step **830** starts play history tracking by marking the current playback point as the start point, before passing control to step **832**. Otherwise, there is no need to start a new instance of play history, and control proceeds directly to step **832**, which signals the intersplicer to resume play at normal speed. The method ends at step **834**.

Referring now to FIG. **8**C, there is shown a flowchart illustrating the operation of an intersplicer control command method for general navigation throughout the requested content. This includes backing up at a regular, reduced, or accelerated speed, fast-forward play, skipping forward or backward to a fixed point, slow motion or frame advance, and general skipping around by dragging along a time bar.

In step **862**, the method checks to see if a required ad is currently in progress. If the answer is yes, step **864** checks to see if the requested operation is a backward skip, and exits the method immediately if it isn't. If it is a backward skip in a commercial segment, control passes to step **868**, which halts play, and then to **870**, which moves the current frame back to the beginning of the current ad or advertisement block. When a required ad is playing, no skipping prior to this point is permitted. Step **872** redraws the current frame at this point, using the method illustrated in FIG. **8**B, and once playback is resumed, the method ends in step **874**.

At step **862**, if no ad is in progress, or the ad and ad block in progress are already tagged as having been viewed at least once, control proceeds to step **876**, which halts playback. Next, step **878** updates the play history currently in progress with the initiated navigation and continues tracking. Step **880** is a decision based on whether the operation that called the method is one to alter the play speed, or to skip around. In the event of a speed alteration, control passes to step **882**, signaling the intersplicer to run the player at a new forward or backward speed. In the event of a skip, control passes to step **884**, which moves the current play position to a new point and signals the intersplicer to redraw the screen with the frame for the new position. After step **882** or **884**, the method ends in step **886**. If playback is to resume after a skip action, the action calls the method shown in FIG. **8**D at this point. In either case, if the user is dragging along a time bar, playback doesn't resume until the drag is released.

In FIG. **8**D, there is shown a flowchart to illustrate the operation of the intersplicer control command to resume play upon release of an interactive skip operation. The command begins in step **890**. In step **891**, the program checks to see if a required ad is already in progress. If the answer is yes, then control proceeds to step **893**, which resumes playback at regular speed, using the method depicted in FIG. **8**B. After resuming playback, the method ends in step **898**. If the answer is no, then control passes to step **892**, where the intersplicer checks to see if any ads are immediately necessary as a result of the user's jump to the new current position, and waits for the intersplicer to run any such ads in their entirety, before passing control to step **894**. In step **894**, the program updates the play history with the starting point of the new play location. Next, step **896** signals the intersplicer to resume play at the current speed setting, and the command ends in step **898**.

Referring now to FIG. **9**A, there is shown a flowchart illustrating the operation of an intersplicer control command to close out the media request session. The command begins in step **900**. In step **902**, it instructs the intersplicer to halt play if it is in progress. In step **904**, it checks to see if play history tracking is in progress. If it is, then the command goes to step **906**, which ends the current play history and passes control to step **908**. If not, control proceeds directly to step **908**. In step **908**, the command instructs the intersplicer to close out its session the next time it reaches its decision step **720** (FIG. **7**A).

Referring now to FIG. **9**B, there is shown a flowchart illustrating the operation of an intersplicer control command to hide the view of a running intersplicer's panel or window. The command begins in step **920**. In step **922**, it instructs the intersplicer to signal its associated real-time player to turn off the redrawing of running media, allowing the player to free up resources as it sees fit. Step **924** ensures that audio content will continue to play if the media is not halted, and it may involve signaling higher level audio control software to mix this audio with that of other active intersplicer sessions. Step **926** indicates to the intersplicer that the player is "hidden", for sake of tracking media use and ad penetration. That is, play history accounting of content or advertising that plays while the intersplicer is hidden will take into account the fact that any visual aspect of the content or ad was hidden at the time. This accounting applies to video and print content or ads, because their visuals are not seen, and to the audio portion of any content or ad in the special case where another session's audio is mixed into the stream while the content or ad is playing. In the case of hiding the panel or window of audio-only content to use some other silent

visual media, hidden accounting of content or ad play history may not take effect. Step **928** is the end of the command.

Referring now to FIG. **9**C, there is shown a flowchart illustrating the operation of an intersplicer command to restore the view of a hidden intersplicer's panel or window. The command begins in step **940**. In step **942**, the command prompts the intersplicer to resume display activity through its associated real-time player, giving the player a chance to ready any buffers and other resources it needs to reestablish visible play. Once the player is prepared to proceed, control passes to step **944**, which signals the player to resume redraw of visual content. The command ends in step **946**.

Referring now to FIG. **10**A, there is shown a flowchart illustrating the operation of an intersplicer command to change or mute the playback volume. According to the invention, volume and mute controls behave as they would in an ordinary media player, except during the presentation of required ads. In that circumstance, the player/viewer has a minimum threshold, and the sound volume is required to be at or above this level.

The method begins in step **1000**. In step **1002**, the method saves the new volume level value as the volume to be applied after completing required ads. In step **1004**, it checks to see if a required ad is currently in progress. If the answer is yes, step **1006** checks the new volume level against the minimum threshold volume for required ads. If the new volume level is at or beneath this level during required ad play, step **1008** signals the player to change the volume to the threshold level. If the requested volume is above the threshold, or if required ads aren't in progress, control proceeds to step **1010**, which changes the player volume to the new level. In either case, control proceeds after step **1008** or **1010** to step **1012**, the end of the method.

Referring now to FIG. **10**B, there is shown a flowchart illustrating the operation of an intersplicer command to turn the page. This command is used in the course of viewing print media, where the user is offered buttons to page forward or page backwards. Print media also offers controls to skip to the beginning or end of the current chapter (which may take any of the same form as book chapters, newspaper sections, magazine features, or other editorial divisions), or to any specific point in the content. For these operations, the method of FIG. **8**C is employed, where each page can be thought of as a "frame" in the viewer, and chapters are equivalent to segments for the purpose of determining ad requirements.

However, most user interaction with print media is on a page-by-page (frame-by-frame) basis, and individual page turns may signal the insertion of one or more required ads. The intersplicer command for turning the page begins with step **1020**. In step **1022**, the method checks to see if a required ad involving any visual content is already in progress. If the answer is yes, control proceeds to step **1024**, which signals the forward or backward page turn logic associated with the current ad, after which the method ends in step **1026**, thereby prohibiting the user from paging out of a required visual ad while it is in progress. If the particular ad logic is equipped for user-requested page turns within the ad, it will handle the signal from step **1024** accordingly.

If the answer to step **1022** is no, control proceeds to step **1028**, which tests whether the page turn is in the forward or backward direction. If the direction is forward, step **1030** sets the update page to be the page after the current page. If it's backward, step **1032** sets the update page to be the page before the current page. Either way, control after that proceeds to step **1034**.

Step **1034** is a test to see if the page turn request crosses a chapter boundary in the print media. If the answer is yes, control proceeds to step **1036**, which checks to see if any ads are to be shown at the specific chapter boundary in question. If the answer is yes, control proceeds to step **1038**, which resets the page counter before passing control to step **1040**. Step **1040** runs or queues the appropriate ad or block of ads, and, as with all ads, the intersplicer maintains the means to determine if such ads are required to run in their entirety, or if the user is allowed to skip through them.

Step **1040** typically starts running the new ads immediately. However, if a previous audio-only ad is still in progress at the time, step **1040** queues the new ad segment for play immediately following the completion of the playing ad. If the new ad segment is not required, step **1040** may elect to forego it for sake of user convenience, rather than putting it in the queue. If it queues up any visual advertising material, step **1040** may display a special purpose, single-page silent ad to accompany the audio-only ad that is still in progress, which may be generic in nature or tied to the current ad in some material way.

Once step **1040** has set into motion or queued the new advertising, step **1042** decides whether the currently playing ad has any visual content. If the answer is yes, the method ends at step **1044**. Otherwise, control proceeds to step **1048**, which updates the displayed page, and then to step **1050**, which tests to see if it is valid to increment the page counter. The purpose of this is to allow assorted rules of use to page allowance. One such use would be to increment in all cases, whether the page turn is forward or backward. Alternatively, only forward page turns may increment the counter, or the counter may increment only when turning to a page that hasn't been viewed within the last few minutes. Whichever method is chosen, a test for it is performed in step **1050**. If the test passes, control proceeds to step **1052**, in which the method increments the counter before ending in step **1054**. If it fails, the method goes directly to its end at step **1054**.

If the answer to either step **1034** or **1036** is no, control passes to step **1046**, which is a decision based on the value of the page counter. If the page count has reached or exceeded the allowance for page turns between ad segments, control goes back to step **1038** and then to **1040**, resetting the page counter and calling for ads. Allowance-based ads are typically required when they arise, as opposed to chapter break ads which are generally required just the first time around. It is also generally true that allowance based ads rotate more often than chapter break ads, which maintain some sense of "particular ads at a particular place" in the media time line. In step **1042**, the method will decide to end if the currently playing ad is visual in nature. If the ad is audio-only, control proceeds to step **1048**, updates the displayed content page, and then to step **1050**, which tests to see if the page counter is to be incremented. If the answer is yes, step **1052** increments this count before passing control to step **1054**. Otherwise, control passes directly to step **1054**, the end of the command.

Whenever a visual ad or block of ads finish, the update page is the page that is viewed next in the paging direction. It is also possible to have blocks of text content and visual ads interspersed on the same "page", much in the same way that content may appear interspersed with advertising on a traditional newspaper page. In this case, the intersplicer treats the assembly of content and advertising as a visual ad, and the ad provides logic to handle all of its associated parts, through the mechanism of step **1024** above, possibly operating in conjunction with user interface event handlers that work directly with the logic of such print ads.

Through the operation described above, the invention behaves as described, providing a novel apparatus that implements the method of a particular business model. That model is the sponsorship of media content, made available to the public for free, through the use of paid commercial interruptions. The use of this business model adds value to the distributor and copyright holder by creating a market for advertising time via the distribution system, and it adds value to the consumer, who gains the ability to request any available desired content on demand and use it for free. The wider the consumer audience that uses and redistributes content to be used in this fashion, the greater the benefit to the distributor and copyright holder.

By implementing this business model, the apparatus and method of the present invention are a new use of digital rights management technologies, one that is a clear improvement over their ordinary practice of either granting or denying use of material altogether. The invention pertains to any digital media distribution or rights management system that employs application software, running on a multitude of consumer devices, to enforce the insertion of ads into the media content presentation stream at time of use as described above, where these ads are selected and their sequence determined by the software on the consumer device. In a particular embodiment with additional functionality, ad selection at the consumer device level is supplemented through ad selection from a central database, either as a means to determine candidate ads, or as a distributor-supplied fill-in for broadcast streams, to provide an option to consumer device level ad sequencing when user specific ads aren't available in time to go with the stream.

Referring now to FIG. **11**A, there is shown a schematic diagram indicating exchanges between individual consumers **102**, the media distributor **120**, and one or more copyright-holders **1110**, as they commonly occur on digital networks without the method and apparatus of the present invention.

Individual consumers **102** receive media content though direct purchase or ongoing subscription to an online service offered by a distributor **120**. Whether this happens by transfer over a digital network **100**, or physical conveyance of removable media, the content is transferred directly to a particular consumer in exchange for a one-time charge or regular periodic payment. The distributor **120** has an agreement with the copyright holders **1110** to pay them a certain royalty based on use of their material, and the distributor **120** pays this out of the money received from the consumers **102**.

Ordinarily, when individual consumers **102** have the ability to openly copy and redistribute media content over a network **100**, this arrangement breaks down. Under this circumstance, certain consumers can get content directly from one or more other consumers, thereby bypassing the legitimate distribution chain and using the media without paying for it.

The distributor **120** may employ existing digital rights management methods to curtail this type of exchange, but only to a certain extent. There is generally some way for an unscrupulous consumer to get around the system and redistribute the media property, even if it means having to go through an intermediate analog or other step. Furthermore, there is a strong market force to support such piracy, because of the economic nature of media content as a good. It is believed that the majority of consumers who refrain from purchasing media content do so more out of pricing concerns than out of lack of interest in the product. This implies that there is a huge market for pirated media content, given the vast number of consumers who would use more media if the price were lowered.

Referring now to FIG. **11**B, there is shown a traditional broadcast model for media distribution. A broadcaster **1120** pays to license the use of content material from the copyright holder **1110**, and sends it out for free over the airwaves, through cable lines, or through some other means to the widest possible audience of consumers **102**. The broadcaster **1120** profits from this practice by inserting paid advertisements into the content stream, which the consumers **102** are ordinarily exposed to along with the content because of the real-time nature of their receiving devices. One or more sponsors **1130** pay the broadcaster to run their ads, in exchange for the audience viewership that these ads receive. A sponsor **1130** makes money from an individual consumer **102** when the consumer purchases the sponsor's product as a result of seeing or hearing an ad for it.

Radio and television broadcasting have conventionally employed such a model, and as the system matured, the value of a viewership ratings system **1150** became apparent. Through statistically based estimates on programming viewership, broadcasters and sponsors get a better sense of the value of their ad time.

This system supports the free distribution of media content to the widest possible audience. The more consumers **102** who are exposed to content sequenced with ads, the greater the value sponsor **1130** and broadcaster **1120** derive from it. If a consumer **102** records broadcast material and redistributes it to other consumers digitally over a network, without removing the ads, there is still value to be had, if only the viewer rating system **1150** had a way of measuring such use and including it into its statistics. Ordinary methods of viewer ratings measurement are not equipped to handle this type of redistribution.

With conventional broadcasting systems, there is little to be gained even if this redistribution were measured, because of the ease with which consumer technology can edit out the paid advertisements from a recorded broadcast. That is, for a consumer who is going through the effort of redistributing broadcast material, it requires very little extra effort to remove the commercials from the content, thereby circumventing the system entirely.

Referring now to FIG. **11**C, there is shown a schematic diagram for media distribution according to the invention. In this case, we have a distributor **120** who distributes media to individual consumers **102** by the same direct transfer methods described with FIG. **11**A, one method of which is transfer over a digital network **100**.

However, by the apparatus of the invention, in particular the player/viewer software which individual consumers use to playback their content, a method is put in place to insert advertisements targeted by user demographic information, device location, user self-selected preferences, or some other criteria, into every media presentation that is produced for a consumer who chooses to use the content for free under a general license. By way of this novel apparatus, the invention creates a new use for the traditional broadcaster's business model, depicted in FIG. **11**B.

By virtue of this business model, the value to distributor **120** and copyright holder **1110** of unrestricted consumer redistribution of material is turned from a liability to an asset, and a clear improvement results. Consumer redistribution becomes in effect a means of broadcasting, and the revenue generation value of the distribution system is bolstered by it.

According to the invention, a distributor **120** makes arrangements for the use of content material from the copyright holder **1110**, and sends it out for free over a digital network **100** to the widest possible audience of consumers **102**. The distributor **120** profits from this practice by inserting paid advertisements into the media presentation, which the consumers **102** are forced to watch and/or listen to along with the content because of the player/viewer software apparatus of the invention. One or more sponsors **1130** pays the distributor **120** to run their ads, in exchange for the audience viewership that these ads receive. A sponsor **1130** makes money from an individual consumer **102** when the consumer purchases the sponsor's product as a result of seeing or hearing an ad for it.

To gauge the audience viewership that these media and ads receive, the player/viewer software includes a unique usage monitor which provides for a more sophisticated viewer ratings system than the ordinary and conventional ratings systems in practice with traditional broadcasting. Principally, the usage monitor forwards media and ad penetration data gathered during media presentation, from every consumer (rather than just from a representative sample), to the viewer ratings system **1152**. Additionally, when used in conjunction with information gathered by virtue of the digital rights management practices employed for license verification, these data provide a complete media and ad consumption history for each user.

With usage monitoring, it also becomes feasible for the license verification process to provide "special offers" and other extra benefits in exchange for frequent use. For instance, the distributor might choose to bestow a full purchase license to a media title upon a consumer who has "earned" it by way of many repeated presentations of the same title under the general license with ads. Alternatively, the distributor might choose to grant "reward points" to a consumer, "earned" by way of many repeated presentations of various media under the general license with ads, good toward a full purchase license to a media title of the consumers choosing. A third alternative might involve rewarding a consumer with either a full purchase license to a media title or "reward points" good toward a full purchase license to a media title of the consumers choosing, in exchange for that consumer making other consumers on the system aware of new media, either directly or indirectly, which results in additional revenue which can be attributed to the efforts of the original consumer.

This method and apparatus result from the incorporation of well-established mass-media broadcasting practices, along with existing and new computer-controlled digital data management, manipulation, and encryption techniques, into a novel, software based digital media presentation apparatus. By coupling the long-standing broadcast media practice of commercial advertisement sponsorship with the appeal of select-on-demand, consumer-level redistribution, it is a great improvement over current digital media distribution practices. The consumer retains the conveniences of virtually unlimited free media selection, instant access, and unrestricted sharing, while gaining the legitimate right to have them. The copyright owner gains a tangible value from the increased viewership resulting from unlimited consumer-level redistribution of content onto digital devices, and explicit control over media use. The ability of media content consumers **102** and copyright owners **1130** to mutually benefit from digital distribution over a network **100** is vastly improved.

Without departing from the spirit and scope of this invention, one of ordinary skill in the art can make various changes and modifications to the invention to adapt it to various usages and conditions. For example, while in the embodiments described herein the invention is implemented primarily in software, it should be understood that the invention may be implemented with hardware, software, firmware, or any combination thereof. As another example, ad selection can be based on other useful criteria including, but not limited to, time of day, the format of the associated media file, and marketing preferences (e.g., user preferences, distributor preferences, advertiser preferences, content provider preferences, etc.). Further, the invention can be embodied in an electronically-readable medium having code embodied therein for causing an electronic device to perform the methods described herein.

What is claimed is:

1. A digital media system comprising:

a user interface for receiving user input for controlling a course of presentation of digital media content;

an advertisement rotator for managing one or more requests for advertising content to be presented during the course of presentation of the digital media content either visually or audibly; and

an intersplicer in communication with the advertisement rotator, the intersplicer configured to:

change a predetermined advertisement insertion point in the digital media content to an adapted advertisement insertion point in the digital media content, in response to receiving a user input to update a current play position in the digital media content to a new play position in the digital media content, the adapted advertisement insertion point determined by an adaptive preference rule based on an advertisement requirement that applies to the digital media system;

modify the adapted insertion point of digital advertising content based on the advertisement requirement; and

request, from the advertisement rotator, digital advertising content to be played at the adapted advertisement insertion point.

2. The digital media system of claim **1**, wherein the digital advertising content is different from a predetermined advertisement selected to be played at the predetermined advertisement insertion point.

3. The digital media system of claim **1**, wherein the intersplicer is further configured to change the predetermined advertisement insertion point to the adapted advertisement insertion point by adaptively modifying a presentation position of a predetermined advertisement from the predetermined advertisement insertion point to the adapted advertisement insertion point in the digital media content, the adapted advertisement insertion point being different than the predetermined advertisement insertion point.

4. The digital media system of claim **1**, wherein the intersplicer is configured to replace the predetermined advertisement insertion point with the adapted insertion point of digital advertising content by adapting one or more data blocks of the digital advertising content into one or more data blocks of the digital media content.

5. The digital media system of claim **1**, wherein the adaptive preference rule is based on at least one of a number of tracks played since a previous digital advertisement, a length of time associated with playing the digital media content, and a number of digital media data blocks played since the previous digital advertisement.

6. The digital media system of claim **1**, wherein the intersplicer is configured to generate a control signal configured to interrupt a course of presentation of the digital

media content with a presentation of the digital advertising content at the adapted advertisement insertion point.

7. The digital media system of claim **1**, wherein the advertisement rotator selects the digital advertising content based on the advertisement requirement that applies to the digital media system.

8. The digital media system of claim **1**, wherein the intersplicer eliminates the advertisement requirement, in response to presenting the digital advertising content at the adapted insertion point of digital advertising content.

9. The digital media system of claim **2**, wherein the predetermined advertisement is scheduled to play at the predetermined advertisement insertion point, and wherein the advertisement rotator is configured to manage one or more requests to replace the predetermined advertisement.

10. A digital media advertisement presentation control system comprising:

at least one processor;

a non-transitory computer-readable storage medium storing instructions that, when executed by the processor, cause the processor to perform operations comprising:

replacing a predetermined advertisement insertion point in digital media content with an adapted insertion point for digital advertising content, in response to receiving a request to update a current play position in the digital media content to a new play position in the digital media content, the adapted insertion point determined by an adaptive preference rule based on one or more advertisement requirements;

requesting digital advertising content to be played at the adapted insertion point of digital advertising content; and

presenting the digital advertising content at the adapted insertion point of digital advertising content.

11. The system of claim **10**, wherein the digital advertising content is different from a predetermined advertisement selected to be played at the predetermined advertisement insertion point.

12. The system of claim **10**, wherein the replacing the predetermined advertisement insertion point with the adapted insertion point includes adaptively modifying a presentation position of the predetermined advertisement from the predetermined advertisement insertion point to the adapted insertion point in the digital media content.

13. The system of claim **10**, wherein the replacing the predetermined advertisement insertion point with the adapted insertion point includes adapting one or more data blocks of the digital advertising content into one or more data blocks of the digital media content, and wherein the one or more data blocks of the digital advertising content and the one or more data blocks of the digital media content are playable by a user device as audio or visual content perceivable by a user.

14. The system of claim **10**, wherein the adaptive preference rule is based on at least one of a number of tracks played since a previous digital advertisement, a length of time associated with playing the digital media content, and a number of digital media data blocks played since the previous digital advertisement.

15. The system of claim **10**, wherein the course of presentation of the digital media content is interrupted with a presentation of the digital advertising content at the adapted insertion point.

16. The system of claim **10**, wherein the digital advertising content is selected based on one or more advertisement requirements that apply to a user device.

17. The system of claim **11**, wherein the predetermined advertisement is scheduled to play at the predetermined advertisement insertion point.

18. The system of claim **16**, wherein the advertisement one or more requirements are eliminated in response to presenting the digital advertising content to the user device at the adapted insertion point of digital advertising content.

19. A method embedded in a machine-readable medium in form of executable instructions to cause at least one programmable processor to perform operations comprising:

replacing a predetermined advertisement insertion point in digital media content with an adapted insertion point for digital advertising content, in response to receiving a request to update a current play position in the digital media content to a new play position in the digital media content, the adapted insertion point determined by an adaptive preference rule based on one or more advertisement requirements;

requesting digital advertising content to be played at the adapted insertion point of digital advertising content; and

presenting the digital advertising content at the adapted insertion point of digital advertising content.

20. The method of claim **19**, wherein the digital advertising content is different from a predetermined advertisement selected to be played at the predetermined advertisement insertion point.

21. The method of claim **19**, wherein the replacing the predetermined advertisement insertion point with the adapted insertion point includes adaptively modifying a presentation position of the predetermined advertisement from the predetermined advertisement insertion point to the adapted insertion point in the digital media content.

22. The method of claim **19**, wherein the replacing the predetermined advertisement insertion point with the adapted insertion point includes adapting one or more data blocks of the digital advertising content into one or more data blocks of the digital media content.

23. The method of claim **19**, wherein the adaptive preference rule is based on at least one of: a number of tracks played since a previous digital advertisement, a length of time associated with playing the digital media content, and a number of digital media data blocks played since the previous digital advertisement.

24. The method of claim **19**, wherein the course of presentation of the digital media content is interrupted with a presentation of the digital advertising content at the adapted insertion point.

25. The method of claim **20**, wherein the predetermined advertisement is scheduled to play at the predetermined advertisement insertion point.

26. The method of claim **22**, wherein the one or more data blocks of the digital advertising content and the one or more data blocks of the digital media content are playable by a user device as audio or visual content perceivable by a user.

27. A computer program product comprising a non-transitory machine-readable medium storing instructions that, when executed by at least one programmable processor, cause the at least one programmable processor to perform operations comprising:

replacing a predetermined advertisement insertion point in digital media content with an adapted insertion point for digital advertising content, in response to receiving a request to update a current play position in the digital media content to a new play position in the digital media content, the adapted insertion point determined

by an adaptive preference rule based on one or more advertisement requirements;

requesting digital advertising content to be played at the adapted insertion point of digital advertising content; and

presenting the digital advertising content at the adapted insertion point of digital advertising content.

28. The computer program product of claim **27**, wherein the digital advertising content is different from a predetermined advertisement selected to be played at the predetermined advertisement insertion point.

29. The computer program product of claim **27**, wherein the replacing the predetermined advertisement insertion point with the adapted insertion point includes adaptively modifying a presentation position of the predetermined advertisement from the predetermined advertisement insertion point to the adapted insertion point in the digital media content.

30. The computer program product of claim **27**, wherein the replacing the predetermined advertisement insertion point with the adapted insertion point includes adapting one or more data blocks of the digital advertising content into one or more data blocks of the digital media content.

31. The computer program product of claim **27**, wherein the adaptive preference rule is based on at least one of: a number of tracks played since a previous digital advertisement, a length of time associated with playing the digital media content, and a number of digital media data blocks played since the previous digital advertisement.

32. The computer program product of claim **27**, wherein the course of presentation of the digital media content is interrupted with a presentation of the digital advertising content at the adapted insertion point.

33. The computer program product of claim **28**, wherein the predetermined advertisement is scheduled to play at the predetermined advertisement insertion point.

34. The computer program product of claim **30**, wherein the one or more data blocks of the digital advertising content and the one or more data blocks of the digital media content are playable by a user device as audio or visual content perceivable by a user.

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