If the bit rate has been reduced so that it is less than or equal to the MABR, then the remaining Messages are Packetized and transmitted 54_3.

[0175] If the removal of non time-sensitive Messages was not sufficient to meet MABR, then another procedure involving the use of a lower quality Codec (or Codecs) for the remaining time-sensitive Messages 54_7 is used. An attempt is made to transmit the payload data as fast as possible by sending fewer bits during the transmission loop. In other words, by reducing the quality of the payload, the transmission sends fewer bits in a given period of time. In various embodiments, different Codec or Codecs, each having a different bit rate versus quality tradeoff, may be used. If the use of the lower quality Codec or Codecs is sufficient, meaning the MABR limit is met, then the Messages are transmitted 54_3.

[0176] If the use of lower quality Codec(s) still does not meet the MABR, then the packetization interval of the time-sensitive Messages is increased 54_8. With this procedure, the header-to-payload ratio is increased, which lowers the overall bit rate but introduces latency (i.e., a delay in the delivery of the transmission to the recipient). If this procedure results in the reduction of the AIBR to less than or equal to the MABR, then the transmission 54_3 occurs.

[0177] If after changing the packetization interval the MABR is still not met, then the bit rate may be progressively lowered 54_9 to be within the MABR limit. When the bit rate is lowered in this manner, time-sensitive messages are sent at a rate that is not sufficient to maintain a live conversation. Therefore, the Conversation is forced out of "live". If the network is down or conditions are very poor, it is possible that no data transmission may occur. Again, the aforementioned sequence is repeated for each transmission loop 54_{10} between the sending and receiving pair.

[0178] If there are multiple network interfaces between the sending and receiving pair, the sequence described in relation to Figure 9C is performed for each interface for which receipt reports are available. In various embodiments, the sender may contain logic to distribute the transmission load among the multiple interfaces. In different examples, the payloads can be sent only on one interface, while in other embodiments, some or all of the interfaces may be used.

[0179] The aforementioned description pertains to any sending and receiving pair in the system 10. In most situations, the sending and receiving pair will include a Client 12,

enabled Device 13 and Server 16, two Servers 16, a Server 16 and Client 12 enabled Device 13, or even possibly two Clients 12 respectively. If a sending node is transmitting to two (or more) receiving nodes at the same time, the above mentioned sequence as described in relation to Figures 9A-9C occurs concurrently for each receiving-sending pair.

H.3 DQM Operation Flow Diagrams

[0180] The DQM 28g determines if data received at the Client 12 is either corrupted or if there are missing packets. In addition, the DQM 28g of a receiving Client 12 generates of the receipt reports, which are sent back to the transmitting node on the network. The DQM 28g also runs a background process to ensure that an exact copy of transmitted data is eventually received and stored. These functions are described below in Figures 9D through 9F respectively.

[0181] Referring to Figure 9D, a flow diagram illustrating the operation of the DQM 28g for checking for missing and/or corrupted data is illustrated. In the initial step 56_1, the DQM 28g checks for corrupted packets using well-known techniques, such as CRC or similar integrity checking mechanisms. If a packet is corrupted, that packet is treated as missing 56_2. The DQM 28g next ascertains if any packets are missing 56_3. If an out of sequence packet is not received after a predetermined period of time, it is assumed to be missing. The DQM 28g notes any missing or corrupted packets 56_4 in the DNQS 32. On the other hand if no corrupted or missing packets are detected, the DQM 28g determines if the quality of the received data was intentionally degraded by the sender 56_5 for the purpose of saving bandwidth. The degraded quality is noted in the DNQS 32 56_6. Regardless if the quality of the received data is degraded or not, receipt information (e.g., a packet sequence number, time stamp, and the network address of the next node in the network the packet is to be sent) of the data is stored 56_7 in the DNQS 32. The aforementioned process is continually repeated, as signified by the return arrow to the start of the flow diagram.

[0182] As a result of the process detailed in Figure 9D, information regarding the receipt of non-degraded packets, the deficiency of degraded quality packets, and missing packets, are all stored in the DNQS 32. As Media is received, the DNQS 32 maintains up-to-date information regarding the status of the Media.

[0183] Referring to Figure 9E, a flow diagram illustrating the operation of the receipt report generator function of the DQM 28g is illustrated. In the initial step, the DNQS 32 is periodically scanned 58_1 to determine if there is any Media for which a receipt report needs to be generated 58_2. If the answer is no, then the above scanning process is repeated. On the other hand if Media is identified, then the process determines if the Media is time-sensitive 58_3, meaning either the User intends to Review the Media live or the user would like to immediately Review Media that is not stored on their Device 13.

[0184] If not time-sensitive, then the recipient informs the sender to set the retransmission priority (as defined below) to low 58_4. If time-sensitive, then the amount of packet loss is considered 58_5. If the amount of packet loss is outside a usable quality range, the retransmission priority is set to high 58_6. As noted above, if the amount of packet loss is too large, the recipient may not be enabled to Review the Media upon receipt. If the quality is within an acceptable range, meaning the quality of the transmission is sufficient that it can be understood when rendered, then the priority for the sending of the receipt report is set to low 58_4. Regardless if the recipient is Reviewing upon receipt or not, a receipt report is sent 58_7, the DNQS 32 is updated 58_8 and the Network Quality Manager (NQM) 28h is updated 58_9. The retransmission requests defined in step 58_4 is therefore conditional based on time-sensitivity. The transmission request defined in step 58_6 is conditional on both time-sensitivity and quality.

[0185] The retransmission priority informs the PQM 26g of the sender to properly prioritize the transmission rate for the Media that requires retransmission. For example when the retransmission priority is set to high, then the sending PQM 26g of the sender should send any retransmissions before any new Media. If the priority is low, the PQM 26g should send the retransmitted Media after any new Media.

[0186] The aforementioned process is continuously repeated so that receipt reports are generated as Media is received. If the sender does not receive receipt reports in a timely manner, the PQM 26g of the sender will reduce the transmission rate, eventually stopping the transmission if no receipt reports are received.

[0187] Referring to Figure 9F, a flow diagram illustrating the sequence for requesting of missing or degraded Media is illustrated. In the initial step 60_1, the DNQS 32 is

periodically scanned for missing or degraded Media 60_2. If there is no missing or degraded Media, then the above defined scan is periodically repeated.

[0188] Media is considered missing if an out of sequence packet does not arrive after a predetermined threshold period of time 60_3. If the packet arrives before the threshold, then it is no longer considered missing. On the other hand if the packet does not arrive after the threshold is exceed, then it is deemed missing. With missing packets, a low priority request for retransmission is made 60_4 and the time of the request is noted 60_5 in the DNQS 32. This process is repeated until the missing packet is received. When the missing packet arrives and the corresponding Media is available in the PIMB 30, the missing status of the Media is removed from the DNQS 32. The retransmission request defined in step 60_4 is therefore conditional based on whether the Media is determined to be missing.

[0189] If degraded, the DQM 32 determines if the Media is part of a live Conversation 60_6. If not, a request for a full quality copy of the degraded Media is made 60_7, the full quality Media is designated as missing 60_8 and the request time is noted 60_9, in the DNQS 32. If the Media is part of a live Conversation, then no action is immediately taken in order to preserve network bandwidth. When the Conversation transitions out of the live mode, then the steps 60_7 through 60_9 are performed to ensure that a full quality (i.e. an exact or perfect) copy of the degraded Media is eventually received. When the data becomes available in the PIMB 30 of the recipient Client 12, the degraded status of the associated Media is removed from the DQNS 32. The transmission request defined in step 60_7 is conditional on whether the Media is both degraded and not part of a live conversation.

[0190] The aforementioned process is continually repeated, as signified by the return arrows from 60_5 and 60_9 to the top of the flow diagram at 60_1. By repeating the process outlined in Figure 9F, exact copies of all transmitted Media is eventually stored in the PIMB 30 of the receiving Device 13. In this manner, the storage of exact copies of transmitted Media is guaranteed at the recipient Device 13.

I. Graphical User Interface

[0191] Referring to Figure 10, an exemplary Device 13 running Client application 12 is illustrated. The Device 13 includes a graphical user interface display 110, data entry buttons, keys, or keyboard 112, a microphone 114, and a transducer 116 for converting

electrical signals into sound, such as a speaker. The display 110 may also accept input as a touch screen. Further, the display 110 and keyboard 112 may be combined using a touch screen interface. As noted above, the Device 13 may be a variety of different communication tools, such as a desktop computer, laptop or other mobile computers, personal digital assistants, a programmable land-line or cellular phone, or programmable radios, or just about any other type of programmable communication device. The exemplary Device 13 illustrated in the figure is intended to be "generic", in the sense that it is supposed to represent or encompass all of the communication devices listed above. In addition, the term "graphical" user interface should not be construed as limiting. Other types of user interfaces which can be implemented on a Device 13 as well including Audio/DTMF interfaces, Voice User Interfaces (VUI), radio switch interfaces, or a combination thereof, can all be used to implement the various functions described below. For the sake of simplicity, each of these types of methods by which a User may interact with their Device 13 are generically referred to as a "user interface".

[0192] All Devices 13, regardless of their type, preferably have a user interface that enables the user to operate the Device 13 and communicate with other User's in the system 10. Although the user interface can be designed to have virtually an infinite number of different look and feel implementations, there are certain functions and features that all Devices 13 should have in common. These functions and features are listed below.

[0193] The user interface preferably includes one or more of the following status indicators or flags: (i) battery indicator; (ii) connectivity indicator; (iii) clock; (iv) transmitter status; (v) transmission sync status; (vi) Reviewing status; (vii) Priority Messages needing attention; and (viii) missed Messages.

[0194] The user interface preferably includes the following functions, flags and components to conduct and manage a single Conversation: (i) name of a Conversation and/or list of Participants; (ii) Conversation status; (iii) Conversation type; (iv) Conversation duration; (v) time behind the Head of the Conversation; (vi) outstanding Messages; (vii) presence/status of Participants; (viii) meta data with navigation; (iix) Conversation attributes or designators; (ix) Conversation set-up including title, scheduling, Participants, Conversation summary; and (v) indicators showing which Participants have contributed Messages and which have Listened to or Reviewed messages.

[0195] The user interface also preferably includes, in addition to those listed immediately above, the following functions, flags and components to conduct and manage multiple Conversations: (i) a name/identifier for each Conversation; (ii) live/active or standing/inactive indicator; (iii) Review position, either at Head or Time shifted; (iv) Priority and other attributes; and (v) indicators of what portions of Conversations were missed.

[0196] The user interface also preferably includes, a number of navigation features, such as: (i) DVR style fast back/forward per conversation; (ii) instant messaging style personal message navigation; (iii) Conversation Time indicators; (iv) time scale shifting (i.e. zooming backward and forward through a Message or the Messages of a Conversation); (v) changing Priority of Conversations; (vi) hanging up; and (vii) home.

[0197] The aforementioned functions and features may be implemented in a variety of ways, for example using a touch-screen graphical user interface 110, or other input devices, such as the data entry buttons, keys, or keyboard 112, a mouse, by voice-activated commands, or a combination thereof. Again the functions and features listed above and how they are implemented is not intended to be exhaustive. The various methods and technologies that could be used is so comprehensive, that it is not practical to list or discuss them all herein.

J. Conversations

[0198] The MCMS application 20 supports a number of different types of Conversations, such as a near real time or "live" calls where the delay from when a Participant speaks and the other Participant(s) hear the first Participant is very small, Conversations where Participants exchange voice Messages back and forth with a longer delay between Messages, "live" conference calls involving multiple Users, standing Conference calls at a regularly scheduled times, or configurable structured call types such as a simultaneous briefing, where Participants each leave a Message briefing beforehand for others to Review to before everyone joins the live conference call. Yet another unique attribute of the MCMS application 20 is the ability for Users to transition between the different types of Conversations. For example, the Participants can seamlessly transition from a voice-messaging mode to a live call and back again. Or the Participants of a live conference call can transition to a voice-messaging mode and send updates or action items to each other after the conference call. While several

examples have been noted, it should be understood that the system 10 is extremely flexible and provides numerous options to transition between different types of calls or Conversations and between multiple conversations. By varying the delay between Messages, the Participants effectively flows between the type of Conversation that best suits their needs. The above examples should therefore not be construed as limiting.

[0199] As noted above, Conversations consist of Messages maintained in their original context and sequence. A sent Message either belongs to an existing Conversation or begins a new Conversation. A typical Conversation includes a set of Messages that are organized around a defined subject matter, topic, time, Group or Channel. For example, Conversations may involve a common Group of people such as the members of a club, a company may have a standing Conversation at a fixed time, such as a weekly sales meeting, or friends may have ad-hoc Conversations on various topics, such as making dinner plans.

[0200] Each Conversation is defined by a set of attributes, including a name, a list of Participants, begin and end time, and state including at least pending, active, or terminated. Other Conversation states are possible in other embodiments. A User interacts with the MCMS application 20 on their Devices 13. In preferred embodiments, the interface allows a User to organize Conversations by any of the various attributes.

[0201] The relationship between a Participant and a Conversation also has attributes. These attributes include, but are not limited to, Priority, Status (states of participation in a Conversation). The values of Participant status include active, participation in more than one Conversation at a time, Reviewing a Conversation in a time-shifted mode, Catching Up To Live, passively participating (i.e., not actively Reviewing, but receiving high Priority Messages), standby, or ignoring a Conversation (i.e., declined to participate or record the Conversation).

[0202] From a recipient's perspective, a User may select or define the relative priority of Messages. For example, Messages from a person's boss would typically be given a higher Priority than a social acquaintance. In some embodiments, a recipient has the ability to set their own Priorities. In the implementation of MCMS-C the User selects a subset of their Conversations to be rendered consecutively. The User then sets ordered Priorities for these Conversations. The system uses the priorities set by the user to order the Messages to be rendered. The aforementioned algorithm queues the Messages to be

rendered using User Priorities and information concerning Message data available (beyond MTSD).

[0203] In other embodiments, such as tactical communications, the recipient may have no or limited ability to set Priorities. For example, a fire fighter may have no ability to lower the Priority of Messages from the fire chief. A sending-User, however, has the ability to send urgent or highly important Messages. By Tagging a Message as urgent or an emergency, the Message is rendered as soon as possible at the recipient(s), overriding any Priority settings of the recipient. Any conflicts among multiple emergency messages are resolved based on a predetermined priority scheme.

K. MCMS Operation

[0204] Referring to Figure 11A, an organizational diagram 1100 grouping the major functions of the MCMS application 20 is illustrated. The major functions include account management 1102, conversation management 1104, aggregate conversation list management 1106, conversation participation 1108, call controls 1110, and contact management 1112. After registering and logging into the system 10, the User may navigate through the user interface of their Device 13 implementing the various management functions, described in detail below. In some embodiments, this functionality will provide a great deal of flexibility. In other embodiments, such as tactical or communication radios, the implementation of the user interface may be constrained with many of the user functionality and options preconfigured to meet the utility of the device. The discussion here is exemplary and is not intended to be an exhaustive explanation of the MCMS functionality, but rather is intended to provide just an overview of some of the MCMS attributes.

K.1 Account Management

[0205] Under the account management function 1102, a registered User may change certain settings and preferences. A User may change their email address, password, name, phone number, phone password, call-in number, default and/or User defined rendering speeds, Tags, gain or volume levels for Reviewing Messages, Catch Up to Live mode, etc. To make these changes, the User enters the appropriate information through the interface 110 of their Device 13. The MCMS application 20 responds by writing the updated preferences into the MCMS database 22.

K.2 Conversation Management

[0206] As illustrated in Figure 11B, conversation management 1104 is a set of functions that allow a User to view their aggregate Conversation lists, create a new Conversation, update the details of a Conversation, delete a Conversation, and close a Conversation. Each of these functions are described below.

[0207] View Conversations 1104a – For each Conversation, the MCMS application 20 may provide the User the one or more of the following attributes: the name of the Conversation, the actual start time, the last activity, Tags, duration, and the list of Participants. For each Participant, the name and/or phone number, status (live, other call, in past, catch-up-mode, offline-reachable, offline-unavailable.)

[0208] Create a Conversation 1104b - A User creates a Conversation through the interface 110 by inputting a Conversation name, a list of Contacts, and an optional scheduled start time. If no start time is designated, it is assumed the start time is immediate. In response, the MCMS application 20 creates a new Conversation in the database 22, associating records for each Participant on the Contacts list. The MCMS application 20 also creates in the database 22 Participant records for each User on the Contact list, allowing the caller to receive the presence information of the others on the Contact list. If the Conversation is scheduled, the MCMS application 20 starts the Conversation at the designated time. Otherwise, the Conversation starts right away.

[0209] Update Conversation Details 1104c - The User may make changes to a Conversation through the user interface 110. For example, Participants may be added or removed. Any change in status of the participants is updated in the MCMS database 22.

[0210] Delete a Conversation 1104d - A User may delete a specific Conversation from their list of Conversations through the interface 110. In response, the MCMS application 20 notes the change in the database 22, and designates the Conversation as deleted.

[0211] Close a Conversation 1104e – A User may elect to terminate or close a Conversation. In one embodiment, only the User that creates a Conversation can elect to terminate that Conversation.

K.3 Aggregate Conversation List Management

[0212] As illustrated in Figure 11C, the aggregate conversation list management 1106 is a set of functions that allow a User to engage in multiple Conversations (i.e., the User's aggregate conversation list). The aggregate conversation list management functions

allow a User, through the interface 110 on their device, to participate in one Conversation "live", while participating in other Conversations in a time-shifted mode.

[0213] Chose Conversation 1106a – Through the interface 110, a User may select one Conversation among the User's aggregate conversation list as current. The Messages of the current Conversation may be rendered in either the "live" or time-shifted modes. The User may switch the current conversation among the aggregate conversation list from time-to-time.

[0214] Switch Conversations Modes1106b – In an optional embodiment, a User may be able to switch from the MCMS, MCMS-C and MCMS-S modes of operation.

K.4 Conversation Participation

[0215] As illustrated in Figure 11D, conversation participation 1108 is a set of functions that allow a User to start a Conversation, receive a notification to join a Conversation, obtain Conversation status information, and hang up on a Conversation.

[0216] Start a Conversation 1108a - After a Conversation has been created, either by the User through the interface 110 or the scheduler in the MCMS application, the status of each Participant is checked. If a Participant is offline, then an effort is made to contact that person. If a Participant is online but engaged in another Conversation, then the MCMS application 20 notifies that Participant. The presence status of all online Participants is updated in the database 22.

[0217] Receive a Notification 1108b – The system may notify a User that their attention has been requested on a Conversation through a graphic display and/or audible notification via the user interface 110.

[0218] Conversation Status 1108c – A user may request the status of a Conversation through the interface 110 of their Device 13. In response, the MCMS application 20 assembles the status information stored in the database 22 and presents the information to the User.

[0219] Conversation Pause 1108d– Through user interface 110, a User may hang up or switch away from an active Conversation. In response, the MCMS application 20 updates the User's participant status for active Conversations in the database 22 and directs the Store and Stream module 24 to remove the User from the Conversation.

K.5 Conversation Controls

[0220] As illustrated in Figure 11E, conversation control 1110 is a set of functions that allow a User to control their participation in a Conversation. These functions allow a User to catch-up-to live, skip to the Head, jump to a past location, pause, play faster and play slower when Reviewing the Messages of a Conversation. Each of these functions is triggered by the User through the interface 110 on the Device 13.

[0221] Catch-up-to-live 1110a - A User may Catch Up To Live in an ongoing Conversation using the "CTL" function. When this function is activated, the MCMS application 20 checks the last point in the Conversation the User has reviewed and directs the Store and Stream module 24 to render the Messages not previously heard, using a faster than normal rendering option designated by the User, and to seamlessly transition to live mode when it reaches the head.

[0222] Jump to Head 1110c – This function enables a User to jump to the Head of a Conversation, skipping over any intervening Messages between the current point of the User in the Conversation and the Head. When implemented, the MCMS application 20 instructs the Store and Stream module to immediately render the Messages at the Head of the Conversation. (If the Head of the Conversation is currently live this is called Jump to Live (JTL).

[0223] Jump to past 1110d – This function enables a User to jump back to a previous Message or point in the Conversation, similar to a rewind or replay function. When implemented, the MCMS application 20 instructs the Store and Stream module 24 to render Media starting from the rewind point.

[0224] Pause 1110e – This function enables the User to pause the Reviewing of the Messages of a Conversation. In response, the Store and Stream module 24 stops the rendering of Messages until another command is issued.

[0225] Play faster 1110f – This function enables a User to render Messages more quickly. In response, the Store and Stream module 24 renders the Messages at a faster rate than normal. The rendering rate may be either specified by the User or the User may select from a number of preset options.

[0226] Play slower 1110g - This function enables a User to render Messages more slowly. In response, the Store and Stream module 24 renders the Messages at a slower

rate than normal. The rendering rate may be either specified by the User or the User may select from a number of preset options.

K.6 Contact Management

[0227] As illustrated in Figure 11F, the system 10 provides the User with a host of functions for managing Contact lists and user Groups. These functions include the adding, editing, deleting Contacts and user Groups. Each of these functions are implemented by a User though the interface of their Device 13. Any revisions or deletions in a User's Contact list or Group list is stored in the MCMS database 22.

[0228] Add a Contact 1112a – This function enables a User to add a new Contact to their contact list. The new Contact can be either a registered User or an external contact. Typically the name, phone number(s), type of number (cell, office, home, computer, etc.), email address and other personal information are provided for each contact record.

[0229] Edit a Contact 1112b – This function enables a User to edit or update an existing contact record.

[0230] Delete a Contact 1112c – This function enables a User to remove or delete an existing contact record.

[0231] Search for a Contact 1112d – This function enables a User to search for a specific Contact in their contact list. The search may be conducted using a number of criteria, such as name, phone number, most recently called, most frequently called, Group, etc.

[0232] Get a Participant list 1112e – This function enables a User to search and retrieve a list of Participants of a Conversation by a number of different search criteria, including for example by name, most recent outgoing calls, most recent incoming calls, most frequently called, etc.

[0233] Authorize a caller to review status 1112f – This function enables a first User to authorize other Users to view the first User's status. Non-authorized Users may not view the status of the first User.

[0234] Create a Group of Contacts 1112g – This function enables a User to associate a number of Contacts into a Group. When a User defines a Group, the list of Contacts in that Group are stored in the MCMS database 22.

[0235] Edit a Contact Group 1112h – This function enables a User to edit a Group, or update the contact information for a member of the Group.

[0236] Delete a Contact Group 1112i – This function enables a User to delete a Group.

L. MCMS Operation

L.1 MCMS-C

[0237] As noted above, the MCMS-C operation is similar to MCMS, with the added feature of enabling Users to manage and participate in multiple conversations consecutively through a hierarchical system of Priorities and the time-shifting of Messages, which are automatically managed by the system. Implementing the MCMS-C functionality includes three basic processes. As illustrated in Figure 12A, the first process involves defining a set of Conversations for consecutive rendering. Once the list is defined, a hierarchical set of Priorities and other factors are applied to the indexed media payloads associated with the set of Conversations. The indexed media payloads are then sequenced into a sequencing order. By rendering the media in the sequence order, the Messages of the set of Conversations are consecutively rendered.

[0238] Referring to Figure 12A, a flow chart illustrating the steps for defining the list of Conversations to render consecutively is shown. In the initial step 1202, the User's aggregate list of Conversations is defined. Either the User or pre-configuration data (step 1204) is next used to select the Conversations among the aggregate list for consecutive rendering (step 1206). With a tactical communication system for example, typically pre-configuration data is used to impose the Conversations to be consecutively rendered. With non-tactical applications, the User is typically given a higher degree of flexibility to select the Conversations for consecutive rendering.

[0239] Referring to Figure 12B, a flow chart illustrating the steps for defining hierarchical set of priorities for rendering the Messages of consecutive Conversations is illustrated. In the initial step (1208), a set of priority rules are defined and applied to the list of Conversations to be rendered consecutively (1206). In various embodiments, the set of priority rules may range from a rigid, hierarchical communication protocol to a highly flexible communication protocol. For example in a tactical communication system where a rigid hierarchy is often desirable, the set of priority rules will preferably impose a specific order in which concurrent Messages are rendered. For example with a first-responder tactical system, Messages from a fire chief may be given the highest

priority. The next level of priority may be given to fire fighters inside a burning building. At the next level, priority may be given to fire fighters outside the building, etc. By defining a rigid priority, the current Messages of those supervising the efforts to fight the fire, or those in harms way, are rendered ahead of those performing a less critical role. With non-tactical communications, a User may be given a great deal of flexibility to define their own priority scheme to meet personal needs. A sales executive may for example define a priority scheme listing consecutive Conversations with clients from the most important to the least important. Or a User may prioritize consecutive Messages among family and friends. Regardless of the scheme used, a priority list for consecutive Conversations is defined (step 1210) in this process.

[0240] Referring to Figure 12C, a flow diagram illustrating the construction of a queue of Messages received from the various consecutive Conversations is illustrated. In the initial step, the availability of non-rendered indexed media payloads of Messages (i.e., media streams) is continually detected (step 1212) for each of the Conversations to be consecutively rendered. The priority hierarchy is applied to the available indexed media payload streams (step 1214). Based at least partially on the priority hierarchy, and possible other parameters as mentioned below, the available indexed media payloads are arranged into a sequence order (step 1216). The indexed media payloads are then continuously rendered in the sequence order (step 1218). By continuously repeating the above-described process, the Messages of multiple Conversations are consecutively rendered.

[0241] In one embodiment, the sequencing order is based either partly or fully on the priority hierarchy. In alternative embodiments, other parameters in addition to the hierarchy and availability may be considered as well. For example, the sequence order may be defined using one or more parameters such as the switching costs associated with interrupting a currently rendered stream of indexed media payloads with the indexed media payloads of a higher priority Conversation, the quality of the available streams of indexed media payloads, the relative time the indexed media payloads were received, a shuffling order, or from input of a controller of the system.

[0242] Typically when conflicts between the Messages of different Conversations occur, the indexed media payloads first in sequence order are rendered while the rendering of other available indexed media payloads are paused or delayed. When there

no conflicts, indexed media payloads are immediately rendered as they become available.

[0243] In yet another embodiment, the Messages of the consecutively rendered Conversations may be optionally reviewed in a time-shifted mode. If the User of the first communication device generated any Media associated with the consecutively rendered Conversations, that media is indexed and stored in the PIMB 30 of the Device as well as the PIMB(s) 85 of the Servers 16 on the network. Thus when a Conversation is reviewed in the time shifted mode, the User has the option of reviewing just the incoming Messages associated with the Conversation, or both the incoming Messages as well as the Media created by the first User associated with the Conversation in time index order.

L.2 MCMS-S Operation

[0244] In the MCMS-S or simultaneous mode, a User of a Client 12 enabled Device 13 may define a set of Conversations for simultaneous rendering. Once the set of Conversations is defined, the indexed media payload streams associated with the set of Conversations are simultaneously rendered on the Device 13, regardless if they overlap or not. In alternative embodiments, the User may optionally render the received indexed media payloads from the set of media streams separately. The indexed media payloads of the simultaneous Conversations may also be optionally rendered in near real-time or in the time-shifted mode.

L.3 MCMS, MCMS-C and MCMS-S Examples

[0245] In Figures 13A through 13D, a series of diagrams illustrating the attributes of a Conversation and the operation of MCMS, MCMS-C and MSMS-S is illustrated.

[0246] In Figure 13A, a time diagram illustrating the sequence of rendering the indexed media payloads of the Messages of a Conversation labeled "A" between a User "X" and two other users, designated "Y" and "Z". In this example, Media is generated by user Y during the time intervals designated by t1, t5, 56, t7 and t9. Media is generated by user Z during the time intervals designated t3, t6 and t9 through t10.

[0247] The rendering sequence at the Device 13 of User X is illustrated at the bottom of the figure. During intervals t1, t5, and t7, Media derived only from Y is rendered. During intervals t3 and t10, only Media derived from Z is rendered. In intervals t6 and t9, Media from both Y and Z is rendered. In intervals t2, t4 and t8, nothing is being

rendered because neither users Y or Z are generating Media during these periods. It should be noted that intervals t1 through t10 are not intended to mean fixed time intervals, but rather, just periods of time when Media is being generated.

[0248] The diagram of Figure 13A is useful in illustrating the attributes of Conversations. When one user is generating Media (either Y or Z), that Media is received at the Device 13 of X and is available for rendering. When both users X and Y are generating Media, both Media streams are received at Device 13 of X and is available for Mixing. When neither user X or Y is generating Media, no Media is received at Device 13 of X. As noted above, User X has the option of Reviewing the Media generated during Conversation A in either the near real-time or time-shifted modes. Also the User X has the option of Reviewing the Media in the Mixed format as illustrated, or to separately Reviewing the Media from Y and Z in the time-shifted mode.

[0249] Figure 13B illustrates the operation of MCMS. In this example, the User is Participating in three Conversations, designated A, B and C. For Conversations A, B, and C, the User either generates or receives Messages designated (A1, A2, A3, and A4), (B1, B2 and B3) and (C1and C2) respectively. The timing and duration of each Message is indicated by the starting point along the time-line. It is useful to note that in this example, all of the Messages overlap in time to some degree, except Message B2.

[0250] With the MCMS application, the User selects one Conversation as current. For the selected Conversation, the User may Review incoming Messages and generate Messages which are transmitted to the other Participants of the Conversation. In this example, the User selects in order Conversation B, C and A as current respectively. The Message sequence is therefore initially B1, B2, and B3, followed by C1 and C2, and then finally A1 through A4. Again, while a particular Conversation is selected as current, the User may transition between the near real-time and the time-shifted modes and back again. The final rendering as illustrated in the diagram is not intended to correspond in timing of the received Messages as illustrated in the top portion of the diagram. Rather the lower portion of the diagram is intended to show only the rendering order of the Messages, based on Conversation order selected by the User.

[0251] The example of Figure 13B is thus useful in illustrating the attributes of the MCMS application. A User selects one Conversation as current. The other

Conversations are paused. The User may also transition the current Conversation among all the Conversations at any time.

[0252] Referring to Figure 13C, a diagram illustrating the operation of MCMS-C is illustrated. In this example, the User is Participating in two consecutive Conversations, A and B. With Conversation A, three Messages are received A1, A2, and A3. With Conversation B, three Messages are received B1, B2 and B3. It is useful to note that with this example, Message B1 conflicts with Messages A1. Also Conversation A has a higher priority that Conversation B.

[0253] During the consecutive rendering of the two Conversations, the higher priority Messages A1 and A2 are first rendered in near real-time, as represented by the vertical dashed lines in the figure. Since there is a relatively large time gap between Messages A2 and A3, this space is filled by time shifting and rendering Messages B1 and B2. When A3 arrives, it is rendered in near real-time, while Message B3 is rendered only after the higher priority Message A3 is rendered. By time-shifting rendering of the lower priority Messages between the higher Priority Messages, consecutive multiple conversations can be managed. It should be noted that in this simple example, priority is the only parameter used to determine the consecutive order for rendering. As noted above, a number of other parameters may be used as well.

[0254] Referring to Figure 13D, a diagram illustrating MCMS-S is illustrated. In this example, a User is engaged in three simultaneous Conversations, A, B and C. The Messages A1, A2 and A3, B1, B2 and B3, and C1 and C2 are received for each Conversation A, B and C are shown in the diagram respectively. With the MCMS-S, the incoming Messages are rendered at a recipients Device 13 as they are received. The rendering sequence of the Messages of the three Conversations A, B and C, as illustrated in the lower portion of the diagram, are therefore the same as when the Messages were received. In this manner, multiple Conversations may be simultaneously rendered.

[0255] In the aforementioned examples, several variations of the MCMS application were described, including MSMS-C and MCMS-S. Regardless of the specific type of MCMS application used, they all share several common characteristics. In each case, the Conversations are defined by a threaded sequence or organization of Messages. The Messages are segmented from a stream of Media, with each Message given a sequence

identifier and indexed by the time the Media was created. Depending on the variation of the MCMS application, Messages can be rendered in accordance with one or more rendering options. The rendering options include, in one form or another, the filtering, grouping overlapping and/or serialization of Messages, using anywhere from zero to a plurality of different attributes. In this manner, multiple Conversations, each including a string of Messages, can be conducted on a single Client 12 enabled Device 13. Lastly, each of the variations of MCMS may handle the receipt of interrupt Messages in the same way. When an interrupt Message is received, it typically takes precedent over and is rendered before other Messages belonging to other Conversations.

M. Client and Server Hardware

[0256] Referring to Figure 14A, a block diagram 140 illustrating the hardware of a Device 13 used for storing and executing the Client application 12 is shown. The hardware includes a CPU 142, main memory 144 and mass storage 146. As is well known in the art, the Client application 12 is loaded and stored in main memory144 and mass storage 146 and executed by the CPU 142.

[0257] Referring to Figure 14B, a block diagram 150 illustrating the hardware of a Server 16 used for storing and executing the server application 78 is shown. The hardware includes a CPU 152, main memory 154, mass storage 156, and the archive 89. As is well known in the art, the server application 78 is loaded and stored in main memory 154 and mass storage 156 and executed by the CPU 152. As noted above, indexed media payloads of one or more Users are stored in the archive 89.

[0258] Although many of the components and processes are described above in the singular for convenience, it will be appreciated by one of skill in the art that multiple components and repeated processes can also be used to practice the techniques of the system and method described herein. Further, while the invention has been particularly shown and described with reference to specific embodiments thereof, it will be understood by those skilled in the art that changes in the form and details of the disclosed embodiments may be made without departing from the spirit or scope of the invention. For example, embodiments of the invention may be employed with a variety of components and should not be restricted to the ones mentioned above. It is therefore intended that the invention be interpreted to include all variations and equivalents that fall within the true spirit and scope of the invention.

SUBSTITUTE SPECIFICATION

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TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Application 12/028,400, filed on February 8, 2008 entitled "Telecommunication and Multimedia Management Method and Apparatus", which claims the benefit of U.S. Provisional Patent Application No. 60/937,552, filed June 28, 2007 entitled "Re-thinking Voice Communication" and U.S. Provisional Patent Application No. 60/999,619, filed on October 19, 2007 entitled "Telecommunication and Multimedia Management System and Method", all of which are incorporated herein by reference for all purposes.

BACKGROUND

Field of the Invention.

[0002] This invention pertains to telecommunications, and more particularly, to a telecommunication and multimedia management method and apparatus that enables users to review the messages of conversations in either a live mode or a time-shifted mode and to transition the conversation back and forth between the two modes, participate in multiple conversations and to archive the messages of conversations for later review or processing.

Description of Related Art

[0003] The current state of voice communications suffers from inertia. In spite of automated switching, high bandwidth networks and technologies such as satellites, fiber optics, Voice over IP (VoIP), wireless and cellular networks, there has been little change in how people use telephones. One is still required to pick up the phone, dial another party, wait for a connection to be made, and then engage in a full-duplex, synchronous conversation with the dialed party. If the recipient does not answer, no connection is made, and the conversation does not take place.

[0004] At best, a one-way asynchronous voice message may be left if the recipient has voice mail. The process of delivering the voice mail, however, is burdensome and time consuming. The caller is required to wait for the phone on the other end to stop ringing, transition into the voice mail system, listen to a voice message greeting, and then leave the message. Current voice mail systems are also inconvenient for the recipient. The recipient has to dial a code to access their voice mail, navigate through a series of prompts, listen to any earlier received voice messages in the queue, and then finally listen to the message of the sender.

[0005] Another drawback with typical voice mail systems is the inability to organize or permanently archive voice messages. With some voice mail systems, a user may save a message, but it is automatically deleted after a predetermined period of time and lost forever.

[0006] Yet another problem with current voice mail systems is that a connection must be made between the caller and the voice mail system before a message can be left. If no connection is made, there is no way for the caller to leave a message.

[0007] Current telephone systems are based on relatively simplistic usage patterns: real-time live calls or disjointed voice mail messages, which are typically deleted as they are heard. These forms of voice communications do not capture the real power that can be achieved with voice communication or take advantage of the advances of network speed and bandwidth that is now available. Also, if the phone network is down, or is inaccessible, (e.g., a cell phone user is in an area of no coverage or the phone lines are down due to bad weather), no communication can take place.

[0008] In general, telephone based communications have not kept pace with the advances in text-based communications. Instant messaging, emailing, faxing, chat groups, and the ability to archive text messages, are all commonplace with text based communications. Other than voice mail, there are few existing tools available to manage and/or archive voice messages. In comparison, the tools currently available to manage telephone communications are primitive compared to text communications.

[0009] The corporate environment provides just one example of the weakness in current voice communication tools. There is currently no integrated way to manage voice communications across an organization as a corporate asset. Employees generally do not record or persistently store their phone conversations. Most business related

voice communication assets are gone as quickly as the words are spoken, with no way to manage or store the content of those conversations in any manageable form.

[0010] As an illustrative example, consider a sales executive at a company. During the course of a busy day, the executive may make a number of calls, and close several sales, with customers over the phone. Without the ability to organize, store, and later retrieve these conversations, there is no way for the executive to resolve potential issues that may arise, such as recalling the terms of one deal versus another, or challenging a customer who disputes the terms of a previously agreed upon sale. If this executive had the ability to easily retrieve and review conversations, these types of issues could be easily and favorably resolved.

[0011] Current tactical radio systems, such as those used by the military, fire, police, paramedics, rescue teams, and first responders, also suffer from a number of deficiencies. Most tactical radio communication must occur through a "live" radio connection between the sender of a message and a recipient. If there is no radio connection between the two parties, there can be no communication. Urgent messages cannot be sent if either the sender or the receiver does not have access to their radio, or a radio circuit connection is not established. Tactical communications are therefore plagued with several basic problems. There is no way (i) to guarantee the delivery of messages, (ii) for a recipient to go back and listen to a message that was not heard in real time; (iii) to control the granularity of the participants in a conversation; (iv) for the system to cope when there is a lack of signal integrity for a live conversation. If a message is not heard live, it is missed. There are no tools for either the sender or a recipient to manage, prioritize, archive and later retrieve (i.e. time-shift) the messages of a conversation that were previously sent.

[0012] Yet another drawback with tactical radio communication systems is that only one message can be sent at a time per channel. Consider an example of a large building fire, where multiple teams of fire fighters, police and paramedics are simultaneously rescuing victims trapped in the building, fighting the fire, providing medical aid to victims, and controlling bystanders. If each of the teams is using the same channel, communications may become crowded and chaotic. Transmissions get "stepped on" when more than one person is transmitting at the same time. Also there is no way to differentiate between high and low priority messages. A team inside the burning building fighting the fire or rescuing trapped victims should have a higher priority over

other teams, such as those controlling bystanders. If high priority messages are stepped on by lower priority messages, it could not only hamper important communications, but could endanger the lives of the fire fighters and victims in the building.

[0013] One possible solution to the lack of ability to prioritize messages is to use multiple channels, where each team is assigned a different channel. This solution, however, creates its own set of problems. How does the fire chief determine which channel to listen too at any point in time? How do multiple teams communicate with one another if they are all on different channels? If one team calls for urgent help, how are other teams to know if they are listening to other channels? While multiple channels can alleviate some issues, it can also cause confusion, creating more problems than if a single channel is used.

[0014] The lack of management tools that effectively prioritize messages, that allow multiple conversations to take place at the same time, that enable the time-shifting of messages to guarantee delivery, or that support archiving and storing conversations for later retrieval and review, all contribute to the problems associated with tactical radios. In first responder situations, such as with the military, police, and fire, effective communication tools can literally mean the difference between life and death, or the success or failure of a mission. The above burning building example is useful in illustrating just some of the issues with current tactical radio communications. Similar problems exist with the military, police, first responders and others who use tactical communications.

[0015] With packet-based networks, commonly used protocols include Transmission Control Protocol (TCP) and User Datagram Protocol (UDP). UDP offers the advantage of fast delivery of data, but at the expense of completeness. Packets may be dropped in transit and not available when attempting to render the data as soon as possible at the destination. In spite of the shortcomings, UDP is the standard for Voice over Internet Protocol (VoIP) transmissions due to its speed attributes. On the other hand TCP does guarantee the delivery of perfect (i.e., an exact copy of the transmitted data) data, but at the expense of latency. All packets are delivered, regardless of how long it takes. This delay makes TCP impractical for use with "live" phone calls. Currently there are no known protocols that offer the performance advantages of both TCP and UDP, where "good enough" media can be transmitted for rendering as soon as possible, with the eventual delivery of a perfect copy of the media. Also there is no protocol that

determines how much information should be sent over the network based on the presence of recipients on the network and their intentions to render the data either live or in a time-shifted mode. In addition, other factors commonly considered, such as network latency, network degradation, packet loss, packet damage, and general bandwidth conditions, are used in determining how much data to transmit. Prior art systems, however, do not consider the presence and intentions of recipients. As a result, the default assumption is that the data is rendered by the recipient in real time. When a recipient is not going to render data immediately, these prior art systems unnecessarily use bandwidth when it is not needed, degrading the overall performance of the network.

[0016] For the reasons recited above, telephone, voicemail and tactical voice communications systems are inadequate. An improved voice and media communication and management system and method, and improvements in delivering voice and other media over packet-based networks, is therefore needed.

SUMMARY OF THE INVENTION

[0017] The above-described problems are solved by a communication application, method and apparatus that supports new modes of engaging in conversations and/or managing multiple conversations using a variety of media types, such as voice, video, text, location, sensor information, and other data. Users can engage in conversations by sending messages to designated recipients. Depending on preferences and priorities, the recipient(s) might participate in the conversation in real time, or they might simply be notified that the message is ready for retrieval. In the latter case, the recipient participates in the conversation in a time-shifted mode by reviewing and replying to the recorded message at their convenience.

[0018] Users are empowered to conduct communications in either: (i) a near-synchronous or "live" conversation, providing a user experience similar to a standard full duplex phone call; or (ii) in a series of back and forth time-delayed transmissions (i.e., time-shifted mode). Further, users engaged in a conversation can seamlessly transition from the live mode to the time-shifted mode and back again. This attribute also makes it possible for users to engage in multiple conversations, at the same time, by prioritizing and shifting between the two modes for each conversation. Two individuals using the system can therefore send recorded voice messages back and forth to each other and review the messages when convenient, or the messages can be sent at a rate where they essentially merge into a live, synchronous voice conversation. This new form of communication, for the purposes of the present application, is referred to as "Voxing"

[0019] When you "Vox" someone, the conversation consists of a series of discrete recorded messages, which are recorded in a number of locations, which may include the encoding device of the sender, (e.g. a phone or computer), servers on multiple transmission hops across the network, and the receiver's rendering device. Unlike a standard phone call or voice mail, the system provides the following features and advantages: (i) the conversation can transition between live and time-shifted or vice versa; (ii) the discrete messages of the conversation are semantically threaded together and archived; (iii) since the messages are recorded and are available for later retrieval, attention can be temporarily diverted from the conversation and then the conversation can be later reviewed when convenient; (iv) the conversation can be paused for

seconds, minutes, hours, or even days, and can be picked up again where left off; (v) one can rejoin a conversation in progress and rapidly review missed messages and catch up to the current message (i.e., the live message); (vi) no dedicated circuit is needed for the conversation to take place, as required with conventional phone calls; and (vii) lastly, to initiate a conversation, one can simply begin transmitting to an individual or a group. If the person or persons on the other end notice that they are receiving a message, they have the option of reviewing and conducting a conversation in real time, or reviewing at a later time of their choice.

[0020] The communication media management system also supports new modes of optimizing the transmission of data over a network. The system actively manages the delivery of payloads to a recipient engaged in a conversation in real time when network conditions are less than ideal. For example when network conditions are poor, the system intentionally reduces the quality of the data for transmission to the point where it is "good enough" to be rendered upon receipt by the recipient, allowing the real time participation of the conversation. The system also guarantees the eventual delivery of an "exact" copy of the messages over time. The system and method therefore provides the advantages of both speed and accuracy. The utilization of network bandwidth is optimized by making tradeoffs between timeliness and media quality, using the presence and intentions of whether or not recipient(s) intend to review to the message immediately in real time, as well as measures of network latency, network degradation, packet loss or damage, and/or current bandwidth conditions.

[0021] It should be noted that the messages of conversations may contain voice only or voice, video and other data, such as sensor information. When the messages are reviewed, they are listened to or visually reviewed, or a combination thereof, depending on the type of media contained in the messages. Although as of the filing of the present application, most conversations are voice only, it is intended that the communication system and method described herein broadly includes conversations including multiple media types, such as voice and video for example.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The invention may best be understood by reference to the following description taken in conjunction with the accompanying drawings, which illustrate specific embodiments of the invention.

[0023] Figure 1 is a diagram of the architecture of the communication and media management system of the invention.

[0024] Figures 2A and 2B illustrate a block diagram of a Client running on a Device in the communication and management system of the invention.

[0025] Figure 3 is a block diagram of a Server used in the communication and media management system of the invention.

[0026] Figures 4A through 4D illustrate various embodiments of data payloads used in the communication and management system of the invention.

[0027] Figure 5 is a diagram illustrating data being transmitted over a shared IP network in accordance with the invention.

[0028] Figure 6 is a diagram illustrating data being transmitted over a circuit based network in accordance with the invention.

[0029] Figure 7 is a diagram illustrating data being transmitted across both a cellular network and the Internet in accordance with the invention.

[0030] Figures 8A through 8F are a series of flow diagrams illustrating a store and stream function of the communication and management system of the invention.

[0031] Figures 9A through 9C are flow diagrams illustrating the operation of a Payload Quality Manager (PQM) and Figures 9D through 9F are flow diagrams illustrating the Data Quality manager (DQM), both used by the Clients and Servers of the invention.

[0032] Figure 10 is an exemplary device having a graphical user interface that may be used with the system of the invention.

[0033] Figures 11A through 11F are diagrams illustrating multiple conversation management (MCMS) features of the invention.

[0034] Figures 12A through 12C are diagrams illustrating the multiple conversation management system – consecutive (MCMS-C) features of the invention.

[0035] Figures 13A through 13D illustrate a series of diagrams detailing the operation of the invention.

[0036] Figures 14A and 14B are block diagrams that illustrate the hardware used for running the Client and Server applications of the invention.

[0037] It should be noted that like reference numbers refer to like elements in the figures.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

[0038] The invention will now be described in detail with reference to various embodiments thereof as illustrated in the accompanying drawings. In the following description, specific details are set forth in order to provide a thorough understanding of the invention. It will be apparent, however, to one skilled in the art, that the invention may be practiced without using some of the implementation details set forth herein. It should also be understood that well known operations have not been described in detail in order to not unnecessarily obscure the invention.

A. Functional Overview

[0039] An improved voice and other media communication application, method and apparatus is disclosed which provides one or more of the following features and functions:

i. enabling users to participate in multiple conversation types, including live phone calls, conference calls, voice messaging, consecutive or simultaneous communications;

ii. enabling users to review the messages of conversations in either a live mode or a time-shifted mode (voice messaging);

iii. enabling users to seamlessly transition a conversation between a synchronous "live" mode and a time shifted mode;

iv. enabling users to participate in conversations without waiting for a connection to be established with another participant or the network. This attribute allows users to begin conversations, participate in conversations, and review previously received time-shifted messages of conversations even when there is no network available, when the network is of poor quality, or other participants are unavailable;

v. enabling the system to save media payload data at the sender and, after network transmission, saving the media payload data at all receivers;

vi. enabling the system to organize messages by threading them sequentially into semantically meaningful conversations in which each message can be identified and tied to a given participant in a given conversation;

vii. enabling users to manage each conversation with a set of user controlled functions, such as reviewing "live", pausing or time shifting the conversation until it is convenient to review, replaying in a variety of modes (e.g., playing faster, catching

up to live, jump to the head of the conversation) and methods for managing conversations (archiving, tagging, searching, and retrieving from archives);

viii. enabling the system to manage and share presence data with all conversation participants, including online status, intentions with respect to reviewing any given message in either the live or time-shifted mode, current attention to messages, rendering methods, and network conditions between the sender and receiver;

ix. enabling users to manage multiple conversations at the same time, where either (a) one conversation is current and all others are paused; (b) multiple conversations are rendered consecutively, such as but not limited to tactical communications; or (c) multiple conversations are active and simultaneously rendered, such as in a stock exchange or trading floor environment.

x. enabling users to store all conversations, and if desired, persistently archive them in a tangible medium, providing an asset that can be organized indexed, searched, transcribed, translated and/or reviewed as needed;

xi. enabling the system to provide real time call functionality using a best-efforts mode of message delivery at a rate "good enough" for rendering as soon as possible (similar to UDP), and the guaranteed eventual delivery of exact copies of the messages as transmitted by requesting retransmission of any missing or defective data from the originally saved perfect copy (similar to TCP); and

xii. enabling the system to optimize the utilization of network bandwidth by making tradeoffs between timeliness and media quality, using the presence and intentions of the recipient(s) (i.e., to either review the media in real-time or in a time-shifted mode), as well as measures of network latency, network degradation, packet loss or damage, and/or current bandwidth conditions.

[0040] In various embodiments, some or all of the numerous features and functions listed above may be implemented. It should be understood, however, that different embodiments of the invention need not incorporate all of the above listed features and functions.

B. Glossary

[0041] Prior to explaining the details of the invention, it is useful to define some of the terms and acronyms used throughout the written description. This glossary of terms is organized into groups of System Components, Media, Media Management, People and Conversation Management.

B.1. System Components

[0042] Client: A Client is the user application in the communication system, which includes a user interface, persistent data storage, and "Voxing" functionality. Users interact with the Client application, and the Client application manages all communications (messages and signals) and payload (Media) transfers that are transmitted or received over a network. The Client supports encoding of media (e.g., the capturing of voice, video, or other data content) and the rendering of media and supports security, encryption and authentication as well as the optimization of the transmission of data across the network. A Client may be used by one or multiple Users (i.e., multi-tenant).

[0043] Device: A physical device that runs the Client application. A User may be actively logged into a single Device or multiple Devices at any given point of time. In various embodiments, a Device may be a general-purpose computer, a portable computing device, a programmable phone, a programmable radio, or any other programmable communication device.

[0044] Servers: A computer node on the communication network. Servers are responsible for routing Messages sent back and forth between Users over the network and the persistent storage and archiving of Media payloads. Servers provide routing, transcoding, security, encryption and authentication and the optimization of the transmission of data across the network.

B.2. Media

[0045] Message: An individual unit of communication from one User to another. Each Message consists of some sort of Media, such as voice or video. Each Message is assigned certain attributes, including: (i) the User sending the message; (ii) the Conversation it belongs to; (iii) an optional or user created Importance Tag; (iv) a time stamp; and (v) the Media payload.

[0046] Media: Audio, video, text, position, sensor readings such as temperature, or other data.

[0047] Conversation: A thread of Messages (identified, persistently stored, grouped, and prioritized) between two or more Users on their Devices. Users generally participate in a Conversation using their Devices by either Reviewing Messages in real time or in a time-shifted mode, or creating and sending Messages of a Conversation as

desired. When new Messages are created, they either define a new Conversation, or they are added to an existing Conversation.

[0048] Head of a Conversation: The most recent Message of a conversation that has been encoded by the most recent speaker. It is where a User is positioned in a Conversation when reviewing "live" or where one jumps to if the "Jump To Live" feature is used.

[0049] Multiple Conversation Management System or MCMS: An application that runs as part of a Client application, which enables a User to engage in multiple Conversations using a variety of Media types. With the MCMS application, a User selects one Conversation among the multiple Conversations as current, where only the Messages of current conversation are rendered. For the selected current Conversation, the User may transition from a series of back and forth Messages in time-shifted mode to near-synchronous "live" mode, similar to a standard telephone conversation, and back again. The Messages of the non-selected Conversations are in a paused state. Messages associated with the non-selected Conversion will accumulate if others are still participating in those Conversations. The User may selectively transition the current Conversation among the multiple Conversations and Review the accumulated Messages of the selected current Conversation.

[0050] Multiple Conversation Management System-Consecutive or MCMS-C: Similar to MCMS, with the added feature of rendering and enabling Users to manage and participate in multiple Conversations consecutively through a hierarchical system of Priorities and time-shifting, which are automatically managed by the system. The MCMS-C application allows the Messages of consecutive Conversations to be rendered in a prioritized order, as opposed to MCMS where only the Messages of the currently selected Conversation are rendered. MCMS-C is particularly applicable in situations where it is important that the Messages of the consecutive Conversations are rendered, in the prioritized order, and/or the receipt of all Messages, even those belonging to lower priority Conversations, is more important than receiving the Messages in real-time. Examples of situations where MCMS-C may be suitable include, but are not limited to, hospitals, taxi fleet management, or tactical communications.

[0051] Multiple Conversation Management System-Simultaneous or MCMS-S: Similar to MCMS, with the added feature of enabling With MCMS-S, multiple

Conversations are selected for simultaneous rendering, as opposed to MCMS where the Messages of only the selected current Conversation are rendered. The MCMS-S application is particularly applicable in situations where a User is listening to multiple Conversations at the same time, such as a trader listening to multiple brokers on different exchanges and periodically sending trading requests to one or multiple of them simultaneously. MCMS-S may also be suitable for tactical communications as well.

[0052] Priority: The mechanism through which the system determines which Message to render next when a User is participating in MCMS-C. Priority is automatically managed by the system. A User can set default Priorities, or a predetermined set of system Priorities may be used. In the event of a conflict, where more than one Message is ready to be rendered at the same time, the system resolves the conflict at least partly based on Priority, to determine what Message to render immediately and what Message to time shift.

[0053] Tags: a set of attributes a User or the system may assign to a Conversation or a message, such as a topic (a company name), a directive ("action items"), a indicator ("conversation summary"), or any other label by which one might want to search or organize the data.

[0054] Importance Tags: A special Message attribute that enables a sender to specify when a Message is to be rendered, regardless of other Priority settings. An "urgent" Importance tag will override other Priorities for example. This feature is critical for tactical systems, though any system can be configured to use or disable this feature.

[0055] Packet: Any unit of binary data capable of being routed through a computer network. Each packet consists of header (meta data) and payload (media data). Includes standard packet protocols such as, but not limited to, Internet Protocol (IP), EvDO, UMTS or any other packet-based network, either radio, fiber optic, or wired.

[0056] Header or Packet Header: The portion of a packet that describes the packet; the meta data concerning the payload, its encoding type and destination.

[0057] Vox packet: A proprietary packet that enables the system and method to further refine and optimize the delivery of Messages, Media and other signaling information.

[0058] Media Payload (or Payload): The actual Media portion of a Packet.

B.3. Media Management

[0059] Time Shift Delay (TSD): The amount of time between the arrival of a Vox Packet and the rendering of the Packet on a Device. The TSD must exceed the **Minimum Time Shift Delay**. The TSD is typically determined by the User's behavior in choosing to review the Messages of a Conversation some time after receipt.

[0060] Minimum Time Shift Delay (MTSD): The time shift delay enforced by the Client to allow for jitter processing using jitter buffer techniques. This causes the system to delay rendering until an adequate number of the packets have arrived to create a usable media stream. The system will typically adaptively adjust the MTSD over time to compensate for variable conditions in the network.

[0061] Rendering: Delivering a Media stream to a User in a form suitable for User consumption (e.g., voice, text, graphic display, video, or a combination thereof).

[0062] Mixing: The Rendering of one or more Media streams. For example, the Media stream from two Participants of a Conversation may be Mixed when Rendered, creating a User experience similar to a conversation where multiple people are speaking at the same time.

[0063] Encoding: The process of translating Media either created by a User (such as voice or video) or otherwise originating on a Device (such as GPS or other sensor data), and converting the media into digital data to be processed by a Client.

[0064] Adaptive Jitter Buffer: Jitter buffers or de-jitter buffers are used to counter jitter (i.e., either the arrival of out of sequence packets or the delayed arrival of packets) introduced by packet switched networks, so that the continuous rendering of audio (or video) signals transmitted over a network can be performed without disruption. The data is stored in a buffer before Rendering to allow a reasonably sized buffer of Media to arrive. The Media may be rendered before all the Packets are received, trading off quality for currency. An Adaptive Jitter Buffer is capable of dynamically changing its size to optimize the delay/quality tradeoff.

[0065] Persistent Infinite Message Buffer (PIMB): The PIMB is a storage management system for the storage of time-based Media that performs both the de-jittering of "live" data and the storage and retrieval of archive data. The PIMB further includes the additional attributes of potentially infinite and persistence storage of Media.

The PIMB maintains "exact" or full copies of Vox Packets of a Message and Conversations at some or all Participant Devices and/or Servers.

[0066] Packet Loss Compensation or Concealment) (PLC): During Rendering of a Media stream, the PLC component compensates for missing Packets, interpolating the results to present the stream to a reviewer. Missing Packets may be rendered as silence, or information from adjacent Packets may be used to present an interpolated sound or image. The particular method to be used will be dependent on the media, Codecs in use, and other generally known parameters.

B.4. People

[0067] User: A person who is authorized to use the system.

[0068] Contact: A record of either a User or non-user of the system. Users typically engage in Conversations with members on their list of Contacts. A non-user is a user that accesses or uses the system using a legacy phone, radio or other non-Client 12 enabled device.

[0069] Group: The association of multiple Contacts. Contacts may be selectively added or deleted from a Group. When a Conversation takes place among a Group, all the members of the Group may or may not participate.

[0070] Channel: Typically used for tactical communication systems. A Channel is similar to a Group in that it associates multiple Contacts with the Channel.

[0071] Participant: A person who is identified as a member of a Conversation. Could be a User or a non-User participant.

B.5. Conversation Management

[0072] Time Shifting: Time shifting is the ability to play any Message at any time after it has been received as determined by the User-recipient. By Time-Shifting, a User may Review a Message: (i) immediately on demand by Rendering immediately after the MTSD; or (ii) time-shifted in a mode of reviewing the Message upon the discretion of the User; (iii) from the archive for searching, reconstructions, etc. of old Conversations; (iv) after a delayed period of time to accommodate the Reviewing of other higher Priority Messages (or Conversations) that need to reviewed first; (v) and/or repeatedly if necessary for the Message to be reheard and understood. In other words, Time Shifting is the ability of a user to render a Message at any time after the system imposed MTSD.

[0073] Reviewing: Listening, viewing, reading or otherwise observing the Media content in Messages. Reviewing may take place in either a near synchronous real-time "live mode" or the time-shifted mode.

[0074] Intention: Either (i) a User-defined attribute capturing whether the User wants to Review the Messages of a Conversation either as soon as possible or Review the Messages in a time-shifted mode; (ii) implied by a User's behavior; or a combination of (i) and (ii). .

[0075] Attention: A user attribute capturing whether the User is Reviewing the Messages of a given Conversation at the moment.

[0076] Catch Up To Live (CTL): A rendering mode that allows a User, who is not at the Head of a Conversation, to Review previous Messages more quickly to "Catch Up To Live" (i.e., the Head of the Conversation). The CTL feature may use any of a number of catch up techniques, such as the faster replay of Messages, the removal of gaps in the Media of the Messages, removal of hesitation particles, etc. When the User has caught up to live, the system seamlessly flows into the live Conversation. This is a very useful feature with conference calls, for example, in situations where a User needs to temporarily shift their attention away from the Conversation, but wishes to hear the entire Conversation upon their return.

[0077] Catch Up Mode: A user-configured or pre-configured mode that determines how the CTL process will catch-up (i.e., replay faster, remove silence, and hesitation particles, or a combination thereof).

[0078] Jump To Live (JTL): This feature allows a user to jump from their current position to the Head of a Conversation. A user will typically use the JTL feature when they do not want to Review all of the Messages between their current position in the Conversation and the Head. When the JTL feature is implemented, the user skips over any intervening Messages and starts Rendering the "live" Messages at the head of the Conversation.

[0079] MCMS Participant Attributes: A set of attributes, either defined by a User, interpreted by the system from the User's behaviors, assigned by an administrator, or a combination thereof, which define the Intention, Attention, Priority, and rendering preferences of a receiver for a given Conversation. The attributes include, but are not limited to: (i) the Intention of when a receiver would like to render to the Messages of

the Conversation. Possible Intention values include: "now", "time-shifted", "Catch Up To Live" (CTL), "paused", and "never"; (ii) Catch Up Mode, which is a configuration setting which determines how the CTL process should catch the receiver up to live (e.g., play faster, skip silence gaps or hesitations, or play at normal speed); (iii) Time Shift Delay (TSD), which defines how far the receiver's current position in the conversation is from the Head of the Conversation, and (iv) the Priority of the Message with regard to the receiver's other Conversations.

C. System Architecture

[0080] Referring to Figure 1, a block diagram of the telecommunication and media management system according to one embodiment of the invention is shown. The system 10 includes a plurality of Clients 12_1 through 12_n, running on Devices 13_1 through 13_n respectively. The Devices 13 communicate with one another over a communication services network 14, including one or more Servers 16. One or more networks 18_1 through 18_n, is provided to couple the plurality of Devices 13_1 through 13_n to the communication services network 14. In various embodiments, the networks 18 may be the Public Switched Telephone Network (PSTN), a cellular network based on CDMA or GSM for example, the Internet, a tactical radio network, or any other communication network, or a combination thereof. The communication services network 14 is a network layer on top of or otherwise in communication with the various networks 18_1 through 18_n. In various embodiments, the network layer 14 is either heterogeneous or homogeneous. Clients 12_1 through 12_n communicate with one another and with Servers 16 over the networks 18_1 through 18_n and network 14 using individual message units referred to as "Vox packets", which are described in detail below.

D. Client Architecture

[0081] Referring to Figures 2A and 2B, a block diagram of a Client 12 running on a Device 13 is illustrated. As illustrated in Figure 2A, the Client 12 includes Multiple Conversation Management System (MCMS) application 20, a rendering and encoding module 21, and an MCMS applications database 22. As illustrated in Figure 2B, the Client 12 further includes a Store and Stream (SAS) module 24 with a Persistent Infinite Message Buffer (PIMB) reader 26, a PIMB writer 28, PIMB database 30, a data and network quality (DNQS) store 32, and Media driver and encoder hardware 34. The MCMS application 20 and the Store and Stream module 24 communicate with one

another through message handling modules 25a and 25b respectively. The Client 12 further includes an authentication-encryption-security module 40 and a communication protocol module 44.

[0082] The module 40 provides authentication, encryption and security services during the transmission and receipt of "Vox" packets to and from the Client 12. The communication protocol module 44 encapsulates Vox packets into the native packets used by the underlying network 18 connected to the Device 13 running the Client 12 when transmitting data and de-encapsulating Vox packets from the native packets when receiving data. With the modules 40 and 44, multi-party end-to-end authentication, encryption and security is provided between Clients 12. Messages are authenticated, encrypted and secured across the networks 18_1 through 18_n and network 14, from a first sending Device 13 to second receiving Device 13.

D.1.1. The MCMS Database

[0083] The database 22 stores and manages the persistent meta data for a number of entities in the system 10, including Contacts and Participants, Conversations and Messages (live and stored), and default Priorities, and information regarding the Servers 16. In addition, the MCMS database 22 stores the moment-to-moment operational data of a User's Conversations, presence, and status, as well as that of all the Participants conversing with the User or on the User's Contact list. For example, with regard to Conversations and Messages, the database 22 keeps track of status information, such as what Messages of a Conversation a User has or has not Reviewed, Priorities, and Catch Up To Live status for each Conversation in which the Client 12 is a Participant, the presence and status of all Participants, and other network and other system management data.

D.1.2. The MCMS Application

[0084] MCMS application 20 supports the different Voxing modes of engaging in conversations and/or managing multiple conversations using a variety of media and data types (voice, video, text, location, data, etc.). Users engage in Conversations by sending Messages to designated recipients using their Client 12 enabled Devices 13. Depending on preferences and Priorities, the recipient might Review the Message in real time, or they might simply be notified that the Message is ready for Reviewing. Users can transition from a series of back and forth Messages, which are Reviewed in a time-

shifted (or voice messaging) mode or in a near synchronous, full duplex conversation (similar to standard "live" phone calls) and then back to voice messaging again. The MCMS application 20 allows a User to control their interactions with their most important Conversations in real-time without missing any Messages in other ongoing Conversations. For example, the MCMS application 20 notifies a User of urgent or high priority communications from a Conversation that they are not currently Reviewing. MCMS application 20 also enables all Messages from all Conversations to be stored for later retrieval so they can be reviewed at any time.

[0085] In accordance with various embodiments, there are several different operational modes of the MCMS application 20, including MCMS-Consecutive (MCMS-C) and MCMS-Simultaneous (MCMS-S), which support the consecutive and simultaneous rendering of Messages respectively. Each of these embodiments is described in more detail below. Unless specifically specified, the term "MCMS" is intended to generally mean the MCMS application 20, which includes the aforementioned different modes.

[0086] The MCMS application 20 is a multi-tiered architecture that includes a number of modules and services. The modules and services include the MCMS Database Module 20a, the SAS Services Module 20b, the Messaging and Signaling Services Module 20c, the User Interface Application Programming Interface (API) 20d, the User Interface Module 20e, the Conversations/Messages Management Services 20f, the Priorities Services 20g, the Contacts Service 20h, the Presence/Status Services 20i, and the Messages/Signals Services 20j.

D.1.2.1 The MCMS Database Module

[0087] The MCMS database module 20a is a service module that manages all function calls necessary for the MCMS application 20 to access the MCMS database 22.

D.1.2.2 The SAS Services Module

[0088] The SAS Services module 20b includes a set of function calls that enable communication and coordination between the MCMS application 20 and the Store and Stream module 24, and which are passed back and forth through the message handling modules 25a and 25b respectively. The set of function calls enable both the MCMS application 20 and the Store and Stream module 24 to operate as necessary to implement the various Voxing functions when invoked by Users and/or as dictated by network conditions. Some of the functionality performed by the SAS Services module

20b includes maintaining and communicating the status of Message transmissions and Message acknowledgments, the instructions for rendering of Messages, and the status and presence of Users.

D.1.2.3 The Messaging and Signaling Services Module

[0089] The Messaging and Signaling Services module 20c runs on both Clients 12 and Servers 16 and enables communication between the Client 12 and the Servers 16 of the system 10. This communication, which includes messages, data and other signals, allows the Client 12 and the system 10 to track and administer communications, network status, Users, and User status. Types of messages and signals sent between the Message and Signaling Services modules 20c running on the Clients 12 and the Servers 16 include, for example, network availability of Users, tracking of Messages that the Server 16 has sent to the Client 12 (possibly including a "high water mark") to determine if an entire message or some portion of a message is missing, (e.g., a sequence number per Participant per Conversation created by the "generating" Client), whether a user is speaking or Reviewing Messages of a given Conversation, where a User is with respect to the Head of a Conversation, or when a Participant is no longer Reviewing a Conversation live. These are examples a few of the many types of messages and signals sent between the Message and Signaling Services modules on the Clients 12 and Servers 16 and in no way should be construed as limiting the invention.

D.1.2.4 The User Interface API

[0090] The User Interface API 20d is a module that defines a set of function calls that define the programming interface between the User Interface module 20e and the underlying services of the MCMS application 20. The User Interface API 20d supports general-purpose methods such as UI application support, and all function calls necessary for a User Interface to operate the MCMS Application 20. In various embodiments, the User Interface API 20d enables the Client 12 to support a wide variety of user interfaces and device types, such as Adobe Flash-based and/or Microsoft Windows applications, cellular or mobile phone devices, PSTN devices driven with tones, a voice user interface (VUI), and physical radio communication interfaces. In various embodiments, the User Interface API module 20d enables the design of both highly flexible and highly constrained user interfaces to support the functionality of the MCMS application 20.

D.1.2.5 The MCMS User Interface Module

[0091] The MCMS User Interface module 20e supports the operation and functions of the audio and video user interface of the Client 12. The User Interface module 20e supports a host of user interactions and can be implemented with various interaction mediums, such as, an array of graphical user interface screens, an Audio/DTMF interface, or voice user interface on the Device 13, all of which enable a User to interface with the system 10. A partial list of User interactions that are supported include, for example, functions to: log-in; manage, join, and monitor Conversations; control Conversation rendering; manage Priorities; and requests to review archived Conversations. It should be noted that this list is exemplary and in no way should be construed as limiting the invention.

D.1.2.6 Conversation/Message Management Services

[0092] The Conversation/Message management services 20f is a module which defines a set of functions that manage the data structures and processes responsible for managing and retaining all information needed for the User to manage the receipt and Review of transmitted and received Media (e.g., voice or video content Messages) between the participants of a Conversation. The Messages are organized into Conversations. Media that is sent or received by the Device 13 running the application 12 is available for immediate Review while being received. The received Media is also recorded for Review in a time-shifted mode, Conversation management, and archival purposes. In an alternative embodiment, Messages or Conversations can be optionally marked for transience, specifying their desired retention requirements (e.g., some Messages will not be retained or stored beyond the requirements for immediate rendering). In yet another embodiment, Media can be optionally marked for review in a time-shifted mode only and cannot be reviewed immediately upon receipt.

[0093] The Conversation/Message management services 20f further enables, for each current or ongoing Conversation of the User, the sending of Media to a receiving Client 12 at any time, and the receiving Client 12 seamlessly associates these Messages with the appropriate Conversation, regardless of the actions or inaction of the receiver.

[0094] With the Conversation/Message management services 20f, all Conversations are essentially asynchronous. If two Users are actively engaged in a given Conversation and the User controlled delay between transmissions is minimal, the experience will be

one of a synchronous full duplex conversation, as with current telephone or VoIP conversations. If either User delays their participation, for whatever reason, the Conversation drifts towards an asynchronous voice (or other Media) messaging experience. In alternative embodiments, Conversations can be optionally Tagged as asynchronous Messages only or synchronous Messages only. In either of these cases, the Conversation cannot drift between the two modes, unless the Tag is reset. After the Tag is reset, the Conversation again may flow between near synchronous (i.e. live or real-time) and asynchronous (i.e., time-shifted or voice messaging) modes.

[0095] The Conversation/Message management service 20f processes the transmission and receipt of Messages in a progressive fashion. When transmitting, Media may be created while Messages are simultaneously encoded, stored and transmitted. In other words, the transmission of Messages may occur simultaneously with the generation of Media by the User (i.e., while speaking into their Device 13 or generating video). On the receiving side, the receipt, storage, and Rendering of Messages also all occur progressively. Messages do not need to be completely received before they can be Rendered. The Rendering of Messages may occur at the same time Messages are being delivered, right up to the MTSD. Further, the service 20f is also capable of the simultaneous transmission of outgoing Messages and Rendering of incoming Messages. The progressive nature of the service 20f allows a User to be engaged in a live Conversation while storing and streaming the media of the Conversation for later retrieval and review as well other functions described herein.

[0096] The time-shifting of Messages by the Conversation/Message management services 20f allows a User to "Catch Up To Live" on a Conversation if they missed earlier Messages or were involved in another Conversation. This time-shifting process eliminates the need for Users to broadcast a request to their entire Group or Channel to have Messages repeated. Older Messages may be replayed at any time at potentially higher speeds to save time. Users may easily skip forward and backward through their Messages and within individual Messages. The Reviewing process may be configured on a Message-Priority basis to potentially skip lower priority Messages.

[0097] In one embodiment, the Conversation/Message management service 20f also identifies Messages by a specific Participant (speaker) and, by default, mixes Messages of a Conversation that were delivered at the same time (MCMS-S). In an optional

embodiment, a User could Review the transmissions of different Participant speakers of a Conversation separately.

[0098] The Conversation/Message management module 20f further allows Conversation sharing among Participants, who can be added to an active or archived Conversation. In one embodiment, an added Participant to a Conversation is provided access to the Conversation and has the ability to retrieve the previous Messages of the Conversation for Review. In an alternative embodiment, the added Participant is provided access to the Messages of the Conversation only from the point where the new Participant joined, and not any previous Messages of the Conversation.

[0099] The Conversation/Message management module 20f is also responsible for managing the functions used to control all rendering tasks performed by the Store and Stream module 24. These tasks include rendering Media (i.e., voice, video, etc.) appropriately for the Device 13 running application 12. These rendering tasks include, but are not limited to, the rendering of Mixed Messages (i.e., overlapping messages), as well as rendering according to user-defined criteria, such as playing faster, catching up to live, removing silence, removing hesitation particles, frequency shifting, and the ability to apply independent gain control to individual senders in a multi-party conversation.

D.1.2.7 Priority Services

[0100] The Priority service 20g is a module that defines a set of functions that manage the data structures and processes responsible for managing and retaining all information needed for a User to manage the Priority of the consecutive Conversations (i.e., MCMS-C) in which the User is engaged. When a User participates in a number of consecutive live Conversations, the User is required to prioritize the Conversations. Issues arise when Messages of different Conversations are ready to be rendered at the same time. An algorithm is used to determine the order in which the Messages are rendered that considers the availability of Messages to be rendered and the Priorities set by the User. The algorithm determines that the available Messages with the highest priority are rendered first while any concurrently available Messages are time shifted automatically just enough to allow for the rendering of the higher priority Message. As rendering time becomes available, the system will automatically render the time-shifted messages according to the User's Priorities.

D.1.2.8 Contacts Services

[0101] The Contacts services 20h is a module that defines a set of functions that manage the data structures and processes responsible for managing and retaining all information needed for authenticating and associating one or more Contacts with Conversations. When sending a Message as part of a Conversation that is associated with a number of Contacts, all of the Contacts receive the Message.

D.1.2.9 Presence/Status Services

[0102] The Presence/Status services 20i is a module that defines a set of functions that maintain the data structures and processes responsible for managing and sharing presence and status information between certain Users and/or non-users of the system. In various embodiments, the presence and status information is maintained for all User and non-users engaged in the Conversations the User of the Client 12 is engaged in, all Users and non-users in the Contacts list, or Users within a predefined domain (e.g., the members of a corporation or other organization). These examples are merely illustrative and should not be construed as limiting. The Presence/Status services 20i module may manage and share presence and status information on any defined set of Users and/or non-users.

[0103] The Presence/Status service 20i enables Users to monitor the status of other User's Intentions, Attention, and their Time Shift delay on any given Conversation (i.e., how far back they are from Reviewing the Messages of the Conversation live). In one embodiment, privacy controls are provided concerning availability of Presence and Status data. The Presence/Status module 20i further controls the data that enables the system 10 to deliver Messages that match the behavior and Intentions of Users. For example, a User may indicate their Status by designating an Intention to either Review or not Review a Conversation live. In response, the Presence/Status services 20i issues commands that cause the rendering of Messages either "live" or time-shifted, in accordance with the Intention of the User. In addition, the Intentions of Users are shared with the other Participants of the Conversation. The service 20i is also capable of inferring other Status values from the User's behaviors. The Presence and Status information is also used to optimize network traffic and bandwidth, as described in more detail below.

D.1.2.10 Messages/Signals Services

[0104] The Messages/Signals services 20j is a module that defines a set of functions that manage the data structures and processes responsible for messaging and signaling Users of the system 10, using special messages or audible tones. The special messages or tones may include for example an indication if a Message or Messages are live or time-shifted, whom the Message(s) are from, Priority, and other factors. The Message/Signal service 20j further has the ability to (i) signal the presence or absence of Users on the network, as well as the ability to notify if one or more Users are no longer actively Reviewing the Messages of a Conversation; (ii) "ring" or otherwise notify another User to get their attention when they are paying attention to another Conversation or not paying attention to their Device 13 at all; (iii) leave a Message for Users currently not on the network 18 to immediately review the Message the next time the individual re-connects to the network 18; (iv) generate an audible or visible feedback that alerts the sender that a sent Message was not received by recipient(s), generate a confirmation when the Message has been received by the recipient(s), and/or a confirmation indicating when the Message has been Listened to by the recipient(s); and (v) implement a Priority scheme where individuals on a Conference or tactical call may be notified that their attention is immediately needed on the call. This indication may convey multiple levels of urgency and an acknowledgement of some kind by the recipient.

D.1.2.11 Rendering and Encoding

[0105] The rendering and encoding module 21 is responsible for performing all rendering tasks for the MCMS application 20. These tasks include rendering Media appropriately for the device 13 running application 12.

D.2 The Store and Stream Module

[0106] The Store and Stream module 24 supports a number of functions and performance attributes, which are described below.

[0107] With the Store and Stream module 24, Message transmission is essentially "full-duplex", enabling any party to send a Message at any time, even while another party is also sending a Message, or if the other party is unavailable or otherwise engaged. The Store and Stream module is able to render messages as in a live PSTN or VoIP call or

deliver them for time shifted messaging modes. It is able to optimize transmission and control Rendering according to the desires of the User.

[0108] The Store and Stream module 24 maintains connectivity with all target recipients (e.g., Servers 16 or other Devices 13) on the underlying network 18, manages all message, signal, and media transmissions, and optimizes the delivery speed and bandwidth usage across the network 18 to meet a User's immediate performance requirements, while managing network quality and capacity. The module 24 adapts and optimizes Media delivery commensurate with the quality and capacity of the underlying network 18. When insufficient underlying network resources are available, the quality of the transmitted Media streams can be degraded. As bandwidth becomes available, the quality of the transmitted Media streams may be increased. In addition to tradeoffs of Media quality, the Store and Stream functionality can make tradeoffs in the amount of Media transmitted in each packet based on Users' intentions to render data in real time as described below.

[0109] By dynamically controlling the delivery rate of Media based on the conditions of the underlying network 18, the Store and Stream module 24 is optimized to deliver time-sensitive Media that is "good enough" to Render upon receipt, and the guarantee eventual delivery of exact or full copies of the Media for archival purposes through a background process of requesting retransmission of missing, low quality, or damaged packets. As long as sufficient network resources exist to meet minimum Media quality levels, this retransmission does not impede the Rendering of live call Media. The Clients 12 of the system 10 are thus designed to bridge the performance gap between the delivery of an exact or complete copy of the Media at the expense of substantial potential latency versus the quick delivery of Media, but with no guarantees of completeness. In the context of this application, the term "good enough" means that the quality of the Media is sufficient so that when it is rendered, it is intelligible. The notion of "good enough" is therefore subjective and should not be construed in absolute terms. For example, the quality level of certain Media to be good enough may vary depending on the type of Media, circumstances, and other factors.

[0110] The Store and Stream module 24 further persistently stores all Media created by or otherwise originating using a Device 13 or received over the network 18 from other Device 13 and/or users. There are several significant advantages of storing this Media on the Device 13 running the Client 12: (i) it enables Users to leave a Message for

another party, even when the sender and/or the recipient has either unavailable or poor network connectivity. In the case of insufficient bandwidth, the Message will be transmitted as fast as available bandwidth can be effectively used. In the case of no connectivity, the Message is queued for transmission as soon as network connectivity becomes available, resulting in a time-shifted delivery; (ii) the User has the ability to pause, replay, fast-forward, and Catch-Up-To-Live with an ongoing Conversation, as well as retrieve and review the archived Messages of previous Conversations; and (iii) it enables the optimization of data payloads over the system 10 and improves system resilience against network bandwidth and connectivity problems that may occur from time to time.

[0111] The Store and Stream module 24 is also responsible for: Mixing Messages as appropriate to create overlapping Messages (generated by the normal overlap of speakers in a Conversation or background noise), simulating an actual Conversation where multiple parties are speaking; rendering transcriptions or translations of audio media; adjusting the rendering of Media according to a number of User-defined criteria including playing faster, removing silence gaps between spoken words, removing hesitation particles, and frequency shifting; and the ability to apply independent gain control to individual senders in a multi-party Conversation; as well as other potential Rendering options.

[0112] The Store and Stream module 24 manages control and informational messaging between itself and MCMS.

D.2.1 The Persistent Infinite Message Buffer (PIMB)

[0113] The Persistent Infinite Message Buffer or PIMB 30 is a set of indexed (i.e., time-stamped and sequentially numbered) Media payload data structures and a system for their storage and retrieval. In one embodiment, the data in the PIMB 30 is arbitrarily persistent, meaning it is available virtually forever or at least until the system runs out of storage. Various retention rates and strategies may be employed to make effective use of storage resources. Many possible implementations exist for the physical storage implementation of the PIMB 30, including, but not limited to: RAM, Flash memory, hard drives, optical media, or some combination thereof. The PIMB 30 is also "infinite" in size, meaning the amount of data that can be stored in the PIMB 30 is not inherently limited. This lack of limit is in comparison to existing jitter buffer technology that

discards data as soon as it is rendered. In one specific embodiment, the PIMB 30 may be implemented using a small and relatively fast RAM cache memory coupled with a hard drive for persistent storage. As the physical storage capacity of the PIMB 30 is exceeded, the data is maintained on the Server 16 (as described below) for later retrieval on demand. User criteria or a replacement algorithm, such as least-recently-used, or first-in-last-out, is used to control the actual data stored in the PIMB 30 and the data that is maintained on the Server 16 or archived at any point in time. The PIMB 30 further provides the attributes of file system storage and the random access attributes of a database. Any number of Conversations, regardless of their duration or the number of Messages in each, may be stored and later retrieved for Review. In addition, the meta data associated with the Messages of a Conversation, such as its originator and its length, may be also stored in the PIMB 30. In alternative embodiments, the indexed Media payloads and other data can be stored for a designated period of time (e.g. 30 days). Once the age of the media exceeds the designated period, the payloads and data are discarded. In another embodiment, payloads can be discarded based on the sender and/or the recipient of the Message containing the payload, or the topic of the Conversation or Messages associated with the payload. In yet other embodiments, payloads and data may be marked for transience, meaning the Messages will not be stored in the PIMB 30 beyond the requirements for immediate Rendering.

D.2.2 The Data and Network Quality Store

[0114] The data and network quality store (DNQS) 32 is a data store for storing information regarding Media payloads and Vox packets that are either read from or written to the PIMB 30.

D.2.3 The PIMB Writer

[0115] The PIMB writer 28 writes data to the PIMB 30 for two basic purposes. The PIMB writer 28 writes data from a Media capturing device (e.g., a microphone or camera) on the Device 13 running the Client 12 ("Encode Receive"). The PIMB writer 28 also writes data received over the network 18 from other Clients 12 into the PIMB 30 ("Net Receive").

D.2.3.1 Encode Receive

[0116] For capturing Media from the Device 13, the PIMB writer 28 includes Encoder Receiver 28a and a Data Storer 28c. When a User speaks into the microphone or

generates video images with the Device 13 for example, the hardware 34 receives the raw audio and/or video signals and provides them to the Encoder Receiver 28a, which encodes the signals into indexed media payloads (hereafter sometimes simply referred to as "payload" or "payloads"). The Data Store 28c stores the payloads into the PIMB 30. Other types of Media, such as sensor data is converted into payloads in a similar manner.

D.2.3.2 Net Receive

[0117] For storing Media received over the network 18 into the PIMB 30, the Net Receive function of PIMB writer 28 includes a Network Receiver 28d, a Data Bufferer 28e, a Data Storer 28f, a Data Quality Manager 28g, and a Network Quality Manager 28h. The Network Receiver 28d receives Vox packets over the network 18. The Data Bufferer 28e places the received Vox packets into their proper sequence and prevents the Rendering of the incoming Vox packets for at least the Minimum Time Shift Delay (MTSD) delay. The Data Storer 28f transforms the packets into indexed media payloads and stores the indexed media payloads in the PIMB 30. As the payloads are stored, the Data Quality Manager (DQM) 28g notes any missing or defective packets. If packets are missing or defective, the DQM 28g schedules a request for retransmission over the network 18. The sending device replies by resending the missing or defective packets. Eventually these packets are converted into indexed media payloads and stored in the PIMB 30. By retrieving the missing or defective packets, an "exact" copy of a sender's Message is eventually stored in the PIMB 30. The retransmission of missing and/or defective packets does not delay the rendering of Messages in real time, provided that the packets that have been delivered are of "good enough" quality and quantity. Retransmission requests may be delayed by the DQM 28g if insufficient network resources are available to support both the new "live" data as well as the retransmission.

D.2.4 The PIMB Reader

[0118] The PIMB reader 26 reads data from the PIMB 30 for two basic purposes. The PIMB reader 26 accesses the PIMB 30 when data is to be rendered ("Render") for the local Client 12. Data is also read from the PIMB 30 when data is to be transmitted ("Transmit") by the Client 12 over the network 18.

D.2.4.1 Render

[0119] For the rendering of messages on the Client 12, the PIMB reader 26 includes a Data Prioritizer 26a, a Data Retriever 26b, a Packet Loss Compensation/Interpolator ("PLC/Interpolator") 26c, a Data Mixer 26d and a Data Renderer 26e. The Prioritizer 26a prioritizes the data to be rendered by building an ordered queue of messages that could potentially be Rendered. It uses User configured Priority for the rendering of consecutive Conversations (MCMS-C). In addition, the Data Prioritizer uses the availability of media data to render within the limits imposed by the MTSD, the User's current Attention, and the User's defined and implied Intentions. The Data Retriever 26b retrieves the prioritized indexed media payloads from the PIMB 30. The PLC/Interpolator 26c performs packet loss compensation and interpolation on the retrieved payloads, using known packet loss compensation and interpolation algorithms. The particular method to be used is dependent on the media Codecs in use, and other well-known parameters. The Mixer 26d is used to appropriately mix concurrent data streams from multiple Messages of a single Conversation together. For example, if two or more Participants of a Conversation are speaking at the same time, the Mixer 26d mixes the Messages, creating the effect of both Participants speaking at the same time. In an alternative embodiment, the User has the option of Reviewing the multiple streams from one Participant at a time. If only one Participant in the Conversation is speaking, the Mixer 26d may simply pass the single Message stream, without performing any mixing. The Renderer 26e takes the data from the Mixer module 26d and converts it into a form suitable for the hardware driver 34. The hardware 34 then drives either the speaker or video display of the Device 13, depending on the type of Media, creating voice, video or some other audible and/or visible notifier on the Device 13.

D.2.4.2 Transmit

[0120] To prepare messages for transmission from the Client 12 over a network 18, the PIMB reader 26 includes a Data Prioritizer 26f, a Packet Quality Manager (PQM) 26g, a Data Retriever 26h, Packetizer 26i, a Transmitter 26j and an Acknowledger 26k. The Data Prioritizer 26f prioritizes the Messages for transmission over the network 18. Priority is determined using the MCMS Participant Attributes related to payloads available for transmission, network connectivity and bandwidth conditions, and the Intentions of Users beyond the next hop to either Render live or time-shifted, and, in

some embodiments, possible optimizations of transmission bundling where multiple packets to any given next network hop are available. The prioritized packets are then optimized, using the PQM 26g, which assures the timely delivery of "good enough" data quality for live Messages, while minimizing real-time bandwidth, as described in more detail below. The Data Retriever 26h retrieves the appropriate payloads from the PIMB 30. The Packetizer 26i assembles the payloads into Vox Packets, which are then transmitted by the Transmitter module 26j over the network 18. When the recipient receives the Vox packets, an acknowledgement is sent back to Acknowledger 26k over the network 18 for notifying the sending User that a Message has arrived at its destination.

D.2.5 The Packet Quality Manager

[0121] The PQM 26g has several optimization goals: (i) the timely delivery of an adequate copy of time-sensitive Media ("as soon as possible to be good enough" for Rendering); (ii) the efficient use of available bandwidth, meaning using the optimal transmission frequency, payload quality, and packet size for the underlying network; and (iii) the ability to dynamically adjust or make changes in the transmission frequency, payload content, payload quality, packet size, etc. as network conditions change.

D.2.6 The Network Quality Manager

[0122] On the receiving side of a network transmission is the Network Quality Manager 28h (NQM). The NQM is responsible for observing specific properties of network performance for each sender that has sent media to the Client 12, comparing expectations of jitter, loss, and throughput to their actual values. This is used to compute a Network Quality Rating (NQR) for every sender. This NQR is used to indicate sender availability and Conversation live-ness to the User of the receiving device.

D.2.7 The Data Quality Manager

[0123] The Data Quality Manager 28g measures the quality of the data being received over the network by observing packet loss, jitter, and throughput. The DQM 28g uses these measurements for three purposes: (i) to send receipt reports back to the sender; (ii) optionally using those receipt reports to request retransmission of certain data; and (iii) making these measurements available to the NQM 28h.

E. Server Architecture

[0124] Referring to Figure 3, a block diagram of the application 78 that runs on the Server(s) 16. The application 78 is similar to the Client application 12 in many regards and includes an MCMS server application 80, an MCMS database 82, a store and stream module 84, a PIMB 85, a data and network quality store (DNQS) 86, MCMS-SAS message handling modules 87a and 87b which manage messages and signals back and forth between the MCMS server application 80 and Store and Stream module 84, an archive/retriever 88, and an archive 89. The application 78 further includes an authentication-encryption-security module 40 and a communication protocol module 44.

[0125] The MCMS server application 80 is a multi-tiered architecture including a MCMS Database Module 20a, a Store and Stream (SAS) Module 20b, a Messaging/Signaling Module 20c, Conversations/Messages management services 20f, Priority services 20g, Contacts (including User and Authentication) services 20h, Presence/Status service 20i, and Messages/Signals services 20. The aforementioned modules and services of the application 78 are similar or the same as the modules and services having like reference numerals as the Client 12, and therefore are not described in detail herein, except for one notable exception. In various embodiments, the MCMS server application 80 and Store and Stream module 84, including the MCMS database 82, is configured to support many Users in one instance of the application. The one instance may be further configured to support multiple domains, where each domain is defined as a group of Users (i.e., a corporation or other group of Users belonging to a common organization). This architecture allows each application 78 on Server 16 to serve multiple users (or domains), where each user (or domain) is not visible to other Users. This partitioning is referred to as "multi-tenancy".

[0126] The server Store and Steam 84 module performs the functions of Net Receive and Transmit. For the Net Receive function, the module 84 includes a Net Receiver 28d, Data Bufferer 28e, a Data Storer 28f, a Data Quality Manager (DQM) 28g, and a Network Quality Manager 28h. For Transmit functions, the module 84 includes a Data Prioritizer 26f, Packet Optimizer 26g, Data Retriever 26h, Packetizer 26i, Transmitter 26j and an Acknowledger 26k. The aforementioned elements of the Store and Stream module 84 are similar or the same elements having like reference numerals as the Client 12, and therefore are not described in detail herein.

[0127] Since the Server 16 does not directly interact with Users, the encoding and rendering functions provided in the Store and Stream module 24 of the Clients 12 need not be present. The MCMS application 80, when running on Servers 16, does not interact directly with Users. Consequently, the user interface and user interface API modules and services 20e and 20d are not needed.

[0128] The application 78 on each Server 16 potentially serves multiple tenants, meaning it serves multiple Users of the system 10. The PIMB 85 of the server application 78 is therefore significantly larger and is used to store the media payloads of multiple Users, as opposed to the PIMB 30, which is used to store just the generated or received payloads of only a single User. The main purpose of the Store and Stream module 84 is to receive Messages transmitted by the Clients 12 and transmit Messages to other Clients 12. As Messages are received, they are stored in the PIMB 85 and transmitted to the next Server 16 (i.e., the net "hop") of the network layer 14 along the path to the intended recipient(s), or to the recipient(s) directly depending on the system configuration. The archive-retriever 88 is responsible for archiving the media payloads stored in the PIMB 85 in archive 89. As the physical space in the PIMB 85 is exhausted, media payloads in the PIMB 85 are moved to the archive 89, which is a mass storage device. In various embodiments, the payloads stored in the PIMB 85 may be archived in accordance with User defined criteria and/or any known replacement algorithm, such as first-in-first-out (FIFO) or least recently used (LRU). It should be noted that only a single Server 16 is illustrated in Figure 1 for simplicity. It should be understood that in actual embodiments, multiple servers or a "server farm" may be used for a network with a large number of Users.

[0129] The terms "persistent" and "infinite" used to describe the PIMB 30 and the PIMB 85 should not be construed literally as absolute terms. A User may wish to indefinitely store some Messages that are considered important. In other situations, such as a casual chat between two friends, the Messages may be deleted after a certain period of time to save space. According to various embodiments of the invention, different retention policies may be used, either set by the system 10 or configured by the User. The use of the word "infinite" refers to the lack of any preset time boundaries enforced by the PIMB. This is contrasted with current jitter buffer systems, which discard media after it has been rendered. The terms persistent and infinite should therefore be broadly

construed to mean that the PIMB 30 and PIMB 85 have no internal limitations on the time ranges and quantities of Messages that can be stored therein.

[0130] There are a number of advantages to archiving the Messages of Conversations in a persistent storage medium. Voice messages and other Media can be organized, indexed, searched, transcribed, translated, and Reviewed as needed. Voice, as well as other Media, therefore becomes an asset that can be managed both by Users and organizations. These Media assets have value to corporations, first responders, police and fire departments, as well as the military.

F. The Vox Protocol and Indexed Media Payloads

[0131] As noted above, the Vox protocol is used by the Store and Stream module 24 to support all facets of payload transmission, storage, and optimization. The Vox packet is a structured message format designed for encapsulation inside a transport packet or transport packets of the underlying technology of the network 18. This arrangement significantly improves the flexibility of the system 10. By embedding the Vox packets into existing transport packets, as opposed to defining a new transport layer for "Voxing" applications, the system 10 takes advantage of current packet based communication networks running over the existing telecommunications infrastructure. A new network infrastructure for handling the Vox packets therefore need not be created to take advantage of all the benefits of the system and method described herein.

[0132] Referring to Figure 4A, the general format structure of a Vox packet 95 is illustrated. The format of the Vox packet 95 includes fields for type, sub-type, length, and payload. The different types of Vox packets include authentication, signaling, media payload, media multiplex (one message), and media multiplex (multiple messages). The sub-type field is used to designate different types of authentication, signaling or media type messages. Possible sub-types for authentication Messages include those necessary for key exchanges and Authentication. Possible sub-types for signaling Messages include registration, routing, message set-up, and network management. Possible sub-types for Media messages include different Codec styles and different payload aggregation techniques. The length field defines the overall length or size of the payload. The payload field contains the actual payload or media of the packet 95.

[0133] Referring to Figure 4B, a diagram illustrating a Vox packet 95 encapsulated in an exemplary protocol used by the network 18 is shown. In this example, the Vox packet 95 is embedded in underlying UDP, IP and Ethernet transport packets 96 respectively. In this manner, the Vox packet 95 can be transported across underlying UDP, IP and Ethernet layers of the network 18. This is a standard protocol encapsulation technique used by packet networks.

[0134] Referring to Figure 4C, a diagram illustrating a media multiplex Vox packet 95 encapsulated in UDP, IP, and Ethernet 97 is illustrated. In this example, the Vox packet 95 includes a Media type field, a Media sub-type field, a length field, a message ID field, a time stamp field, a sequence ID field, and a Media payload field.

[0135] Referring to Figure 4D, the format of an indexed media payload 98 is illustrated. The indexed media payload includes a sub-type field, a length field, a message identifier (ID) field, a time-stamp field, a sequence identifier (ID) field, and field for the Media payload.

[0136] The encapsulation of Vox packets 95 into the transport packets of the underlying network allows the Media, Messages and Conversations to each be defined by a number of attributes.

[0137] When Media is created or otherwise originated on a Device 13, it is typically time-based, meaning it changes in some meaningful way over time. As a person engages in a Conversation for example, their spoken words are strung together into sentences or statements, which vary over time, and the resulting data (streams and packets) will maintain the same variance over time. Similarly video (as opposed to a still photo) as well as GPS or other sensor data will vary over time. Regardless of the type or how it is originated, the Media is segmented and placed into the payloads of a plurality of Vox packets 95. The packets are then continually, stored, transmitted, received, stored and rendered in streams (i.e., streaming media) at the transmitting and receiving Devices 13 respectively. Since each packet 95 is indexed, time-stamped, and given a sequence identifier, the individual packets can be segmented into Messages. By sequentially threading the individual Messages together, Conversations may be constructed.

[0138] One further unique aspect of the system 10 is that the media payloads generated by a Client 12 are stored in multiple locations. Not only are the payloads stored in the PIMB 30 of the generating Device 13, but also in the PIMB 85 of the Server(s) 16 and

the PIMB 30 of the receiving Devices 13. This basic feature enables or makes possible much of the Voxing functionality described above and provides the system 10 with both resilience and operability, even when network conditions are poor or when a Participant of a Conversation is not connected to the network.

G. Interoperability With Underlying Telecommunication Protocols

[0139] The system 10 is intended to run or be layered over a variety of existing communication networks 18, such as the Internet, fixed PSTN type circuit networks, and mobile or cellular phone networks, or a combination thereof. The system 10 is designed around the concept of moving many small units of information (i.e., the Vox packets) between different Clients 12 and Servers 16 in the system 10. While Vox packets may vary in size, depending on their function and payload, they all appear to be the same kind of data to the underlying network layer. In one embodiment, the system 10 has been designed and optimized for IPv4 networks such as the Internet, but other types of networks may be supported as well. For the purposes of this document, the term "IP" should be taken to mean IPv4, IPv6 or any other current or future implementation of the Internet Protocol.

[0140] Referring to Figure 5, a diagram of a Client 12 running on Device 13 and communicating with a Server 16 over a shared IP network 100 is shown. As illustrated, the Client 12 is coupled to the shared IP network 100 through a first Internet service provider A and the Server 16 is coupled to the shared IP network 100 by a second Internet service provider B. During communication, the Vox packets 95 (designed "VP" in the figure) are encapsulated within UDP/IP packets and then interleaved among other IP protocol packets as is well known in the art and transmitted across the shared IP network 100 from the Client 12 to Server 16, or vice versa. As is well known, each lower packet layer encapsulates the entire packet of the layer immediately above it. Packets can also be sent in a similar manner between two Servers 16. Messages are sent from one Client 12 enabled Device 13 to another over a shared IP network 100. At each hop, the Vox packets 95 are embedded in the underlying IP protocol and transmitted, until they reach the target destination.

[0141] The diagram of Figure 5 is merely exemplary, showing only a single Client 12 and Server 16 connected to the network 100 for the sake of illustration. In actual embodiments of the system 10, a large number of Clients 12 and one or more Servers 16

are typically connected to the shared IP network 100. It is also useful to note that the Client 12 and Server 16 do not have exclusive use of the IP network 100. In the example shown, an HTTP client, which is coupled to the network 100 through Internet provider A, can send packets back and forth with an HTTP server, coupled to the network 100 through a third Internet provider C. The system 10 does not control the manner in which the VPs embedded in the IP packets traverse the network 100. Rather, all packets that traverse and share the network 100 do so in accordance with the standard procedures of the underlying shared IP network 100.

[0142] Referring to Figure 6, a "circuit" based network 104 such as a GSM mobile phone network is illustrated. The circuit network 104 is coupled between Client 12 running on Device 13 and Server 16. Once a circuit is established between the Client 12 and Server 16, the system 10 layers Vox packets (VP1, VP2, VP3, VP4, VP5, etc.) onto the underlying packets used by the network 104 and transmits them across the network 104, creating "virtual Vox" circuit. The Vox Packets sequentially traverse the circuit network 104, typically with spacing or framing data as is well known in the art for transmitting data over a circuit network. In addition, packet construction parameters, such as the payload size and the number of header fields included may be used to exploit the lack of per-packet overhead and to increase speed and/or efficiency of data transfer across the network 104. It should be noted again that for the sake of simplicity, only a single Client 12 and Server 16 are shown connected to the network 104. It should be understood, however, that additional circuits between Clients 12 and Servers 16 as well as other components may be established concurrently through the network 104. The network 104 is therefore not dedicated for the transmission of Vox Packets, but rather may be shared with other types of network traffic.

[0143] Referring to Figure 7, a diagram illustrating communication between a first Client 12A enabled Device 13A associated with a first network A and a second Client 12B enabled Device 13B associated with a second network B is illustrated. The networks A and B further each include gateway Servers 16A and 16B respectively. The Gateway Server pair 16A and 16B facilitate communication between the two networks A and B, allowing the Devices 13A and 13B to communicate with each other. In various embodiments, the networks A and B could each be any type of network. For example, each network A and/or B could be an IP network, a circuit type network, or a wireless or cellular network (i.e., CDMA, GSM, TDMA, etc.). The Servers 16 that straddle the two

networks A and B are considered gateway servers because they route traffic or serve as a "gate" between the two networks.

[0144] With the system 10, there are a several basic network interaction considerations to optimize system performance. These considerations include factors such as resolving the underlying address to which the Vox packets 95 are to be sent, the integrity of any sent Vox packets, and the management of the Maximum Transmission Unit (MTU) of a single Message that may be sent across a given network or combination of networks.

[0145] The address of a target Client 12 needs to be known so that the underlying network delivers the Vox packet 95 to the correct location. With IPv4 networks, the address is typically an IPv4 Address, which is a 32-bit number that uniquely identifies a host within the network. For other networking technologies, the address could be some other type of identifier. IP networks use the Domain Name System (DNS) to resolve human-readable names into IP addresses, and the Address Resolution Protocol (ARP) to resolve IP addresses into physical addresses. Regardless of the underlying networking technology, the system 10 uses one of the above-mentioned or other known addressing schemes for delivery of Vox packets 95 to the correct location.

[0146] As with almost any packet-based communication system, transmitted Vox packets might not be delivered to their addressed location if the underlying network is unable to deliver the packets in which the Vox packets are encapsulated. Most packet networks do not inform transmitters when packets are dropped. Instead they rely on the transmitters and receivers to notice and compensate for any dropped packets. The system 10 is designed to use these receiver receipt report messages to coordinate this packet loss management. If the underlying network is able to inform the sender of lost or dropped packets, the system 10 utilizes this information in its retransmission protocol.

[0147] The management of MTU is the determination of the Maximum Transmission Unit (i.e., the maximum size of a single message) that may be sent across a network. For packet-based networks, the underlying network imposes the MTU. For circuit-switched networks, the MTU may be a tunable parameter for network efficiency and performance. Thus in most cases, the underlying network imposes or determines the maximum size of the Vox packet 95 that may be transmitted efficiently. For example with IP networks, packets may be fragmented if the payload exceeds the MTU, but at a

substantial performance penalty. With IP over Ethernet networks, the transmitting device has an MTU of 1518 bytes, as enforced by Ethernet. The largest IP packet must leave room for the Ethernet headers. The largest UDP packet must leave room for both IP and Ethernet headers and the largest Vox protocol that may be generated on Ethernet for example is the Ethernet MTU (1518) – IP header (20) – UDP header (8) = 1490 bytes. Since the Vox protocol will have a header of its own, the actual Vox media payload will be less than 1490 bytes on an Ethernet network. For Gigabit Ethernet, the MTU could be much larger, but would be determined using a similar formula.

[0148] In a purely packet-based network, there are two potential values for MTU, the local link MTU and the path MTU. Determining the local link MTU yields the maximum size for Vox packets to be efficiently sent out to the local network interface. The path MTU yields the maximum size of Vox packet that may be sent intact all the way to the remote node. If a sender is connected via Ethernet, the Vox packet might pass through various other systems with smaller MTUs en-route to the recipient. The smallest MTU on the path to the destination needs to be resolved and known by the sender. In the IP world, there is a standard procedure for discovering the smallest MTU called "Path MTU Discovery". For other kinds of networks, an equivalent procedure may be used. Again, since the system 10 is layered on top of other networks, any of the above MTU algorithms may be used.

H. Operation Flow Diagrams

H.1 Store and Stream

[0149] Referring to Figures 8A through 8F, a series of flow diagrams are provided to illustrate the operation of the store and stream module 24 and 84 on Clients 12 and Servers 16 respectively. Figure 8A shows the sequence of operation for a first Client 12_1 transmitting Messages to a second Client 12_2. Figures 8B and 8C illustrate the operation of the PIMB writer 28 and PIMB Reader 28 on the transmitting Client 12_1. Figures 8D and 8E illustrate the operation of the PIMB Writer 28 and PIMB Reader 26 on the receiving Client 12_2. Figure ~~10F~~ **8F** illustrates a flow diagram of the Store and Steam module 84 on a server 16.

[0150] In Figure 8A, the User of Client 12_1 running on a Device 13_1 originates Media to be transmitted. The Media can be originated at the Device 13 in a number of different ways such the User creating Media by speaking into a microphone or creating video

content on their Device 13. Media is also originated by a Device 13 by receiving sensor data, such a GPS information or a temperature reading. Regardless of how the Media is originated, the Media is encoded by the PIMB Writer 28 (box 130), which converts the Media into indexed media payloads and stores them in the PIMB 30 (box 132) on Client 12_1. The PIMB Reader 26 on the Client 12_1 reads the payloads out of the PIMB 30, creates Vox packets, and transmits the packets to the receiving Client 12_2 (box 134) over the network 18. Each Server 16 along the path between the sending Client 12_1 and the receiving Client 12_2 stores the transmitted payloads in the PIMB 85 and transmits the Vox packets to the next hop (box 133). At the receiving Client 12_2, the net receive function of the PIMB Writer 28 converts the Vox packets into indexed media payloads (box 136) and stores the payloads into the PIMB 30 of Client 12_2 (box 138). The rendering module of the PIMB reader 26 on Client 12_2 renders the payload information read from the PIMB 30 into a medium suitable for human consumption, such as voice or video (box 140). Each of these steps are described in more detail below with respect to Figures 10B through 10E.

[0151] In Figure 8B, a sequence of the Encode Receive function performed by the PIMB Writer 28 (step 130 of Figure 8A) is provided in detail. In the initial step 130_1, the User of the Device 13 running the Client 12_1 originates the Media to be transmitted. As noted above, the Media may be derived by speaking into a microphone, using a camera, receiving sensor data, or by some other Media generating component. In the next step 130_2, the Encode Receiver 28a encodes the Media and creates the indexed media payloads (step 130_3), which are then stored in the PIMB 30 (step 132) by the Data storer 28c.

[0152] In Figure 8C, the sequence of the Transmit function performed by the PIMB Reader 26 (step 134 of Figure 8A) on the sending client 12_1 is provided in detail. In decision loop 134_1, the transmit function of the PIMB Reader 26 continuously checks to see if indexed media payloads that are to be transmitted have been written into the PIMB 30 and are available for transmission. If such payloads are available in the PIMB 30, the Data Prioritizer 26f prioritizes the payloads that should be sent first, using the MCMS Participant Attributes information, as illustrated in step 134_2. Information about the highest priority payloads are passed to the Packet Optimizer module 26g which runs the PQM (step 134_3), as described in more detail below with respect to Figures 9A-9C. The appropriate payloads are then retrieved from the PIMB 30 (step 134_4) by the Data

Retriever 26h and converted into Vox packets 95 by the Packetizer 26i (step 134_5). The Vox packets 95 are then transmitted (step 134_6) by the Transmitter 26j over the network 18 to the receive Client 12_2, which sends back receipt reports reflecting the properties (loss, jitter, throughput) of the packets that have been received. These receipt reports provide the information necessary for the PQM to calculate the MABR for a given receiver. The aforementioned process is repeated for each transmission loop as indicated by the return arrow from the transmit step to the top of the flow chart.

[0153] In the embodiment described above, the media is encoded, stored in the PIMB 30 and then transmitted over the network in a serial fashion. In an alternative embodiment, the encoded media can be stored in the PIMB 30 and transmitted over the network in parallel, meaning the two functions occur substantially at the same time.

[0154] In Figure 8D, the sequence for the Net Receive function (step 136 of Figure 8A) of the PIMB Writer 28 on the receiving Client 12_2 is illustrated. In the initial step 136_1, the network receiver 28d receives the Vox packets 95 over the network 18. The Data Storer 28f converts the packets into indexed media payloads (step 136_3), which are stored in the PIMB 30 (step 136_4). As the payloads are stored, the Data Quality Manager (DQM) 28g is run. The DQM 28g checks for missing or corrupted packets, ensures the eventually storage of an exact copy of the transmitted data, and the sends receipt reports regarding the conditions of the network to the transmitter. Each of these functions of the DQM 28g are described in more detail below with regard to Figures 9D through 9F.

[0155] In Figure 8E, the sequence for the Render function of the PIMB Reader 26 (box 140 of Figure 8A) on the receive Client 12_2 is illustrated. In the initial step 140_1, the Data Prioritizer 26a prioritizes the indexed media payloads to be rendered as determined by the MCMS application 20 using the MTSD information as well as User status and presence information, including the User's Intentions and Attention status. The prioritized payloads are then read from the PIMB 30 (step 140_2) by the Data Retriever 26b. The PLC/Interpolator 26c performs packet loss compensation and interpolation (step 140_3) on the retrieved payloads, using known packet loss compensation and interpolation algorithms depending on which Codecs are used. In the next step, the Mixer 26d mixes (step 140_4) multiple Messages of a Conversation if two or more Participants have generated Media at the same time within the same Conversation (e.g., both are speaking at the same time). The Renderer 26e renders (step 140_5) the data

stream from the Mixer 26d, generating sound, video, or other Media (step 140_6) for the recipient User.

[0156] In Figure 8F, the sequence for a Server 16 to receive Vox packets from the previous hop on the network 18, store, archive and transmit the Vox packets to the next hop is illustrated. In the initial step, the Server 16 performs the Net Receive function of the PIMB writer (similar to Fig. 8D) to store the indexed media payloads of the received data in the PIMB 85 and archive 89 or the Server 16. The server 16 also performs the Transmit function of the PIMB writer (similar to Fig. 8C) to forward the received packets onto the next hop on the network 18. In this manner, a copy of the media generated by the transmit Client 12_1 is received, stored and transmitted at each hop along the path to the receive Client 12_2.

[0157] In the aforementioned embodiment, the writing of received indexed media is stored in the PIMB 91 of the Server 16 and transmitted to the next hop in a serial fashion. In an alternative embodiment, the received indexed media payloads can be stored in the PIMB 91 and transmitted to the next hop substantially at the same time. The storage of Media on the PIMB 30 of both transmitting and receiving Devices 13 allows for the progressive transmission and rendering of Media. On the transmit side, the Media originating on the transmitting device may be progressively transmitted over the network as it is being received. In various embodiments, the encoded Media (regardless of how it is originated) may be progressively transmitted before, after, or at substantially the same time it is stored in the PIMB 30. On the receive side, the incoming Media may also be progressively rendered as it is received over the network, provided the User has opted to Review the Media in the near real-time mode. In various embodiments, the incoming Media may be progressively rendered before, after or substantially at the same time as it is stored in the PIMB 30 of the receiving Device 13. If the received Media is to be Reviewed in the time-shifted mode, then the Media is retrieved from the PIMB 30 (or possibly a PIMB 85 on a Server 16 if replaced on the local PIMB 30) for later Review at a time designated by the User.

[0158] In the context of the present application, the term progressive or progressively is intended to be broadly construed and generally mean the continuous processing of a data stream based on availability of the data. For example, as Media is created or otherwise originated on a Device 13, the progressive encoding, storage, packetization and transmitting of that media is continuous, so long as the Media is available. As a

person speaks, that Media is progressive or continuously encoded, stored, packetized and transmitted for the duration of the persons speech. When the person pauses or stops speaking, there is no media to progressively process. When the person resumes speaking again, the progressive processing of the Media resumes. On the receive side, the Media is also progressive processed as the Media is being received (i.e., available). As ~~Media~~ the Media is received it is continuously stored. It will also be continually rendered as the Media is being received when in the near real-time mode or from storage when in the time-shifted mode. Although the above explanation was provided in the context of voice, it should be understood that all types of Media can be progressively processed in a similar manner. Also the progressive processing of Media does not necessarily have to be progressively processed in time-indexed order. Rather the Media is processed in the order in which it is received. If Media is received out of index order, in one embodiment, the Media is progressively processed in the order it was received and then organized into the indexed sequence in the PIMB 30. In an alternative embodiment, the received Media can be organized into its indexed sequence and then progressively rendered.

H.2 PQM Operation Flow Diagrams

[0159] The PQM 26g relies on a metric called the Maximum Available Bit Rate (MABR), which is a continually computed approximation of actual transmission capacity or bandwidth (i.e., a measure of the capability of the network at a given point in time) between a sending and receiving node pair. As instantaneous network conditions change, the MABR is updated. Regular measurements of network throughput, packet loss, and jitter are considered in computing the MABR. In an alternative embodiment, the MABR may also be manually set or limited based on time of day, type of network, other conditions or parameters.

[0160] The PQM also considers the Intention of the recipient(s) to optimize transmission for time-sensitivity. A transmission is considered time-sensitive if either (i) the Intention of the recipient(s) is to Review the transmission "live" or in the near real-time mode, or (ii) the recipient would like to immediately Review a Message that for some reason is not currently stored on their Device 13 (e.g., the Message was previously stored in the archive 89). The Intention of the recipient can be either inferred by the behavior of the recipient or the recipient may set or otherwise designate their Intention. On the other hand, a transmission is considered to be not time-sensitive if the

Intention of the recipient is to Review the Message in the time-shifted mode. The Intention of the recipient to Review the transmission in either the live or time-shifted mode at least partially defines the "timeliness requirements" of the transmission. In various other embodiments, factors such as the urgency or priority of transmissions may also be considered in defining the timeliness requirement of the transmission.

[0161] The nodes in the network path between a sender and a receiving pair also need to be consistent regarding the status of intentions of the recipients. If one target recipient indicates timeliness, meaning they wish to Review the transmission immediately or live, then all the intermediate nodes on the network along the sender-receiver path need to have the same timeliness requirement, regardless of the requirements of other recipients. The timeliness requirement of each of the intermediate nodes is therefore dependent on the receiving nodes the transmission is being sent to. This dependency is sometimes referred to as a "union of requirements" for target nodes in the network transmission path.

[0162] The PQM further considers an Ideal Bit Rate or "IBR" for each scheduled Message payload transmission. For time-sensitive transmissions, the IBR is computed based on the packetization rate needed for substantially real time or live communication (referred to herein as the Real Time Bit Rate or RTBR). With voice for example, a packetization rate of a packet every 20 milliseconds containing 20 milliseconds of audio data is considered an acceptable IBR for conducting live conversations. The RTBR for such a system in kilobits per second would be the size of 1 second of audio payload data plus the size of all network headers that would be generated for the transmission. For video media or a combination of voice and video, the RTBR will likely be substantially higher than simply voice. For other types of media such as sensor or GPS positioning data, the RTBR will likely be lower than that of voice. For non time-sensitive transmissions, the IBR is set to a Maximum Efficiency Bit Rate (MEBR) to optimize the usage or efficiency of transmissions over the network. The MEBR is calculated by adjusting the packetization rate to its largest possible value for the underlying network. If multiple messages or payloads are to be sent between a sending and receiving pair, then an Aggregate IBR (AIBR) is considered for the transmission.

[0163] The PQM operates by sending data in a series of transmission loops for each sending and receiving pair. The transmission loops for each sending and receiving pair are independent. Any transmission on the network may affect the MABR of other

sending-receiving pairs. Accordingly, the MABR is preferably continually computed for all recipients.

[0164] Referring to Figures 9A through 9C, flow charts illustrating the sequence of operation of the PQM for a single sending and receiving pair is illustrated. In Figure 9A, the steps in determining the MABR between the single sending and receiving pair are illustrated. In Figure 9B, a flow chart illustrating the steps for calculating the AIBR for each transmission loop for the single sending and receiving pair are illustrated. In Figure 9C, a sequence for determining the amount of data to transmit between the sending and receiving pair per loop is illustrated. The processes illustrated in the three diagrams run simultaneously and interact with one another, as described in more detail below.

[0165] In Figure 9A, a flow chart 50 for calculating the MABR for the network interface between the sending and receiving pair is shown. In the initial step 50_1, the network interface between the sending and receiving pair is monitored. The sender periodically receives reports, which contain information regarding the status of the network connection at the receiver in step 50_2. The reports include information regarding the current status of data throughput 50_3, packet loss 50_4, and jitter 50_5 as observed by the receiver at the network interface. In step 50_6, the MABR is calculated at the sender based on these observations contained in the reports. By monitoring or observing the data in these reports, the MABR value is continually adjusted based on current network capabilities or conditions between the sending and receiving pair. As network capabilities become more favorable for data transmission, the MABR will increase. If the network capabilities become less favorable for transmission, the MABR will decrease, potentially all the way to zero for an unusable network. The reports are similar to the packet loss reports generated by nodes in TCP networks, but additionally include throughput and jitter information as well.

[0166] If there are several network interfaces between the sending and receiving pair, an MABR is calculated for each interface for which a receipt report is received. If no traffic has been recently sent on the network, or no receipt reports have been received, the MABR may not reflect current network conditions. However, since receipt reports are generated continually by receivers while data is transmitted, the sender's MABR metrics will quickly converge to a more accurate value.

[0167] Referring to Figure 9B, a flow chart 52 illustrating the steps for calculating the AIBR for a transmission loop is illustrated. In the initial step 52_1, the Messages with Media (by which we mean portions of the time indexed media that belongs to this Message) ready to be transmitted between the sending and receiving pair in the current loop are ascertained. A list of Messages with Media is then built 52_2. For each Message in the list 52_3, the time-sensitivity or timeliness requirement of each Message is considered 52_4. If a particular Message is not time-sensitive, then the IBR is set to the Maximum Efficiency Bit Rate (MEBR) 52_5. On the other hand, if a Message is time-sensitive, then the IBR is set to the Real Time Bit Rate (RTBR) 52_6. In the next step 52_7, the previously computed IBRs for each of the Messages in the list are summed together, resulting in the Aggregate Ideal Bit Rate (AIBR) 52_8 for the transmission loop. As signified by the return arrow 52_9, the above-described process is repeated for each transmission loop between the sending and receiving pair.

[0168] Referring to Figure 9C, a flow chart 54 illustrating the sequence for determining the rate of data to transmit between the sending and receiving pair per transmission loop is illustrated. In the initial step 54_1, the MABR (as calculated in Figure 9A) is compared to the AIBR (as determined in Figure 9B) for the next transmission.

[0169] If the MABR is greater than or equal to the AIBR, then all the Messages identified as ready for transmission in the loop are packetized at the IBR rate 54_2 and transmitted 54_3.

[0170] On the other hand, if the MABR is less than the AIBR, then a series of procedures are applied to so that the PQM meets its goals of the timely delivery of an adequate copy of the data, the efficient use of available bandwidth, and/or adjustments to the payload content and quality, packet size, and transmission rate to meet current network conditions.

[0171] In the initial step, the Messages in the list are reviewed for time sensitivity 54_4. If there are no time sensitive Messages, then the bit rate is reduced to the MABR 54_5, and the Messages are transmitted 54_3.

[0172] If the list includes time-sensitive Messages, the bit rate allocated for the non time-sensitive Messages is reduced 54_6 until it meets the MABR limits. If reducing the bit rate all the way to zero is insufficient to meet the MABR, then these non time-sensitive Messages are removed from the list of Messages to be transmitted in the loop.

If the bit rate has been reduced so that it is less than or equal to the MABR, then the remaining Messages are Packetized and transmitted 54_3.

[0173] If the removal of non time-sensitive Messages was not sufficient to meet MABR, then another procedure involving the use of a lower quality Codec (or Codecs) for the remaining time-sensitive Messages 54_7 is used. An attempt is made to transmit the payload data as fast as possible by sending fewer bits during the transmission loop. In other words, by reducing the quality of the payload, the transmission sends fewer bits in a given period of time. In various embodiments, different Codec or Codecs, each having a different bit rate versus quality tradeoff, may be used. If the use of the lower quality Codec or Codecs is sufficient, meaning the MABR limit is met, then the Messages are transmitted 54_3.

[0174] If the use of lower quality Codec(s) still does not meet the MABR, then the packetization interval of the time-sensitive Messages is increased 54_8. With this procedure, the header-to-payload ratio is increased, which lowers the overall bit rate but introduces latency (i.e., a delay in the delivery of the transmission to the recipient). If this procedure results in the reduction of the AIBR to less than or equal to the MABR, then the transmission 54_3 occurs.

[0175] If after changing the packetization interval the MABR is still not met, then the bit rate may be progressively lowered 54_9 to be within the MABR limit. When the bit rate is lowered in this manner, time-sensitive messages are sent at a rate that is not sufficient to maintain a live conversation. Therefore, the Conversation is forced out of "live". If the network is down or conditions are very poor, it is possible that no data transmission may occur. Again, the aforementioned sequence is repeated for each transmission loop 54_{10} between the sending and receiving pair.

[0176] If there are multiple network interfaces between the sending and receiving pair, the sequence described in relation to Figure 9C is performed for each interface for which receipt reports are available. In various embodiments, the sender may contain logic to distribute the transmission load among the multiple interfaces. In different examples, the payloads can be sent only on one interface, while in other embodiments, some or all of the interfaces may be used.

[0177] The aforementioned description pertains to any sending and receiving pair in the system 10. In most situations, the sending and receiving pair will include a Client 12,

enabled Device 13 and Server 16, two Servers 16, a Server 16 and Client 12 enabled Device 13, or even possibly two Clients 12 respectively. If a sending node is transmitting to two (or more) receiving nodes at the same time, the above mentioned sequence as described in relation to Figures 9A-9C occurs concurrently for each receiving-sending pair.

H.3 DQM Operation Flow Diagrams

[0178] The DQM 28g determines if data received at the Client 12 is either corrupted or if there are missing packets. In addition, the DQM 28g of a receiving Client 12 generates of the receipt reports, which are sent back to the transmitting node on the network. The DQM 28g also runs a background process to ensure that an exact copy of transmitted data is eventually received and stored. These functions are described below in Figures 9D through 9F respectively.

[0179] Referring to Figure 9D, a flow diagram illustrating the operation of the DQM 28g for checking for missing and/or corrupted data is illustrated. In the initial step 56_1, the DQM 28g checks for corrupted packets using well-known techniques, such as CRC or similar integrity checking mechanisms. If a packet is corrupted, that packet is treated as missing 56_2. The DQM 28g next ascertains if any packets are missing 56_3. If an out of sequence packet is not received after a predetermined period of time, it is assumed to be missing. The DQM 28g notes any missing or corrupted packets 56_4 in the DNQS 32. On the other hand if no corrupted or missing packets are detected, the DQM 28g determines if the quality of the received data was intentionally degraded by the sender 56_5 for the purpose of saving bandwidth. The degraded quality is noted in the DNQS 32 56_6. Regardless if the quality of the received data is degraded or not, receipt information (e.g., a packet sequence number, time stamp, and the network address of the next node in the network the packet is to be sent) of the data is stored 56_7 in the DNQS 32. The aforementioned process is continually repeated, as signified by the return arrow to the start of the flow diagram.

[0180] As a result of the process detailed in Figure 9D, information regarding the receipt of non-degraded packets, the deficiency of degraded quality packets, and missing packets, are all stored in the DNQS 32. As Media is received, the DNQS 32 maintains up-to-date information regarding the status of the Media.

[0181] Referring to Figure 9E, a flow diagram illustrating the operation of the receipt report generator function of the DQM 28g is illustrated. In the initial step, the DNQS 32 is periodically scanned 58_1 to determine if there is any Media for which a receipt report needs to be generated 58_2. If the answer is no, then the above scanning process is repeated. On the other hand if Media is identified, then the process determines if the Media is time-sensitive 58_3, meaning either the User intends to Review the Media live or the user would like to immediately Review Media that is not stored on their Device 13.

[0182] If not time-sensitive, then the recipient informs the sender to set the retransmission priority (as defined below) to low 58_4. If time-sensitive, then the amount of packet loss is considered 58_5. If the amount of packet loss is outside a usable quality range, the retransmission priority is set to high 58_6. As noted above, if the amount of packet loss is too large, the recipient may not be enabled to Review the Media upon receipt. If the quality is within an acceptable range, meaning the quality of the transmission is sufficient that it can be understood when rendered, then the priority for the sending of the receipt report is set to low 58_4. Regardless if the recipient is Reviewing upon receipt or not, a receipt report is sent 58_7, the DNQS 32 is updated 58_8 and the Network Quality Manager (NQM) 28h is updated 58_9. The retransmission requests defined in step 58_4 is therefore conditional based on time-sensitivity. The transmission request defined in step 58_6 is conditional on both time-sensitivity and quality.

[0183] The retransmission priority informs the PQM 26g of the sender to properly prioritize the transmission rate for the Media that requires retransmission. For example when the retransmission priority is set to high, then the sending PQM 26g of the sender should send any retransmissions before any new Media. If the priority is low, the PQM 26g should send the retransmitted Media after any new Media.

[0184] The aforementioned process is continuously repeated so that receipt reports are generated as Media is received. If the sender does not receive receipt reports in a timely manner, the PQM 26g of the sender will reduce the transmission rate, eventually stopping the transmission if no receipt reports are received.

[0185] Referring to Figure 9F, a flow diagram illustrating the sequence for requesting of missing or degraded Media is illustrated. In the initial step 60_1, the DNQS 32 is

periodically scanned for missing or degraded Media 60_2. If there is no missing or degraded Media, then the above defined scan is periodically repeated.

[0186] Media is considered missing if an out of sequence packet does not arrive after a predetermined threshold period of time 60_3. If the packet arrives before the threshold, then it is no longer considered missing. On the other hand if the packet does not arrive after the threshold is exceed, then it is deemed missing. With missing packets, a low priority request for retransmission is made 60_4 and the time of the request is noted 60_5 in the DNQS 32. This process is repeated until the missing packet is received. When the missing packet arrives and the corresponding Media is available in the PIMB 30, the missing status of the Media is removed from the DNQS 32. The retransmission request defined in step 60_4 is therefore conditional based on whether the Media is determined to be missing.

[0187] If degraded, the DQM 32 determines if the Media is part of a live Conversation 60_6. If not, a request for a full quality copy of the degraded Media is made 60_7, the full quality Media is designated as missing 60_8 and the request time is noted 60_9, in the DNQS 32. If the Media is part of a live Conversation, then no action is immediately taken in order to preserve network bandwidth. When the Conversation transitions out of the live mode, then the steps 60_7 through 60_9 are performed to ensure that a full quality (i.e. an exact or perfect) copy of the degraded Media is eventually received. When the data becomes available in the PIMB 30 of the recipient Client 12, the degraded status of the associated Media is removed from the DQNS 32. The transmission request defined in step 60_7 is conditional on whether the Media is both degraded and not part of a live conversation.

[0188] The aforementioned process is continually repeated, as signified by the return arrows from 60_5 and 60_9 to the top of the flow diagram at 60_1. By repeating the process outlined in Figure 9F, exact copies of all transmitted Media is eventually stored in the PIMB 30 of the receiving Device 13. In this manner, the storage of exact copies of transmitted Media is guaranteed at the recipient Device 13.

I. Graphical User Interface

[0189] Referring to Figure 10, an exemplary Device 13 running Client application 12 is illustrated. The Device 13 includes a graphical user interface display 110, data entry buttons, keys, or keyboard 112, a microphone 114, and a transducer 116 for converting

electrical signals into sound, such as a speaker. The display 110 may also accept input as a touch screen. Further, the display 110 and keyboard 112 may be combined using a touch screen interface. As noted above, the Device 13 may be a variety of different communication tools, such as a desktop computer, laptop or other mobile computers, personal digital assistants, a programmable land-line or cellular phone, or programmable radios, or just about any other type of programmable communication device. The exemplary Device 13 illustrated in the figure is intended to be "generic", in the sense that it is supposed to represent or encompass all of the communication devices listed above. In addition, the term "graphical" user interface should not be construed as limiting. Other types of user interfaces which can be implemented on a Device 13 as well including Audio/DTMF interfaces, Voice User Interfaces (VUI), radio switch interfaces, or a combination thereof, can all be used to implement the various functions described below. For the sake of simplicity, each of these types of methods by which a User may interact with their Device 13 are generically referred to as a "user interface".

[0190] All Devices 13, regardless of their type, preferably have a user interface that enables the user to operate the Device 13 and communicate with other User's in the system 10. Although the user interface can be designed to have virtually an infinite number of different look and feel implementations, there are certain functions and features that all Devices 13 should have in common. These functions and features are listed below.

[0191] The user interface preferably includes one or more of the following status indicators or flags: (i) battery indicator; (ii) connectivity indicator; (iii) clock; (iv) transmitter status; (v) transmission sync status; (vi) Reviewing status; (vii) Priority Messages needing attention; and (viii) missed Messages.

[0192] The user interface preferably includes the following functions, flags and components to conduct and manage a single Conversation: (i) name of a Conversation and/or list of Participants; (ii) Conversation status; (iii) Conversation type; (iv) Conversation duration; (v) time behind the Head of the Conversation; (vi) outstanding Messages; (vii) presence/status of Participants; (viii) meta data with navigation; (iix) Conversation attributes or designators; (ix) Conversation set-up including title, scheduling, Participants, Conversation summary; and (v) indicators showing which Participants have contributed Messages and which have Listened to or Reviewed messages.

[0193] The user interface also preferably includes, in addition to those listed immediately above, the following functions, flags and components to conduct and manage multiple Conversations: (i) a name/identifier for each Conversation; (ii) live/active or standing/inactive indicator; (iii) Review position, either at Head or Time shifted; (iv) Priority and other attributes; and (v) indicators of what portions of Conversations were missed.

[0194] The user interface also preferably includes, a number of navigation features, such as: (i) DVR style fast back/forward per conversation; (ii) instant messaging style personal message navigation; (iii) Conversation Time indicators; (iv) time scale shifting (i.e. zooming backward and forward through a Message or the Messages of a Conversation); (v) changing Priority of Conversations; (vi) hanging up; and (vii) home.

[0195] The aforementioned functions and features may be implemented in a variety of ways, for example using a touch-screen graphical user interface 110, or other input devices, such as the data entry buttons, keys, or keyboard 112, a mouse, by voice-activated commands, or a combination thereof. Again the functions and features listed above and how they are implemented is not intended to be exhaustive. The various methods and technologies that could be used is so comprehensive, that it is not practical to list or discuss them all herein.

J. Conversations

[0196] The MCMS application 20 supports a number of different types of Conversations, such as a near real time or "live" calls where the delay from when a Participant speaks and the other Participant(s) hear the first Participant is very small, Conversations where Participants exchange voice Messages back and forth with a longer delay between Messages, "live" conference calls involving multiple Users, standing Conference calls at a regularly scheduled times, or configurable structured call types such as a simultaneous briefing, where Participants each leave a Message briefing beforehand for others to Review to before everyone joins the live conference call. Yet another unique attribute of the MCMS application 20 is the ability for Users to transition between the different types of Conversations. For example, the Participants can seamlessly transition from a voice-messaging mode to a live call and back again. Or the Participants of a live conference call can transition to a voice-messaging mode and send updates or action items to each other after the conference call. While several

examples have been noted, it should be understood that the system 10 is extremely flexible and provides numerous options to transition between different types of calls or Conversations and between multiple conversations. By varying the delay between Messages, the Participants effectively flows between the type of Conversation that best suits their needs. The above examples should therefore not be construed as limiting.

[0197] As noted above, Conversations consist of Messages maintained in their original context and sequence. A sent Message either belongs to an existing Conversation or begins a new Conversation. A typical Conversation includes a set of Messages that are organized around a defined subject matter, topic, time, Group or Channel. For example, Conversations may involve a common Group of people such as the members of a club, a company may have a standing Conversation at a fixed time, such as a weekly sales meeting, or friends may have ad-hoc Conversations on various topics, such as making dinner plans.

[0198] Each Conversation is defined by a set of attributes, including a name, a list of Participants, begin and end time, and state including at least pending, active, or terminated. Other Conversation states are possible in other embodiments. A User interacts with the MCMS application 20 on their Devices 13. In preferred embodiments, the interface allows a User to organize Conversations by any of the various attributes.

[0199] The relationship between a Participant and a Conversation also has attributes. These attributes include, but are not limited to, Priority, Status (states of participation in a Conversation). The values of Participant status include active, participation in more than one Conversation at a time, Reviewing a Conversation in a time-shifted mode, Catching Up To Live, passively participating (i.e., not actively Reviewing, but receiving high Priority Messages), standby, or ignoring a Conversation (i.e., declined to participate or record the Conversation).

[0200] From a recipient's perspective, a User may select or define the relative priority of Messages. For example, Messages from a person's boss would typically be given a higher Priority than a social acquaintance. In some embodiments, a recipient has the ability to set their own Priorities. In the implementation of MCMS-C the User selects a subset of their Conversations to be rendered consecutively. The User then sets ordered Priorities for these Conversations. The system uses the priorities set by the user to order the Messages to be rendered. The aforementioned algorithm queues the Messages to be

rendered using User Priorities and information concerning Message data available (beyond MTSD).

[0201] In other embodiments, such as tactical communications, the recipient may have no or limited ability to set Priorities. For example, a fire fighter may have no ability to lower the Priority of Messages from the fire chief. A sending-User, however, has the ability to send urgent or highly important Messages. By Tagging a Message as urgent or an emergency, the Message is rendered as soon as possible at the recipient(s), overriding any Priority settings of the recipient. Any conflicts among multiple emergency messages are resolved based on a predetermined priority scheme.

K. MCMS Operation

[0202] Referring to Figure 11A, an organizational diagram 1100 grouping the major functions of the MCMS application 20 is illustrated. The major functions include account management 1102, conversation management 1104, aggregate conversation list management 1106, conversation participation 1108, call controls 1110, and contact management 1112. After registering and logging into the system 10, the User may navigate through the user interface of their Device 13 implementing the various management functions, described in detail below. In some embodiments, this functionality will provide a great deal of flexibility. In other embodiments, such as tactical or communication radios, the implementation of the user interface may be constrained with many of the user functionality and options preconfigured to meet the utility of the device. The discussion here is exemplary and is not intended to be an exhaustive explanation of the MCMS functionality, but rather is intended to provide just an overview of some of the MCMS attributes.

K.1 Account Management

[0203] Under the account management function 1102, a registered User may change certain settings and preferences. A User may change their email address, password, name, phone number, phone password, call-in number, default and/or User defined rendering speeds, Tags, gain or volume levels for Reviewing Messages, Catch Up to Live mode, etc. To make these changes, the User enters the appropriate information through the interface 110 of their Device 13. The MCMS application 20 responds by writing the updated preferences into the MCMS database 22.

K.2 Conversation Management

[0204] As illustrated in Figure 11B, conversation management 1104 is a set of functions that allow a User to view their aggregate Conversation lists, create a new Conversation, update the details of a Conversation, delete a Conversation, and close a Conversation. Each of these functions are described below.

[0205] View Conversations 1104a – For each Conversation, the MCMS application 20 may provide the User the one or more of the following attributes: the name of the Conversation, the actual start time, the last activity, Tags, duration, and the list of Participants. For each Participant, the name and/or phone number, status (live, other call, in past, catch-up-mode, offline-reachable, offline-unavailable.)

[0206] Create a Conversation 1104b - A User creates a Conversation through the interface 110 by inputting a Conversation name, a list of Contacts, and an optional scheduled start time. If no start time is designated, it is assumed the start time is immediate. In response, the MCMS application 20 creates a new Conversation in the database 22, associating records for each Participant on the Contacts list. The MCMS application 20 also creates in the database 22 Participant records for each User on the Contact list, allowing the caller to receive the presence information of the others on the Contact list. If the Conversation is scheduled, the MCMS application 20 starts the Conversation at the designated time. Otherwise, the Conversation starts right away.

[0207] Update Conversation Details 1104c - The User may make changes to a Conversation through the user interface 110. For example, Participants may be added or removed. Any change in status of the participants is updated in the MCMS database 22.

[0208] Delete a Conversation 1104d - A User may delete a specific Conversation from their list of Conversations through the interface 110. In response, the MCMS application 20 notes the change in the database 22, and designates the Conversation as deleted.

[0209] Close a Conversation 1104e – A User may elect to terminate or close a Conversation. In one embodiment, only the User that creates a Conversation can elect to terminate that Conversation.

K.3 Aggregate Conversation List Management

[0210] As illustrated in Figure 11C, the aggregate conversation list management 1106 is a set of functions that allow a User to engage in multiple Conversations (i.e., the User's

aggregate conversation list). The aggregate conversation list management functions allow a User, through the interface 110 on their device, to participate in one Conversation "live", while participating in other Conversations in a time-shifted mode.

[0211] Chose Conversation 1106a – Through the interface 110, a User may select one Conversation among the User's aggregate conversation list as current. The Messages of the current Conversation may be rendered in either the "live" or time-shifted modes. The User may switch the current conversation among the aggregate conversation list from time-to-time.

[0212] Switch Conversations Modes1106b – In an optional embodiment, a User may be able to switch from the MCMS, MCMS-C and MCMS-S modes of operation.

K.4 Conversation Participation

[0213] As illustrated in Figure 11D, conversation participation 1108 is a set of functions that allow a User to start a Conversation, receive a notification to join a Conversation, obtain Conversation status information, and hang up on a Conversation.

[0214] Start a Conversation 1108a - After a Conversation has been created, either by the User through the interface 110 or the scheduler in the MCMS application, the status of each Participant is checked. If a Participant is offline, then an effort is made to contact that person. If a Participant is online but engaged in another Conversation, then the MCMS application 20 notifies that Participant. The presence status of all online Participants is updated in the database 22.

[0215] Receive a Notification 1108b – The system may notify a User that their attention has been requested on a Conversation through a graphic display and/or audible notification via the user interface 110.

[0216] Conversation Status 1108c – A user may request the status of a Conversation through the interface 110 of their Device 13. In response, the MCMS application 20 assembles the status information stored in the database 22 and presents the information to the User.

[0217] Conversation Pause 1108d– Through user interface 110, a User may hang up or switch away from an active Conversation. In response, the MCMS application 20 updates the User's participant status for active Conversations in the database 22 and directs the Store and Stream module 24 to remove the User from the Conversation.

K.5 Conversation Controls

[0218] As illustrated in Figure 11E, conversation control 1110 is a set of functions that allow a User to control their participation in a Conversation. These functions allow a User to catch-up-to live, skip to the Head, jump to a past location, pause, play faster and play slower when Reviewing the Messages of a Conversation. Each of these functions is triggered by the User through the interface 110 on the Device 13.

[0219] Catch-up-to-live 1110a - A User may Catch Up To Live in an ongoing Conversation using the "CTL" function. When this function is activated, the MCMS application 20 checks the last point in the Conversation the User has reviewed and directs the Store and Stream module 24 to render the Messages not previously heard, using a faster than normal rendering option designated by the User, and to seamlessly transition to live mode when it reaches the head.

[0220] Jump to Head 1110c – This function enables a User to jump to the Head of a Conversation, skipping over any intervening Messages between the current point of the User in the Conversation and the Head. When implemented, the MCMS application 20 instructs the Store and Stream module to immediately render the Messages at the Head of the Conversation. (If the Head of the Conversation is currently live this is called Jump to Live (JTL).

[0221] Jump to past 1110d – This function enables a User to jump back to a previous Message or point in the Conversation, similar to a rewind or replay function. When implemented, the MCMS application 20 instructs the Store and Stream module 24 to render Media starting from the rewind point.

[0222] Pause 1110e – This function enables the User to pause the Reviewing of the Messages of a Conversation. In response, the Store and Stream module 24 stops the rendering of Messages until another command is issued.

[0223] Play faster 1110f – This function enables a User to render Messages more quickly. In response, the Store and Stream module 24 renders the Messages at a faster rate than normal. The rendering rate may be either specified by the User or the User may select from a number of preset options.

[0224] Play slower 1110g - This function enables a User to render Messages more slowly. In response, the Store and Stream module 24 renders the Messages at a slower rate than normal. The rendering rate may be either specified by the User or the User may select from a number of preset options.

K.6 Contact Management

[0225] As illustrated in Figure 11F, the system 10 provides the User with a host of functions for managing Contact lists and user Groups. These functions include the adding, editing, deleting Contacts and user Groups. Each of these functions are implemented by a User though the interface of their Device 13. Any revisions or deletions in a User's Contact list or Group list is stored in the MCMS database 22.

[0226] Add a Contact 1112a – This function enables a User to add a new Contact to their contact list. The new Contact can be either a registered User or an external contact. Typically the name, phone number(s), type of number (cell, office, home, computer, etc.), email address and other personal information are provided for each contact record.

[0227] Edit a Contact 1112b – This function enables a User to edit or update an existing contact record.

[0228] Delete a Contact 1112c – This function enables a User to remove or delete an existing contact record.

[0229] Search for a Contact 1112d – This function enables a User to search for a specific Contact in their contact list. The search may be conducted using a number of criteria, such as name, phone number, most recently called, most frequently called, Group, etc.

[0230] Get a Participant list 1112e – This function enables a User to search and retrieve a list of Participants of a Conversation by a number of different search criteria, including for example by name, most recent outgoing calls, most recent incoming calls, most frequently called, etc.

[0231] Authorize a caller to review status 1112f – This function enables a first User to authorize other Users to view the first User's status. Non-authorized Users may not view the status of the first User.

[0232] Create a Group of Contacts 1112g – This function enables a User to associate a number of Contacts into a Group. When a User defines a Group, the list of Contacts in that Group are stored in the MCMS database 22.

[0233] Edit a Contact Group 1112h – This function enables a User to edit a Group, or update the contact information for a member of the Group.

[0234] Delete a Contact Group 1112i – This function enables a User to delete a Group.

L. MCMS Operation

L.1 MCMS-C

[0235] As noted above, the MCMS-C operation is similar to MCMS, with the added feature of enabling Users to manage and participate in multiple conversations consecutively through a hierarchical system of Priorities and the time-shifting of Messages, which are automatically managed by the system. Implementing the MCMS-C functionality includes three basic processes. As illustrated in Figure 12A, the first process involves defining a set of Conversations for consecutive rendering. Once the list is defined, a hierarchical set of Priorities and other factors are applied to the indexed media payloads associated with the set of Conversations. The indexed media payloads are then sequenced into a sequencing order. By rendering the media in the sequence order, the Messages of the set of Conversations are consecutively rendered.

[0236] Referring to Figure 12A, a flow chart illustrating the steps for defining the list of Conversations to render consecutively is shown. In the initial step 1202, the User's aggregate list of Conversations is defined. Either the User or pre-configuration data (step 1204) is next used to select the Conversations among the aggregate list for consecutive rendering (step 1206). With a tactical communication system for example, typically pre-configuration data is used to impose the Conversations to be consecutively rendered. With non-tactical applications, the User is typically given a higher degree of flexibility to select the Conversations for consecutive rendering.

[0237] Referring to Figure 12B, a flow chart illustrating the steps for defining hierarchical set of priorities for rendering the Messages of consecutive Conversations is illustrated. In the initial step (1208), a set of priority rules are defined and applied to the list of Conversations to be rendered consecutively (1206). In various embodiments, the set of priority rules may range from a rigid, hierarchical communication protocol to a highly flexible communication protocol. For example in a tactical communication

system where a rigid hierarchy is often desirable, the set of priority rules will preferably impose a specific order in which concurrent Messages are rendered. For example with a first-responder tactical system, Messages from a fire chief may be given the highest priority. The next level of priority may be given to fire fighters inside a burning building. At the next level, priority may be given to fire fighters outside the building, etc. By defining a rigid priority, the current Messages of those supervising the efforts to fight the fire, or those in harms way, are rendered ahead of those performing a less critical role. With non-tactical communications, a User may be given a great deal of flexibility to define their own priority scheme to meet personal needs. A sales executive may for example define a priority scheme listing consecutive Conversations with clients from the most important to the least important. Or a User may prioritize consecutive Messages among family and friends. Regardless of the scheme used, a priority list for consecutive Conversations is defined (step 1210) in this process.

[0238] Referring to Figure 12C, a flow diagram illustrating the construction of a queue of Messages received from the various consecutive Conversations is illustrated. In the initial step, the availability of non-rendered indexed media payloads of Messages (i.e., media streams) is continually detected (step 1212) for each of the Conversations to be consecutively rendered. The priority hierarchy is applied to the available indexed media payload streams (step 1214). Based at least partially on the priority hierarchy, and possible other parameters as mentioned below, the available indexed media payloads are arranged into a sequence order (step 1216). The indexed media payloads are then continuously rendered in the sequence order (step 1218). By continuously repeating the above-described process, the Messages of multiple Conversations are consecutively rendered.

[0239] In one embodiment, the sequencing order is based either partly or fully on the priority hierarchy. In alternative embodiments, other parameters in addition to the hierarchy and availability may be considered as well. For example, the sequence order may be defined using one or more parameters such as the switching costs associated with interrupting a currently rendered stream of indexed media payloads with the indexed media payloads of a higher priority Conversation, the quality of the available streams of indexed media payloads, the relative time the indexed media payloads were received, a shuffling order, or from input of a controller of the system.

[0240] Typically when conflicts between the Messages of different Conversations occur, the indexed media payloads first in sequence order are rendered while the rendering of other available indexed media payloads are paused or delayed. When there no conflicts, indexed media payloads are immediately rendered as they become available.

[0241] In yet another embodiment, the Messages of the consecutively rendered Conversations may be optionally reviewed in a time-shifted mode. If the User of the first communication device generated any Media associated with the consecutively rendered Conversations, that media is indexed and stored in the PIMB 30 of the Device as well as the PIMB(s) 85 of the Servers 16 on the network. Thus when a Conversation is reviewed in the time shifted mode, the User has the option of reviewing just the incoming Messages associated with the Conversation, or both the incoming Messages as well as the Media created by the first User associated with the Conversation in time index order.

L.2 MCMS-S Operation

[0242] In the MCMS-S or simultaneous mode, a User of a Client 12 enabled Device 13 may define a set of Conversations for simultaneous rendering. Once the set of Conversations is defined, the indexed media payload streams associated with the set of Conversations are simultaneously rendered on the Device 13, regardless if they overlap or not. In alternative embodiments, the User may optionally render the received indexed media payloads from the set of media streams separately. The indexed media payloads of the simultaneous Conversations may also be optionally rendered in near real-time or in the time-shifted mode.

L.3 MCMS, MCMS-C and MCMS-S Examples

[0243] In Figures 13A through 13D, a series of diagrams illustrating the attributes of a Conversation and the operation of MCMS, MCMS-C and MSMS-S is illustrated.

[0244] In Figure 13A, a time diagram illustrating the sequence of rendering the indexed media payloads of the Messages of a Conversation labeled "A" between a User "X" and two other users, designated "Y" and "Z". In this example, Media is generated by user Y during the time intervals designated by t1, t5, 56, t7 and t9. Media is generated by user Z during the time intervals designated t3, t6 and t9 through t10.

[0245] The rendering sequence at the Device 13 of User X is illustrated at the bottom of the figure. During intervals t1, t5, and t7, Media derived only from Y is rendered. During intervals t3 and t10, only Media derived from Z is rendered. In intervals t6 and t9, Media from both Y and Z is rendered. In intervals t2, t4 and t8, nothing is being rendered because neither users Y or Z are generating Media during these periods. It should be noted that intervals t1 through t10 are not intended to mean fixed time intervals, but rather, just periods of time when Media is being generated.

[0246] The diagram of Figure 13A is useful in illustrating the attributes of Conversations. When one user is generating Media (either Y or Z), that Media is received at the Device 13 of X and is available for rendering. When both users X and Y are generating Media, both Media streams are received at Device 13 of X and is available for Mixing. When neither user X or Y is generating Media, no Media is received at Device 13 of X. As noted above, User X has the option of Reviewing the Media generated during Conversation A in either the near real-time or time-shifted modes. Also the User X has the option of Reviewing the Media in the Mixed format as illustrated, or to separately Reviewing the Media from Y and Z in the time-shifted mode.

[0247] Figure 13B illustrates the operation of MCMS. In this example, the User is Participating in three Conversations, designated A, B and C. For Conversations A, B, and C, the User either generates or receives Messages designated (A1, A2, A3, and A4), (B1, B2 and B3) and (C1and C2) respectively. The timing and duration of each Message is indicated by the starting point along the time-line. It is useful to note that in this example, all of the Messages overlap in time to some degree, except Message B2.

[0248] With the MCMS application, the User selects one Conversation as current. For the selected Conversation, the User may Review incoming Messages and generate Messages which are transmitted to the other Participants of the Conversation. In this example, the User selects in order Conversation B, C and A as current respectively. The Message sequence is therefore initially B1, B2, and B3, followed by C1 and C2, and then finally A1 through A4. Again, while a particular Conversation is selected as current, the User may transition between the near real-time and the time-shifted modes and back again. The final rendering as illustrated in the diagram is not intended to correspond in timing of the received Messages as illustrated in the top portion of the

diagram. Rather the lower portion of the diagram is intended to show only the rendering order of the Messages, based on Conversation order selected by the User.

[0249] The example of Figure 13B is thus useful in illustrating the attributes of the MCMS application. A User selects one Conversation as current. The other Conversations are paused. The User may also transition the current Conversation among all the Conversations at any time.

[0250] Referring to Figure 13C, a diagram illustrating the operation of MCMS-C is illustrated. In this example, the User is Participating in two consecutive Conversations, A and B. With Conversation A, three Messages are received A1, A2, and A3. With Conversation B, three Messages are received B1, B2 and B3. It is useful to note that with this example, Message B1 conflicts with Messages A1. Also Conversation A has a higher priority that Conversation B.

[0251] During the consecutive rendering of the two Conversations, the higher priority Messages A1 and A2 are first rendered in near real-time, as represented by the vertical dashed lines in the figure. Since there is a relatively large time gap between Messages A2 and A3, this space is filled by time shifting and rendering Messages B1 and B2. When A3 arrives, it is rendered in near real-time, while Message B3 is rendered only after the higher priority Message A3 is rendered. By time-shifting rendering of the lower priority Messages between the higher Priority Messages, consecutive multiple conversations can be managed. It should be noted that in this simple example, priority is the only parameter used to determine the consecutive order for rendering. As noted above, a number of other parameters may be used as well.

[0252] Referring to Figure 13D, a diagram illustrating MCMS-S is illustrated. In this example, a User is engaged in three simultaneous Conversations, A, B and C. The Messages A1, A2 and A3, B1, B2 and B3, and C1 and C2 are received for each Conversation A, B and C are shown in the diagram respectively. With the MCMS-S, the incoming Messages are rendered at a recipients Device 13 as they are received. The rendering sequence of the Messages of the three Conversations A, B and C, as illustrated in the lower portion of the diagram, are therefore the same as when the Messages were received. In this manner, multiple Conversations may be simultaneously rendered.

[0253] In the aforementioned examples, several variations of the MCMS application were described, including MSMS-C and MCMS-S. Regardless of the specific type of MCMS application used, they all share several common characteristics. In each case, the Conversations are defined by a threaded sequence or organization of Messages. The Messages are segmented from a stream of Media, with each Message given a sequence identifier and indexed by the time the Media was created. Depending on the variation of the MCMS application, Messages can be rendered in accordance with one or more rendering options. The rendering options include, in one form or another, the filtering, grouping overlapping and/or serialization of Messages, using anywhere from zero to a plurality of different attributes. In this manner, multiple Conversations, each including a string of Messages, can be conducted on a single Client 12 enabled Device 13. Lastly, each of the variations of MCMS may handle the receipt of interrupt Messages in the same way. When an interrupt Message is received, it typically takes precedent over and is rendered before other Messages belonging to other Conversations.

M. Client and Server Hardware

[0254] Referring to Figure 14A, a block diagram 140 illustrating the hardware of a Device 13 used for storing and executing the Client application 12 is shown. The hardware includes a CPU 142, main memory 144 and mass storage 146. As is well known in the art, the Client application 12 is loaded and stored in main memory144 and mass storage 146 and executed by the CPU 142.

[0255] Referring to Figure 14B, a block diagram 150 illustrating the hardware of a Server 16 used for storing and executing the server application 78 is shown. The hardware includes a CPU 152, main memory 154, mass storage 156, and the archive 89. As is well known in the art, the server application 78 is loaded and stored in main memory 154 and mass storage 156 and executed by the CPU 152. As noted above, indexed media payloads of one or more Users are stored in the archive 89.

[0256] Although many of the components and processes are described above in the singular for convenience, it will be appreciated by one of skill in the art that multiple components and repeated processes can also be used to practice the techniques of the system and method described herein. Further, while the invention has been particularly shown and described with reference to specific embodiments thereof, it will be understood by those skilled in the art that changes in the form and details of the

disclosed embodiments may be made without departing from the spirit or scope of the invention. For example, embodiments of the invention may be employed with a variety of components and should not be restricted to the ones mentioned above. It is therefore intended that the invention be interpreted to include all variations and equivalents that fall within the true spirit and scope of the invention.

Electronic Patent Application Fee Transmittal

Application Number:	12037256
Filing Date:	26-Feb-2008
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Filer:	Steve D. Beyer/Laura Dean
Attorney Docket Number:	REBLP003/VOX-P003

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	21	26	546
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**546**

Electronic Acknowledgement Receipt

EFS ID:	10481975
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	Steve D. Beyer/Laura Dean
Filer Authorized By:	Steve D. Beyer
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	08-JUL-2011
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Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$546
RAM confirmation Number	15701
Deposit Account	504481
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	Prelim_Amendment_Transmittal_3.pdf	22962 d260655d71f0366e46ab9b7f57b285bdc9ad9e0e	no	1
Warnings:					
Information:					
2		REBLP003_Preliminary_Amend_3.pdf	52572 6a0c288cfb1562c2d54e3521e36b44e7c732b7c	yes	12

Multipart Description/PDF files in .zip description

Document Description	Start	End
Preliminary Amendment	1	1
Specification	2	2
Claims	3	10
Applicant Arguments/Remarks Made in an Amendment	11	12

Warnings:					
Information:					
3	Drawings-only black and white line drawings	FIG_1_Replacement_Sheet.pdf	709174 ccccc85913bd48e79e42dbc01b9eadc5b1e0765a2	no	1
Warnings:					
Information:					
4	Miscellaneous Incoming Letter	Substitue_Spec_Transmittal.pdf	25329 35381ac2b581dcdf1221d1d502fa5f597babd748	no	1
Warnings:					
Information:					
5	Applicant Arguments/Remarks Made in an Amendment	REBLP003_Marked_UP_SUB-Spec.pdf	361196 abe56a9953b28f261e6c6465889a6c06bb5e963c	no	70
Warnings:					
Information:					
6	Specification	REBLP003_Clean_Copy_SUB_Spec.pdf	345187 c63ef64ebd3d69b5c69fd765261724 1d9a4405c7	no	67
Warnings:					
Information:					

7	Fee Worksheet (SB06)	fee-info.pdf	30431 350aab44264541b84821b06804baf49ee885 27133	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	1546851

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et. al.	Attorney Docket No.: REBLP003/VOX-P003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIA MANGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on July 8, 2011.

Signed: _____/Laura M. Dean/_____
Laura M. Dean

AMENDMENT TRANSMITTAL

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an Amendment in the above-identified application.
The fee has been calculated as shown below.

	Claims After Amendment		Highest Previously Paid For	Present Extra	Small Entity Rate Fee	Large Entity Rate Fee
Total Claims	63	MINUS	42	21	x 26 = 546.00	x 52 = 00
Independent Claims	3	MINUS	3	00	x 110 = 00	x 220 = 00
Multiple Dependent Claim Present and Fee Not Previously Paid						
				Total	$546.00	$0.00

☒ Applicant(s) believe that no (additional) Extension of Time is required; however, if it is determined that such an extension is required, Applicant(s) hereby petition that such an extension be granted and authorize the Commissioner to charge the required fees for an Extension of Time under 37 CFR 1.136 to Deposit Account No. 50-4481.

☒ Please charge the required fees, or any additional fees required to facilitate filing the enclosed response, to Deposit Account No. 50-4481 (Order No. REBLP003).

Respectfully submitted,
BEYER LAW GROUP LLP

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Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
12/037,256	02/26/2008	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x $ =		OR	x $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x $ =			x $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 07/08/2011

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 63	Minus	** 42	= 21	x $26 =	546	OR	x $ =	
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	x $110 =	0	OR	x $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE	546	OR	TOTAL ADD'L FEE	

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	x $ =		OR	x $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	x $ =		OR	x $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/ANGELONA JONES/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Form 1449 (Modified)	Atty Docket No.	REBLP003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 2

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	2001/0000540	04/26/01	Cooper et al.			11/30/00
	2.	2003/0210265	11/13/03	Haimberg			05/10/02
	3.	2004/0207724	10/21/04	Crouch et al.			04/17/03
	4.	2005/0020246	01/27/05	Kang			07/09/04
	5.	2005/0135333	06/23/05	Rojas			12/18/03
	6.	2006/0168003	07/27/06	Vau et al.			09/08/03
	7.	2007/0002832	01/04/07	Sylvain			06/22/05
	8.	2007/0006021	01/04/07	Nicholson et al.			01/10/06
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	12.	2008/0095338	04/24/08	Cosky			10/18/06
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	16.	6,594,693	07/15/03	Borwankar et al.			01/22/99
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	18.	7,415,291	08/19/08	Kirkpatrick			09/28/01
	19.	7,634,652	12/15/09	McEnroe et al.			01/12/06
	20.	7,719,975	05/18/10	Mallet et al.			10/25/06

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes | No
	21.						
	22.						
	23.						
	24.						

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)	Atty Docket No.	REBLP003
	Application No.:	12/037,256
Information Disclosure Statement By Applicant	Applicant	KATIS et al.
	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 2 of 2

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	25.	Final Office Action in U.S. 12/037,749, dated July 8, 2011.
	26.	Office Action in U.S. 12/028,400 dated October 14, 2011.
	27.	Office Action in U.S. 12/032,426 dated October 14, 2011.
	28.	Office Action in U.S. 12/110,221 mailed on June 29, 2011
	29.	Final Office Action in U.S. 12/042,987, dated July 13, 2011.
	30.	Final Office Action in U.S. 12/102,722, dated July 13, 2011.
	31.	Final Office Action in U.S. 12/103,436, dated July 13, 2011.
	32.	Final Office Action in U.S. 12/110,221 mailed on October 27, 2011.
	33.	"Store and Forward," Wikipedia, the free encyclopedia, URL: http://en.wikipedia.org/wiki/Store_and_forward, Downloaded on Oct. 26, 2011, 2 pages.

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Electronic Acknowledgement Receipt

EFS ID:	11424839
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	James W. Rose/Desiree Ortiz
Filer Authorized By:	James W. Rose
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	16-NOV-2011
Filing Date:	26-FEB-2008
Time Stamp:	18:41:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	REBLP003_IDS_Regular_Transmittal_6.pdf	24339 c94d3c30e8320cde78e226c5f7f555e7416781f8	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	REBLP003_1449_11-16-11.pdf	33655 6c133801abe91a3b6b0b79b4db1c91fd71379aa3	no	2
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Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	12028400_OA_10_14_11.pdf	222259 f4caaa77b7578344223a9f1039bf8ad4405b83371	no	6
Warnings:					
Information:					
4	Non Patent Literature	12032426_OA_10_14_11.pdf	227416 f2b1d326b7c31427db3ce51bf5f1fbfc01fc55ec	no	6
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5	Non Patent Literature	12037749_OA_07_08_11.pdf	352248 20c0e4a6e86aedcaa01f5f6b6f088c39629ac2b3	no	23
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
6	Non Patent Literature	12042987_Final_OA_07_13_11.pdf	1133015 102e2981bc4aac947a79ff2b06d403e3d105809b	no	31
Warnings:					
Information:					
7	Non Patent Literature	12102722_Final_OA_07_13_11.pdf	743577 4ea077156ebcf11841dc68d1b754dd8d874e6e50	no	20
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8	Non Patent Literature	12103436_7_13_11.pdf	606494 2320d319b22967446841ce6cad9bf2eac212accc	no	17
Warnings:					
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9	Non Patent Literature	12110221_FOA_10_27_11.pdf	280618 b6093e639e4eec32604cd2c071a48ea48f771f93	no	8
Warnings:					
Information:					

10	Non Patent Literature	12110221_OA_06_29_11.pdf	662340 848529ba5c441f959c64ee98402680f7045 4707c	no	17
Warnings:					
Information:					
11	Non Patent Literature	Store_and_forward.pdf	73557 ae4c90c0c0af71728fd84ed aec8448de5458 45c7	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	4359518	

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Katis et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: Ramakrishnaiah, Melur
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on November 16, 2011.

Signed: _____/Desiree Ortiz/_____
Desiree Ortiz

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The reference(s) identified in the attached PTO Form 1449 (copies of non-U.S. references are attached) may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that the identified reference(s) indeed constitute prior art.

This Information Disclosure Statement is: (i) filed within three (3) months of the filing date of the above-referenced application, (ii) believed to be filed before the mailing date of a first Office Action on the merits, or (iii) believed to be filed before the mailing of a first Office Action after the filing of a Request for Continued Examination under §1.114. Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure

Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-4481 (Order No. REBLP003).

Respectfully submitted,

/James W. Rose/
James W. Rose
Registration No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687
650-315-8401

Form 1449 (Modified)	Atty Docket No.	REBLP003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	2004/0045036	03/04/04	Terasaki			08/26/03
	2.						
	3.						
	4.						
	5.						
	6.						
	7.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes / No
	8.						
	9.						
	10.						
	11.						

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	12.	Examination Report from Australian application number 2008270956, dated January 12, 2011.
	13.	
	14.	
	15.	
	16.	
	17.	
	18.	
	19.	
	20.	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Electronic Acknowledgement Receipt

EFS ID:	11815146
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	James W. Rose/Desiree Ortiz
Filer Authorized By:	James W. Rose
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	11-JAN-2012
Filing Date:	26-FEB-2008
Time Stamp:	17:50:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	REBLP003_IDS_Regular_Transmittal_7.pdf	24329 8d736084e5e3254af200d22de9c962373807608b	no	2
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Information:					

2	Information Disclosure Statement (IDS) Form (SB08)	REBLP003_1449_IDS_7.pdf	26249 2c94fc301b◆2ec◆c2◆272◆047a9bb9ee658 10eb2	no	1
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This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	AU2008270956_exam_report_ 01-12-11.pdf	1249654 ◆57◆53b1ce243ffe3cf92995cbfe◆0989f◆e2 bbc	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1300232		

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New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
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New International Application Filed with the USPTO as a Receiving Office
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: Ramakrishnaiah, Melur
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on January 11, 2012.

Signed: _____/Desiree Ortiz/_____
Desiree Ortiz

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The reference(s) identified in the attached PTO Form 1449 (copies of non-U.S. references are attached) may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

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Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-4481 (Order No. REBLP003).

Respectfully submitted,

/James W. Rose/
James W. Rose
Registration No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687
650-315-8401

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	5,651,054	07/22/97	Dunn et al.			04/13/95
	2.						
	3.						
	4.						
	5.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
	6.							
	7.							
	8.							
	9.							

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	10.	Notice of Allowance in U.S. 12/110,221, dated January 9, 2012.
	11.	
	12.	
	13.	
	14.	
	15.	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Electronic Acknowledgement Receipt

EFS ID:	12053440
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	James W. Rose/natasha marciel
Filer Authorized By:	James W. Rose
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	10-FEB-2012
Filing Date:	26-FEB-2008
Time Stamp:	20:50:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	REBLP003_IDS_Regular_Transmittal_2_10_12.pdf	24671 eac3dba3ab20e7ff66856756220c279a60db01f0	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	REBLP003_1449_IDS_2_10_12.pdf	25724 9f786b17ff3fda737f145f51affee23562f20ba2	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	12110221_noa_1_9_2012.pdf	434294 636952e348596629aa334196af5f23e237df1e59	no	8
Warnings:					
Information:					
		Total Files Size (in bytes):	484689		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
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New International Application Filed with the USPTO as a Receiving Office
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003/VOX-P003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on February 10, 2012.

Signed: _____/Natasha L. Marciel/_____
Natasha L. Marciel

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The reference(s) identified in the attached PTO Form 1449 (copies of non-U.S. references are attached) may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

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Statement. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-4481 (Order No. REBLP003).

Respectfully submitted,

/James W. Rose/
James W. Rose
Registration No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687
650-315-8401

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.						
	2.						
	3.						
	4.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
	5.	WO 2004/008336	1/22/2004	PCT				
	6.							
	7.							
	8.							

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	9.	Examination Report from Australian Application No.: 2008270956, dated February 7, 2012.
	10.	
	11.	
	12.	
	13.	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 January 2004 (22.01.2004)

PCT

(10) International Publication Number
WO 2004/008336 A1

(51) International Patent Classification[7]: G06F 15/16

(21) International Application Number:
PCT/US2003/022358

(22) International Filing Date: 17 July 2003 (17.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/197,022 17 July 2002 (17.07.2002) US
10/245,918 18 September 2002 (18.09.2002) US

(71) Applicant *(for all designated States except US)*: **FAST-MOBILE, INC.** [US/US]; 1100 E. Woodfield Drive #109, Schaumburg, IL 60173 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **LEE, Jin, Woo** [US/US]; 322 Bloomfield Ct., Vernon Hills, IL 60061 (US).

(74) Agent: **LINDSEY, Michael, K.**; Howrey Simon Arnold & White, LLP, Suite 3400, 321 North Clark Street, Chicago, IL 60610 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

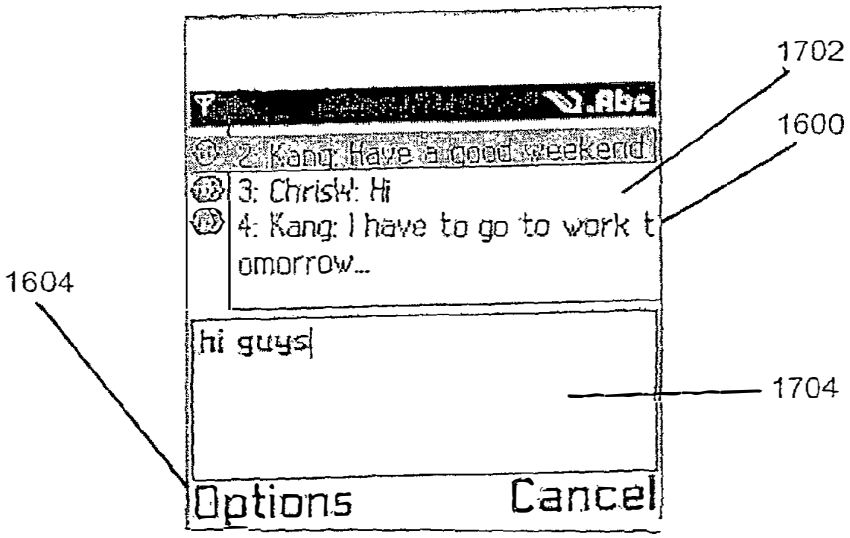
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,*

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR DISPLAYING GROUP CHAT SESSIONS ON WIRELESS MOBILE TERMINALS



(57) Abstract: A system and method for presenting chat group sessions at wireless mobile terminals is disclosed. The system includes plural wireless mobile terminals (100), each having a display screen (102). Each mobile terminal is capable of displaying a chat conversation that is updated in near real-time so that messages in the conversation progressively scroll on the screen. In addition, at least one of the mobile terminals is configured to present a text edit area (1704) on a portion of it screen while showing the chat conversation on another portion of the screen. A text editor resident in the mobile terminal permits a user to compose a message in the text edit area while simultaneously viewing the chat conversation as it progresses. The message can be a response to the conversation currently being displayed.

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MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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METHOD AND SYSTEM FOR DISPLAYING GROUP CHAT SESSIONS ON WIRELESS MOBILE TERMINALS

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[0001] This application is a continuation-in-part of U.S. Patent Application No. 10/245,918 filed on September 18, 2002 and entitled "Voice and Text Group Chat Techniques for Wireless Mobile Terminals", which is a continuation-in-part of U.S. Patent Application No. 10/197,022 filed on July 17, 2002 and entitled "Voice and Text Group Chat Display Management Techniques for Wireless Mobile Terminals". The subject matter of the aforementioned applications is hereby incorporated by reference.

TECHNICAL FIELD

[0002] The present invention relates generally to wireless communication systems incorporating speech and textual input and output modalities and, in particular, to an improved technique for textually presenting real-time conversations (e.g., chat threads) on the displays of mobile units.

BACKGROUND OF THE INVENTION

[0003] Text and, to a lesser degree, speech chatting systems, are generally known in the art, particularly in relation to personal computing systems. Published U.S. Patent Application Nos. 2001/0042095 A1; 2001/0011293 A1; and 2002/0023128 A1 and U.S. Patent Nos. 6,212,548 and 6,286,034 illustrate exemplary system and user interfaces used today. A common feature of such systems is that the various conversations (or threads) are usually split out into distinct regions (or windows) on the display or screen. Furthermore, when a single thread comprises a plurality of both text and speech exchanges, such systems usually separate the two modalities. The speech is usually played over a speaker, whereas the plurality of text messages are displayed on the screen. Users have no means to reference old speech messages or distinguish when they occurred in the thread relative to other messages in that thread.

[0004] Published U.S. Patent Application No. 2002/0023128 A1 ("the '128 Publication") describes a system where the screen area is split into six distinct windows. One window presents a chat history of one thread (the thread in focus) while another window displays a chat history of the

combined plurality of the remaining threads. A chat history comprises a plurality of entries displayed on the screen that describe both inbound (i.e., received by the user's mobile terminal) and outbound (i.e., sent by the user's mobile terminal) chat messages. The entries are usually displayed on the screen in chronological order and usually only describe text messages.

[0005] Although the above described chat systems fulfill the needs of some chat group users, they focus primarily on large screens such as those found on personal computers. Viewable regions on the screen are dedicated to particular functionality. Such interfaces are not well suited for devices where the display area is small. On small screen devices, such as mobile devices, dedicating a region exclusively for text entry or other transient functionality consumes precious screen area. Such schemes do not allow the device to take full advantage of available screen display area when transient functionality (e.g., editing a new message.) is not in use.

[0006] Common practices on mobile device today usually transition the user through a series of screens. For example, when it is time to edit a message, the conventional practice on limited screen devices is to move the user from a chat history screen that occupies the entire content display region of the screen to a text editing screen, which also occupies the content display region of the screen. Such schemes do not allow a user to view a chat history as it progresses in real time while the user composes a message. When there is an incoming message, the user must move back to the history screen to see if the message currently being composed is still relevant given the context of messages received. A user interface that addresses such issues greatly enhances the desirability and convenience of participating in a chat session. Therefore, there is a need to provide a wireless chat messaging system that has an improved user interface at the mobile units, which permits the simultaneous display of chat threads and composition and/or editing of response messages on demand, taking into account limitations of mobile devices.

SUMMARY OF THE INVENTION

[0007] It is an advantage of the present invention to provide improved methods and systems for managing both single-modal (i.e., either voice or text) and multi-modal (i.e., combined voice and text) wireless chat services.

[0008] It is a further advantage of the present invention to provide a mobile terminal interface that allows a user to view a chat session as it progresses in real-time, while at the same time allowing the user to compose a message in response to the chat messages currently being viewed.

[0009] According to one embodiment of the present invention, a wireless system permits chat-based communications between mobile terminals. Each of the mobile terminals includes a display screen capable of presenting chat message text, a graphical user interface, and other information. At least some of the terminals execute a chat client application that provides chat services over wireless carrier networks. Mobile terminals running the chat client are capable of displaying a chat conversation that is updated in or near real-time so that messages in the conversation progressively scroll on the screen. In addition, the chat client allows a mobile terminal to present a text edit area on a portion of its screen while concurrently showing the chat conversation on another portion of the screen. A text editor resident in the mobile terminal permits a user to compose a message in the text edit area while simultaneously viewing the chat conversation as it progresses. The composed message can be a response to the conversation currently being displayed. Once the act of composing and sending the message is complete, the chat client allows the mobile terminal to remove the text edit area and expand the chat history area to occupy the freed screen area.

[00010] Other systems, methods, features and advantages of the invention will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The components in the figures are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention. In the figures, like reference numerals designate corresponding parts throughout the different views.

[0011] FIG. 1 is a schematic illustration of a wireless mobile terminal usable in a chat system in accordance with an embodiment of the present invention.

[0012] FIG. 2 is a block diagram of a wireless communications system supporting chat services in accordance with a further embodiment of the present invention.

[0013] FIG. 3 is a block diagram of wireless communication chat components included in the system of FIG. 2.

[0014] FIG. 4 is a schematic illustration of an outbound text message usable in the system of FIG. 2.

[0015] FIG. 5 is a schematic illustration of an inbound text message usable in the system of FIG. 2.

[0016] FIG. 6 is a schematic illustration of a buddy list update message usable in the system of FIG. 2.

[0017] FIG. 7 is a table that illustrates the data contained in the presence manager shown in FIG. 2.

[0018] FIG. 8 is a table that illustrates the data contained in the nickname manager shown in FIG. 2.

[0019] FIG. 9 shows a buddy list display, presenting an exemplary nickname list in alphabetical order.

[0020] FIG. 10 shows a buddy list display, presenting an exemplary nickname list in group order.

[0021] FIG. 11 is a schematic illustration of a chat history display.

[0022] FIG. 12 is a schematic illustration of a title bar for the chat history display when speech is recorded.

[0023] FIG. 13 is a schematic illustration of a detail view display of an exemplary single communication message.

[0024] FIG. 14 is a schematic illustration of a text message editor.

[0025] FIG. 15 is a block diagram of a wireless communications system that has been extended to integrate legacy mobile terminals.

[0026] FIGS. 16-17 show an exemplary chat history/text editor display combination in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENT

[0027] The present invention may be more fully described with reference to FIGS. 1-17. FIG. 1 illustrates a wireless mobile terminal 100 that may comprise any wireless communication device such as a handheld cellular phone or a wirelessly enabled Personal Digital Assistant (PDA). The configuration of the mobile terminal 100 shown in FIG. 1 is exemplary only, and it is generally understood that a variety of terminals and terminal configurations could be used. As shown, the mobile terminal 100 comprises a speaker 103 for rendering signals, such as received speech, audible; a display 102 to render text and graphical elements visible; a navigationrocker 105 that allows a user to navigate a list or menu displayed on the screen; programmable buttons (or "softkeys") 104; a keypad 106 that allows the user to input digits, letters, and other symbols (e.g., punctuation); a microphone 107 that captures audio such as the user's speech; and a push-to-talk button 101 that allows the user to initiate recording and transmission of audio. These and other components of the mobile terminal (not shown) are well known in the art and need not be described in greater detail herein. Additionally, there are a variety of styles and instances of components that can be used instead of (or in conjunction with) the components described in FIG. 1. For example, the push-to-talk button 101 may be omitted and replaced with automatic voice detection mechanisms. Touch screens and hand writing recognition techniques can replace the need for the softkeys 104, the navigation rocker 105, and the keypad 106. The present invention is not limited in this regard. Additional components of the terminal that are not necessarily visible to the user but are necessary to implement chat functionality are further described with reference to FIG. 3. The input devices available on the wireless mobile terminal (e.g., keypad, softkeys, etc.) may be employed by a user of the wireless mobile terminal to initiate a session of chat software and, within the operation of the chat software, to initiate one or more chat conversations (threads) as described in greater detail below.

[0028] FIG. 2 illustrates the overall system architecture of a wireless communication system comprising a plurality of mobile terminals 100 in accordance with an embodiment of the present invention. The terminals 100 communicate with at least one chat server complex 204 by wirelessly transmitting data to a corresponding wireless carrier's infrastructure 202. As known in the art, the wireless carrier infrastructures 202 comprise those elements necessary to support wireless

communications with the terminals 100. Various service providers (such as Verizon or Sprint in the U.S., or Orange in Europe) build and maintain such infrastructures. The data packets are sent on to a communication network 203 that forwards them onto the server complex 204. The communication network 203, which is a packet-based network, may comprise a public network such as the Internet or World Wide Web, a private network such as a corporate intranet, or some combination of public and private network elements. The server complex 204 preferably comprises a plurality of networked server computers that may be programmed to implement the functionality described below. The particular number of servers used and the manner in which they communicate with each other is a matter of design choice. Techniques for programming server computers and mobile terminals are well known in the art.

[0029] When the server complex 204 communicates with one or more mobile terminals, the server complex 204 sends its data to the network 203 that, in turn, forwards the data onto at least one of the carrier infrastructures 202. Each relevant carrier infrastructure 202 then transmits the data to one or more of its corresponding mobile terminals 100. Preferably, when a plurality of users chat together (i.e., send chat messages from one terminal 100 to another), data comprising text, speech, and/or graphical messages (or some combination thereof) are sent to the server complex 204. The server complex 204 then sends copies of the message out to the targeted terminals 100, preferably including, in one embodiment, the initiating or sending terminal.

[0030] The server complex 204 can be placed inside a wireless carrier's infrastructure 202, or that it may be eliminated in cases where direct terminal-to-terminal transfer is supported. In the latter case, substantially all of the chat messaging functionality is supported by the mobile terminals. Furthermore, the present invention would benefit systems other than packet data based systems, as well as systems that are limited in scope to a single wireless carrier's domain.

[0031] In the preferred embodiment, at least one chat server complex 204 resides outside the carrier's domain. As such, it is able to services a plurality of mobile terminals 100 that can be associated with a plurality of wireless carriers. In effect, the systems disclosed herein are independent of the wireless operators. They do not require any special hardware or software to be placed within the operator wireless network 202. The wireless operator's network (in conjunction with a public network 203) acts as a communication pipe between the mobile terminal 100 and the

server complex 204. Preferably, standard packet data transfer protocols are used to transmit and route data messages back and forth between the mobile terminal 100 and the server complex 204, such as the Internet Protocol (IP), Transmission Control Protocol (TCP), User Datagram Protocol (UDP), and World Wide Web protocols, such as the Hypertext Transfer Protocol (HTTP). The server complex 204 acts as a gateway between the various transfer protocols. Each of the plurality of mobile terminals 100 establishes a connection with the chat server complex 204 using a suitable transfer protocol. Messages flow from the mobile terminal 100 into the server complex 204 over at least one protocol. The server complex 204 copies the message's content and broadcasts it to other intended recipient mobile terminals 100 using the appropriate transfer protocol suitable for each of the targeted mobile terminals 100.

[0032] FIG. 3 illustrates in more detail components found in both the terminals 100 and the server complex 204 used to exchange group speech and text chat messages. Focusing on the components of the terminal 100, machine-readable and executable instructions (typically referred to as software, code, or program) are preferably stored in an application storage (or memory) 310 and executed (or run) on a central processing unit (CPU) 211. All storage devices described herein may comprise any combination of volatile (e.g., random access memory) or non-volatile (e.g., read-only memory) storage as known in the art. Likewise, the CPU 211 may comprise a microprocessor, microcontroller, digital signal processor, co-processor, similar devices or combinations thereof. Using known programming techniques, the software can manipulate the display 102, capture speech from the microphone 107, capture input data from the key pad 106, navigation rocker 105, soft keys 104 and/or push-to-talk button 101 using the I/O controller 312. Outbound chat messages sent to the server complex 204, as well as those inbound chat messages received from the server complex 204, pass through the network interface 306 that provides connectivity between the terminal and the data network. Where the terminal 100 comprises a wireless device, the network interface 306 comprises the entire physical interface necessary to communicate with the server complex 204, including a wireless transceiver. Preferably, but not necessarily, speech sent to the server complex 204 is first encoded using a voice codec 307, which may be implemented in software, but is preferably implemented using a combination of hardware and software components. Similarly, voice from the server complex 204, may, when necessary, be decoded using the voice codec 307 before it is sent to

the speaker 103. The software uses temporary storage 309 to save working data that does not persist between software initiations (sessions). On the other hand, the software uses the permanent storage 305 to persist data for longer periods of time that can span multiple software sessions.

[0033] Focusing on components of the server complex 204, the data traffic comprising encoded speech and text messages (e.g., outbound chat messages 400; see FIG. 4) flows into the server complex 204 preferably via the router 301. Note that the router 301, presence manager 302, message broadcaster 303 and nickname manager 304 may be implemented on one or more server computers or the like residing within the server complex 204. The router 301 directs the outbound chat message 400 towards a message broadcaster 303 that determines the plurality of inbound chat message copies (e.g., inbound chat messages 500; see FIG. 5) needed and their destinations. In the context of the present disclosure, the term inbound refers to messages directed to one or more mobile terminals, whereas the term outbound refers to messages sent by mobile terminals. The message broadcaster 303 decomposes the incoming message 400, and locates the list of recipient identifiers 402. It then queries a presence manager 302 to establish the recipients' current status 702 (i.e., an indicator of whether the recipient is ready to receive the particular type of message, speech and/or text messages only, etc.) and the terminal's address 703. FIG. 7 illustrates a table with the plurality of presence data records 700 contained within the presence manager 303. Each presence record 700, comprises the user's identifier 701, the current status 702, the current terminal address 703 (if known), a public display identifier, such as a public nickname 704 and a public short name 705, and a plurality of other user identifiers 706 that subscribe to the presence information of the user corresponding to that record. The public display identifiers or public nickname set 704-705 is used in inbound chat messages 500 sent to the terminal 100 unless the receiver (i.e., the receiving user) overrides the public nickname set 704-705 with private display identifiers or a private nickname set 802-803. When presence status 702 changes, the presence manager 302 sends a buddy list update message 600 to all the subscribers listed in the subscriber identifier field 706 of the corresponding presence record 700. The presence records 700 may contain other information and attributes such as forwarding address, processing rules that describe what to do in various circumstances, graphical representation for various status, profiles (i.e., a plurality of a different value sets that could be used at various times or depending on the receiver, etc.) and the like.

[0034] Although not illustrated in FIG. 3, the server complex 204 may include other components such as authentication and encryption servers that ensure the authenticity of the chat communication messages and secure the privacy of their content. The server complex 204 may also include a plurality of other components like speech-to-text and text-to-speech translators, natural language translators, voice transcoders, and other similar transformation gateways that transform the message, its contents, and any attachments (e.g., ring-tones, images, and so on) to a more meaningful and usable format by the receiver. Techniques for implementing such other components are well known in the art.

[0035] In the preferred embodiment, each of the plurality of wireless operators may deploy different wireless data technology in the wireless carrier network 202, such as Global System for Mobile Communication's (GSM) General Packet Radio Service (GPRS) and Code-Division Multiple Access's (CDMA) Single Carrier Radio Transmission Technology (1xRTT). In this respect, the systems disclosed herein do not depend on the data wireless technology employed.

[0036] In the preferred embodiment, the voice codec 307 used on the plurality of mobile terminals 100 is native to the terminals. The voice codec 307 native to the mobile terminal 100 is optimized for both the terminal's processing strategy and the wireless technologies used. In order for the system to be independent of the underlying wireless technology, the system uses commercially-available media scheme gateways (not shown). The media gateways transcode speech samples from one encoding to another. In operation, the message broadcaster 303 establishes the type of encoding used on the incoming message. It determines the type of encoding required for the each of the plurality of target mobile terminals 100. For each copy of the message, the message broadcaster 303 uses at least one media gateway to transcode the speech to a coding scheme appropriate of the target recipient. Techniques for detecting the type of encoding used by the incoming message and or required by the target terminals, as well as interfacing to media gateways are known in the art. Exception processing in cases where the media gateway is unable to fulfill a conversion can also be performed by the system. For example, a message may be sent back to the sender informing the sender that the message was not delivered to the target recipient because the system does not support the required transcoding techniques.

[0037] In addition, the system can be configured to optimize transcoding. For example, the message broadcaster 303 can reuse the same transcoding for all messages targeting mobile terminals 100 that require the same encoding. In addition, the message broadcaster 303 can avoid transcoding the speech if it detects that the message cannot be otherwise delivered to a target. Other optimization techniques can be employed as well.

[0038] In the preferred embodiment, the plurality of mobile terminals 100 are grouped and allocated among a plurality of chat server complexes 204. As such, each server complex 204 services a set of homogeneous mobile terminals 100 requiring the same speech encoding. Multiple server complexes 204 may use the same encoding. When a message reaches the message broadcaster 303 of one of the chat server complexes 204, the broadcaster forwards at least a copy of the message to another server complex 204 managing the connection with a subset of the intended recipients of the message. The message forwarded is transcoded by a media gateway in route between the two server complexes 204. The system benefits from using a common encoding for transferring the speech sample between the various server complexes 204. In particular, the message that is received by a server complex 204, is transcoded into the common encoding before it is forwarded to the plurality of other target server complexes 204 (only one transcoding is required in this case). Upon arrival of the message into each of the plurality of target server complexes 204, the message is converted into the encoding that is suitable for the target mobile terminal 100. Only one encoding at the end server complex is needed since all the terminals serviced by the complex use the same encoding. Messages not forwarded outside the server complex 204 need no transcoding since all the mobile terminals serviced by the complex use the same encoding. In this arrangement, simpler media gateways may be deployed between the complexes 204 because the gateways only need to transcode content between the common encoding and the encoding used by the mobile terminals 100 serviced by the complex 204. Also, detection of the type of transcoding required is inherent in the routing of messages i.e., structure and distribution of mobile terminals and does not required actual resolution based on any encoding information itself. It is done based only on the target address of the mobile terminal, which is resolved in all cases to route and direct messages. For example, instead of using multiple server complexes 204, a single server complex 204 can be subdivided where a plurality of message broadcasters 303 are used in the same spirit as distributed server complexes 204. The

invention is not limited to any particular arrangement of server complexes. Altemative arrangements can be employed for the server complexes.

[0039] Preferably, a nickname manager 304 resides in the server complex 204 and is responsible for managing lists of nickname sets 802-803 used by the receiver of an inbound chat message 500 to override public nicknames and short names. Note that nicknames and short names differ primarily in their length. Nicknames may be of any arbitrary length (possibly limited as a matter of design choice), whereas short names are preferably fixed in length or size. Additionally, nicknames and short names are instances of display identifiers used to identify the originators of chat messages. Such display identifiers are distinguished from identifiers used internally by the system to identify particular users (e.g., identifiers having reference numerals 701, 403, and 604 in the accompanying FIGS.). It should also be noted that short names might differ from nicknames in format or type. The system may use graphical, symbolic or other suitable forms of short names that are compact and fixed in dimension while using textual forms for nicknames. The system may vary the graphics and symbols based on context, user preferences, presentation themes and personalities. .

[0040] FIG. 8 illustrates the nickname record 800 contained within the nickname manager 304. Preferably, each nickname record 800 comprises a receiving user's identifier 701, the buddy's identifier 801 (i.e., the identifier of the chat buddy for whom the receiving user desires the message broadcaster 303 to replace the buddy's public nickname set 704-705 with the receiver's private nickname set 802-803 on all inbound chat messages 500) and the private nickname 802 and private short name 803. Like the case of presence records 700, the nickname records 800 may contain other information and attributes such as forwarding address, processing rules, graphical representation for various status, profiles (i.e., different field values that could be used in various times, etc.) and so on. Upon receiving a message targeted to a recipient designated by the receiving user's identifier 701, the nickname manager 304 determines the buddy identifier 801 (i.e., the identification of the chat participant that initiated transmission of the message). Based on the buddy identifier 801, the nickname manager 304 inspects the nickname records corresponding to the targeted recipient. If the buddy identifier is not found in the targeted recipient's nickname records, the message is sent to the targeted recipient as in inbound message with the public nickname and public short name of the sender. In this case, the public nickname and/or short name of the sender will thereafter be displayed

on the targeted recipient's mobile terminal display. If the buddy identifier is located in the targeted recipient's nickname records, the nickname manager determines the private nickname and private short name associated with the buddy's identifier and replaces the public nickname with the private nickname and the public short name with the private short name in the subsequent inbound message sent to the targeted recipient, thereby causing the private nickname and/or private short name to be displayed on the recipient's mobile terminal display. In this manner, users (i.e., recipients) have a greater degree of control over how chat histories are displayed on their terminals. Note that the process of determining private display identifiers and substituting them for public display identifiers could be performed by the mobile terminals assuming that the necessary nickname records are stored on the mobile terminals.

[0041] FIG. 4 illustrates an outbound chat message 400 that the terminal 100 sends to the message broadcaster 303. The outbound chat message 400 comprises a message type 401 (e.g., text, speech, and so on), a number of intended recipients 402, a plurality of recipient identifiers 403, a thread identifier 404, a message length 405, message content 406, and a number of attachments 407. Preferably, the mobile terminal 100 generates the thread identifier 404 by aggregating a client identifier and a session identifier with a thread sequence number. The thread sequence number is a terminal-side number that starts from 0 each time a session is initiated. The client increments the thread sequence number by 1 each time the terminal 100 generates a new thread. Although not illustrated in FIG. 4, the payload may contain message encoding types and other attachments (e.g., icons, ring-tones, and so on). Other elements can be added to the outbound chat message, such as sequence numbers, time stamps, or the like.

[0042] The message broadcaster 303, upon receiving the outbound chat message 400,first compiles a list of target recipients comprising the sender's identifier (i.e., the first recipient identifier in the recipient identifier list 403) and the plurality of other recipient identifiers (i.e., the recipient identifiers in the identifier list 403 other than the sender's identifier). For each target, the message broadcaster 303, determines the status 702 of the target by locating the target's identifier in a presence record 700 with the matching identifier 701. For each available target (i.e., where the presence record indicates that the recipient can receive the message type 401), the broadcast manager 303, composes an inbound chat message 500. The message broadcaster 304 queries the nickname

manager 304 to find the receiver's local nickname set 802-803 for the other recipients (i.e., the identifiers comprising the original list of targets without the receiver's identifier.) If no information is found (i.e., the receiver did not build a nickname record 800 for the particular recipient), the message broadcaster 304 queries the presence manager 302 for the recipient's public nickname information 704-705. The message broadcaster 303 extracts the receiver's address 703 from the presence manager 302 and sends the inbound message 500 to the receiver's terminal 100 via the router 301. Those having ordinary skill in the art will doubtlessly recognize that means to optimize the creation and broadcasting of messages, such as using common compression and encoding techniques may be employed, and that other information may be included in the inbound chat message 500, such as sequence numbers, timestamps, and so on.

[0043] FIG. 5 illustrates an inbound message 500 sent by the server complex 204 to the terminal 100. As shown, the inbound message 500 is largely a copy of an outbound chat message 400 sent from a terminal 100 to the server complex 204. The inbound message 500 preferably comprises the original outbound message 400 and a definition of new users not known to at the terminal 100 (i.e., not already in the receiver's buddy-list.) The new user definition comprises the number of new definitions 501 and a plurality of individual definitions comprising the recipient's identification 502, full name 503, public nickname 504, and public short name 505. In some cases, the original outbound message has to be transformed to be understood by the receiving terminal 100. It should also be noted that the server complex 204 may only need to include the new user definition once during a session. That user definition is placed in the terminal's 100 temporary storage 309. This enables less wireless data transfer. Other attributes can be placed in the inbound chat message 500 including such things as time stamps, sequence numbers, and so on. It should be noted also, that anonymous identifications and virtual or group identification could be used as well.

[0044] When a participant's presence status 702 changes, the message broadcaster 303, sends a buddy list update message 600 to other users subscribed to the participant's presence status 702. FIG. 6 illustrates a buddy list update message 600 sent from the server complex 204 to the mobile terminal 100. The message 600 comprises a list type 601 (e.g., alphanumeric list, group list, etc.), the number of groups identified in the message 602, at least one group definition 603-604, a list of ungrouped individuals 605-606, and a plurality of user definitions 502-505, 607. Note that the

recipient status field 607 indicates the value of the presence status 702. A group definition, in this context, comprises a group name 603 and a plurality of recipient identifiers 604. A recipient's identifier can exist in a plurality of group definitions. However, preferably, there will be only one user definition 502-505, 607. Furthermore, preferably, for each identifier in the list of recipient's identifiers 604, there is at least one user definition 502-505, 607 for that recipient in the buddy list update message 600. The list of ungrouped individuals is a special unnamed group. It comprises the number of ungrouped individuals 605 and the list of recipient identifiers 606. Preferably, recipient identifiers in the ungrouped definition cannot be in other groups. The records 600 can contain other fields of attributes and information such as presentation icons, audicons, or the like. In addition, it should be noted that the message does not have to contain the entire list of groups and individuals on updates, rather incremental updates could be used instead.

[0045] The presence manager 302 may send buddy list update messages 600 to the terminal 100 upon receiving a refresh request from the terminal 100. Those having ordinary skill in the art will recognize other reasons to send buddy list updates (e.g., initial connection,) as well as optimizations in the form of encoding the contents, sending incremental updates instead of the entire list, and so on.

[0046] In another embodiment, parts (or all) of the functionality of the message broadcaster 303 and the nickname manger 304 can reside on the terminal 100. In that case, the terminal 100 communicates with the server complex 204 when it exchanges presence information. Chat communication messages are broadcast from one terminal 100 to the plurality of other terminals 100 in a point-to-point fashion.

[0047] FIG. 9 illustrates a buddy list display with its entries sorted alphabetically. The screen 102 is divided into three regions. In a topmost region, there is a title bar region 901 allowing the display of one line of text and graphic symbols (i.e., icons). The software uses this region 901 to provide the user notices and other meta-information about the current task. In the case of the buddy list display, the title bar 901 comprises the user's own presence indicator 904, the user's own public nickname 704, and, on occasion, an inbound chat message indicator 905. Preferably, the presence indicator 904 is a icon that varies in appearance depending and the presence status 702 (i.e., there is a different and distinguishable feature associated with the various status values). Preferably, the

inbound chat message indictor 905 is an icon accompanied by an audible sound when the icon is first displayed. Combined, the visual and audible notice indicate to the user that there is at least one unheard and/or unread inbound chat message 500 that has arrived at the terminal 100. If the user's nickname is too long for the title bar 901, the software scrolls the title bar leaving only the inbound chat message indicator 905 in a fixed position for quick access. There are many familiar examples in the art today of such display techniques, any of which may be incorporated for use with the present invention.

[0048] In the middle region of the display is a content region 903. In the case of the buddy list display, the software preferably places a multi-selection list in the content region 903, which list has a plurality of entries each representing a buddy that was received by the terminal 100 from the server complex 204 in a buddy list update message 600 and stored in the temporary storage 309. Each entry can be highlighted 908 by the user. Highlighting and navigating list entries are implemented using common techniques in the art. Each entry in the list comprises a selection indictor 906 that indicates whether the user has selected the particular buddy for chatting (i.e., sending a chat communication message), the buddy's presence indicator 911, the buddy's nickname 802 or 704, and/or the buddy's short name indicator 907. Note that symbols other than text could serve the same function as the short name indicator 907 for the short name information 705 or 803 as indicated previously. For example, icons or other graphical elements could be used so long as they sufficiently differentiate buddies from one another. Further still, a combination of such graphical elements and text could be used if sufficient screen space is available.

[0049] On the bottom of the screen 102 is a softkey label region 202. Preferably, there is a minimum of two labels 909-910. The number of labels depends on the actual number of softkeys 104 available on the terminal 100. As shown, the left softkey label 910 is "select" while the right softkey label 909 is "write" if there is at least one selected entry in the buddy list. Otherwise, the right softkey label 909 is labeled "chat". If the user activates the left softkey with a single click (referred to onward as "single-clicking"), the highlighted entry 908 is selected (or deselected if it was already selected,) and consequently its selection indicator 906 changes to reflect the new state. If the user presses and holds (referred to onward as "click-holding") the left softkey, the software presents the user with a plurality of options such as the option to deselect or select the entire list; switch to

other displays (e.g., chat history display described in FIG. 11, group ordered buddy list display described in FIG. 10, etc.); request the details of the buddy (e.g., full name, the public nickname set 704 705, etc.); change the nickname set 802-803; show or hide fields (e.g., the short name indicator 907), and so on. Once again, techniques for programming such functionality and associating it with single-clicking and/or click-holding are well known in the art. It should also be noted that the use of a text string to represent a softkey label is exemplary and only intended to capture the spirit or intent of the invention. Other forms of labels can be used, such as graphical symbols, and the like.

[0050] If no buddies are selected, the right softkey label is "chat". Single-clicking or click-holding the right softkey in this context switches the user to chat history display described in more detail with reference to FIG. 11. If the user pushes the push-to-talk button 101 (referred to onward as pushes-to-talk,) an audible indicator reminds the user that buddies have to be selected first. If there is at least one buddy selected, single-clicking or click-holding the right softkey begins to compose a message for a new thread to the selected buddies. The display in that case switches to the text message editing display described in more detail with reference to FIG. 14. If the user pushes-to-talk, the display switches to the chat history, and the user is able to record and transmit a speech message and consequently start a new thread with the selected buddies.

[0051] FIG. 10 illustrates a buddy list display with its entries sorted by group. In a preferred embodiment, group entries and their member buddies are listed first followed by a list of ungrouped buddies. Individual entries are identical to those displayed in an alphabetically ordered list with the exception to a preferred indentation (i.e., an annotation that indicates membership to a group). Group entries comprise a group name 1005 and a group selection indicator 1001 which is similar to the individual selection indicator 906 except that a group selection indicator can indicate more that just selected and unselected states; it can indicate partial selection as well. Referring to the examples illustrated in FIG. 10, solid squares (group selection indicators) such as in groups 3 and 4, are completely selected. Group 5 has an empty square indicating partial selection. If there is a group without any of its members selected, there is no indicator at all on the group level (or the individual buddy level). To select a group, a user can either select all the members one by one or select the group directly. To partially select a group, a user can start by selecting a group then deselecting one or more member. Alternatively, a user can start with an unselected group and select one or more.

members. A group entry can be collapsed (i.e., the members of the group are suppressed from the display.) In that case, the entry is annotated with a collapse indicator 1002. If the user highlights a collapsed group for a length of time, the group automatically expands to show the members. When the user moves to another group, the group display style reverts back to its collapsed state again. If a user selects or deselects a group entry, all the members of the group are automatically selected or deselected. The softkey labels 1003-1004 are similar in behavior to those described with reference to FIG. 9. However, click-holding when a group entry is highlighted (or an individual within a group is highlighted) presents the user with additional options to mange the group, such as renaming the group; removing the group or its the member; adding a new group or individual, collapsing or expanding the group; collapsing or expanding all groups; and so on. It should be noted that, in a preferred embodiment, only one level of grouping is allowed (i.e., nested groups are not allowed), although multiple levels could be provided.

[0052] Preferably, where the system supports presence profiles that are coupled to recipient users or groups, then as the user highlights the plurality of buddy entries 908, the user's presence indicator 904 and nickname 704 in the title bar 901 will vary to indicate the presence information of that particular buddy (or group of buddies). Also, it should be noted that if the information in the highlighted entry 908 is too long, the software can scroll the information, expand it, or use other techniques common to the art to present all the information to the user.

[0053] It is understood that there are other means to order lists (by date, events, and so on), and that other annotations could be added to the entries. For example, an indicator that there are messages that have not been read/heard available from the individual or group may be used.

[0054] FIG. 11 illustrates a chat history display. The content region 903 of the display is a single selection list comprising a plurality of entries representing inbound chat messages 500 received by the terminal 100 and a plurality of entries representing outbound chat messages 400 transmitted by the terminal 100. Outbound chat messages are preferably echoed back to the sender in full or in part (e.g., speech messages might not include the actual speech sent) in the form of inbound messages. That is, outbound chat messages go to the server complex for transmission to the targeted recipient(s). In addition to sending the message to the targeted recipient(s), the message broadcaster sends a copy of the outbound message to the transmitting terminal (i.e., the sender) as an

inbound message. In some cases, the copy of the message (the inbound message) to the transmitting terminal might not be identical to the message that was sent (the outbound message). For example, the speech content of an outbound voice message is not copied back to the transmitting terminal; only a text portion of a voice message is sent back as in inbound message. Note that, in this case, voice messages have text appended to them, even if only a generic character string or symbol is used to indicate that the message was a voice message. Of course, if speech-to-text conversion is available, the actual speech content of the message could be converted to text and copied back to the transmitting terminal. In this manner, the occurrence of voice message results in an entry being displayed on the screen. In an alternative approach, rather than having the text of an outbound message sent back to the transmitting terminal via an inbound message, the transmitting terminal can locally echo the text to the display directly. In this manner, use of wireless resources may be minimized.

[0055] A common problem in the art of chatting is the representation of successful delivery. A preferred approach to giving notice of delivery is to send an outbound message 400 back (as an echo inbound message 500) to the sender's mobile unit communicate to the sender that the message has been reliably delivered to the message broadcaster 303 in the chat server complex 204. Alternatively, the representation of that notice can be a text message that is placed in the chat history with a message indicating that the message sent was received by all recipients. The echo can be sent back when the outbound message 400 is received by the message broadcaster 303. The chat server complex 204 can then send a receipt notice when all the recipients have received the message. Preferably, the original echo is annotated when the delivery receipt arrives (e.g., changes color and/or font, or is adorned with a symbol like a check mark, etc.) to give notice of receipt. In an alternate approach, the echo message back to the user can be delayed until the broadcaster 303 has received confirmation that all intended recipients received copies of the message. However, the approach may present some presentation side effects that can be confusing to the user in environments where the delivery latency is relatively long and there is a high degree of latency variability between the deliveries of the plurality of copy messages. In such situations, at least one recipient may respond back to the sender before the message reaches the remaining recipients. In that case, the sender would see on his/her chat history display (see e.g., FIG. 11) the response to the message before the

echo. Several techniques can be deployed to rectify this problem. For example, the mobile terminal 100 or the server complex 204 could delay presentation or delivery of the recipient response until the original message was received by all recipients and the echo sent back to the user.

[0056] While not illustrated, at any time, the user may query the system as to who has (or has not) received the message. Other implementations may choose to forgo allowing the user to query the system for outstanding deliveries and instead provide comparable information by sending a plurality of receipt notices (one each time a copy is delivered to the user). While such techniques may be simpler to support in the chat server complex 204, they may require more communication resources.

[0057] In the example of FIG. 11, each entry comprises an attachment indicator 1104-1105 that indicates if there is any attached content (e.g., documents, files, etc.) or transmitted speech available; the short name of the sender 705 or 803, and at least part of the message content or text (all of the text if the text fits within 2-3 lines). Although not illustrated in FIG. 11, there may be other indicators present on an entry such as a locked entry indicator (i.e., indicates that an entry was saved in permanent storage 305 and will always appear in the chat history display until it is unlocked). Note that lesser amounts of information may be included in each entry of the display. For example, only the message content could be displayed without the short names of the senders.

[0058] When an entry is highlighted 1106, the plurality of nicknames 802 or 704 of the sender and the other recipients is placed in the title bar 1101. If the list is too long, the contents of the title bar 401 scroll. Alternatively, short names or other symbols may be used in place of the nicknames in the title bar 1101. As the user selects an entry 1106, all related chat messages in the same thread are emphasized 1103 as well. Emphasis can be done by changing or annotating the related entries or changing unrelated entries (e.g., graying out the entries). If a selected entry is too long to be displayed in its entirety and is selected for a length of time, the contents of the entry can expand automatically to display the entire text content. In that case, when the user moves to another entry, the entry immediately shrinks back to fit within its originally allocated space of 2-3 lines of text. The actual number of allocated lines depends on the screen size. As new inbound chat messages 400 arrive, new entries are added automatically to the list, for example, at the bottom of the list. The bottom or buddy list entry 1107 is a special entry referencing the list of buddies currently

selected in the buddy list display. The user can use the entry to start a new thread with the buddies. The bottom entry 1107 only appears when the user has selected buddies, and comprises an icon 1110 distinguishing the entry from other "regular" chat message entries. If the user selects the bottom entry 1107, the list of buddies appears in the title bar 1101 in the same manner recipients are displayed when the "regular" entries of the chat history are highlighted.

[0059] The left softkey label 1108 is "buddies". Single-clicking or click-holding the left softkey switches the user to the buddy list display (see FIGS. 9 and 10). The right softkey label 1109 is "reply" if the highlighted entry is a chat message entry. Otherwise, it is labeled "write," as before. Single-clicking the right softkey moves the user to a message editor display described in more detail with reference to FIG. 14. The target recipients of a message are either derived from the list of recipients of a chat message entry 1106 or those associated with the buddy list entry 1107. In the case where the highlighted entry is a chat message entry 1106, click-holding the right softkey presents the user options similar to those described in more detail with reference to FIG. 13. Otherwise, if the highlighted entry is the buddy list entry 1107, a "send to all" action is indistinguishable from normal "reply to all action" of single-clicking. If the user pushes-to-talk, the target recipients are compiled (i.e., either the sender and recipients of the chat message entry 1106, or the buddies of the buddy list entry 1107), the title bar is updated in a manner described in more detail with reference to FIG. 12, and the recording and transfer of a speech chat message begins.

[0060] It should be noted, that if an inbound speech message arrives while the chat history display is not visible to the user, the received speech is queued up. In a current implementation, the most recently received speech message (or at least that portion that will fit in available memory) are queued at the receiving terminal. In an alternate approach, such queuing can occur at the server complex such that the recipient can request playback within a predetermined period of time. Further still, queuing could occur at both the terminal and the server-side such that playback may be requested from the server in the event that a given speech message is no longer available at the terminal. While the speech entry is the most recent speech entry, the associated speech remains queued and ready for automatic playback upon the user's return to the chat history display. When the user switches back to the chat history display, if the speech entry is visible on the screen, it is automatically played back. Only the last speech message received is automatically played back. The

playback is abandoned if the user returned to the chat history to record and transmit a speech chat message.

[0001] Unambiguous delivery of speech messages to the user is a problem when integrating multiple multi-modal threads of conversation into a single chat history. In the current art, it is difficult for a user to associate speech with a particular discussion threads. The system disclosed herein solves the association problem in two ways. First, as discussed above, each speech message leaves an entry on the display. The entries link to their corresponding threads and represents at least the sender and the list of other recipients of the message. This, however, is not sufficient in cases where the user is unable to view the display while listening to speech messages. For this reason, the system disclosed herein uses a second technique in conjunction with the first. Preferably, when a user selects a thread, all speech messages associated with the selected thread are played back to the user automatically, unless otherwise provisioned by the user. Any speech messages not belonging to the selected thread are not played back automatically. Instead, the mobile terminal 100 presents an audible signal to the user indicating that there is other incoming speech message(s) in other thread(s). The user at that point can chose to playback the message or request the system drop it. Irrespective of whether the incoming speech message is played, the text portion of the incoming speech message is presented on the display. This helps the user in the decision process of choosing to listen to the message or ignoring it. Further optimizations are possible. For example, the user can be given the option to drop the message. Any speech data being transmitted is then dropped and the server is notified that it can stop transmitting the remainder of the speech message and begin transmitting the next message in the queue (if one exists).

[0061] The delivery techniques can be optimized. For example, the mobile terminal 100 may send a message to the chat server complex 204 whenever the user selects a thread. This allows the chat server complex 204 to suppress sending the speech components of the speech message not belonging to the selected thread until the user indicates he/she wants to listen to the speech. This minimizes sending large amounts of data to the mobile terminal 100 that may not be used.

[0062] FIG. 12 illustrates the title bar of a chat history display when the user is recording and transmitting an outbound speech message. The title bar comprises a recording indicator 1201; the plurality of recipient nicknames 705 or 802 (which does not include the sender) and, optionally, a

single label 1203 indicating to the user that he or she is talking to the identified recipients. If the list of recipients is too long, the list scrolls; however, the recording indicator 1201 remains fixed in position. There may be a delay between the times when the user pushes-to-talk requesting to record and transmit speech and when the system grants the user access to do so. Preferably, the recording indicator 1201 is an icon that changes its appearance (e.g., color or graphic symbol) to indicate when the user has and or loses speech recording/transmitting access. Shortly after the user releases the push-to-talk button 101, the title bar reverts back to the normal title bar 1101 on the chat history display.

[0063] FIG. 13 illustrates a detail view display of an inbound chat message 500. The title bar 1301 comprises the sender's presence indicator 904; the sender's nickname 705 or 802; and optionally a time stamp (when the message was sent or received.) If the information in the title bar is too long, the nickname scrolls. In that case, the remaining indicators preferably remain fixed. The content region 1303 comprises an attachment indicator 1302 that notifies the user of the availability of attachments or speech; the full text of the message 1309; a separator 1304; and the plurality of entries representing other recipients (not including the sender or the receiver). In the example shown in FIG. 13, each entry comprises the user's nickname set 703-705 or 802-803. Alternatively, each entry could comprise only some portion of the nickname set (either the nickname or short name) or some other type of display identifier. The left softkey label 606 is "cancel". Single-clicking and click-holding the left softkey exits the display and restores the previous display. The right softkey label 607 is "write". Single-clicking the right softkey moves the user to a message editor display described in more detail in FIG. 14. Click-holding the right softkey presents the user options such as playing back the available speech; viewing or storing available attachments; locking the entry in the chat history display; saving the inbound chat message in permanent storage 305; moving to the next or previous chat message, replaying to only the sender or one of the other recipients (i.e., initiating a new thread), and so on. If the user pushes-to-talk, the detail view display is exited. The user moves to the chat history and begins talking to the sender (unless the user is the sender) and all other recipients. Playback of any queued speech is abandoned in that case.

[0064] FIG. 14 illustrates a text message editor display. In this example, the title bar 1401 comprises a plurality of target recipient nicknames 704 or 802 and a single action label that indicates

to the user that he or she is composing a message. The title bar 1401 scrolls if the contents are too long. A text entry area 1402 is provided below the title bar 1401 for composing text messages. The left softkey label 1404 is "cancel". Single-clicking and click-holding the left softkey exits the display, preferably abandons the contents, and restores the previous display (except in the case where the previous display was a detail view display, in which case the detail view display's previous display is restored instead of the detail view display.) The right softkey label 1403 is "send". Single-clicking the right softkey causes the software to build and send an outbound text message 400. Click-holding the right softkey provides the user a set of options such as attachment of other content (e.g., ring tones, etc.), spell checking the message, displaying the full details of the recipients and so on. Preferably, if the user pushes-to-talk, the display is exited, its contents are abandoned; the user moves to the chat history and begins talking to selected recipients. Playback of any queued speech is also abandoned in that case.

[0065] The present invention is not limited to multi-modal chatting between humans. Multi-modal chatting can include machines. There exists text-based chatting systems, such as those deployed by Active Buddy, Inc., that allow users to interact with inventive services in the network using a chat metaphor. Unlike these systems, however, the systems disclosed herein allow the chatting dialogue to use both text and speech. For example, a user wishing to get status on a delivery of a package may send a speech message to a package deliver service presence. The speech would include at least the package identifier. The automated response service, using speech recognition techniques known in the art, determines the user's request and composes a response. That response can be speech based (e.g., it may send a speech message indicating it wasn't able to understand the request,) or it can be textual (e.g., the list of details of the package in route to its destination.) The service subscribes to the user's presence. The service sends the results back to the user when it notices the users presence's status allows sending the details in the preferred format.

[0066] The inventive systems also allow services to incorporate commands that can be fulfilled at either the mobile terminal 100 (e.g., initiate a phone call) or at the server complex 204 (possibly in conjunction with other services in the network), or some combination thereof. For example, an individual chatting with another user may at some point wish to initiate a phone conversation. Preferably, the user requests the server complex 204 to initiate a phone conversation

by sending a command from the mobile terminal 100 to the server complex 204 comprising at least the information needed to establish a phone call between the sender and the target recipient. The server complex 204 initiates a request to a Voice Over IP (VoIP) telephony system. That system then establishes the closest telephony access points to the end points and sets up a call by calling back the sender and the target user routing the calls between those access point using such common protocol as Session Initiation Protocol (SIP) and Real-Time Transport Protocol (RTP). The system may use a chatting interface to collect and establish the details of the call (as described earlier) or it may collect the information and initiate a command using common techniques known to those with ordinary skill in the art. In an alternative approach, the server complex 204 sends a command back to the mobile terminal 100 comprising at least the target's phone number. The mobile terminal 100 then initiates a telephony call with the target. Conventional techniques may be used to establish a phone call at the mobile terminal 100.

[0067] The quality characteristics of connections over wireless data networks can change with time. For example, a mobile user can move into a no coverage area where the data connection is dropped. The connection can be re-established later when coverage is available again, however, in the process the mobile terminal 100 may acquire a new IP address. Consequently, the server complex 204 is left unable to forward messages to the mobile terminal 100. To deal with this, the system disclosed herein uses a session identifier to describe the connection between a particular mobile terminal 100 and the server complex 204. Whenever a mobile terminal re-establishes a connection (after losing it due to loss of coverage, as an example) the mobile terminal 100 re-uses the session id of the interrupted session. The server complex 204 then rebinds the new connection to the existing session. If the mobile terminal 100 does not reconnect within a given timeout period, the server complex 204 can terminate the session. Other events causing a disconnection can include a lost session termination command sent from the mobile terminal 100, improper shut down of the chat application at the mobile terminal 100, battery failure, and the like.

[0068] Preferably, all routing that occurs within (or among) server complexes 204 is done using the session ids. A session id is preferably used instead of a client id because a user may choose to terminate a session and establish another. In this manner, all messages bound to the terminated session may be removed from the system. Only transactions associated the active sessions are

maintained. Also, in a distributed server complex 204 environment where there are many message broadcasters 303 (i.e. physical server hosts), the client may attach to different hosts servers. Using session ids provides a simple means to find where the client is currently connected. In addition, on re-establishing a connection, the server complex 204 can use what is commonly known in the art as sticky load-balancing switches that direct a re-connecting client to physically re-establish its connection with its previous host server based on the session id (even in cases where the IP address of the mobile terminal 100 may have changed.)

[0069] In addition, many wireless operator networks do not allow unsolicited network-initiated messages to reach the mobile terminal 100. Network-initiated messages, as they pertains to the systems described herein are messages going from the server complex 204 toward the mobile terminal 100 that appear to the network operator as if it was unsolicited by the mobile terminal 100. This is a common problem in chatting environments since a message broadcaster 303 commonly sends unsolicited inbound messages 500 to the recipients of a message. To overcome this, the system uses keep-alive strategies. These strategies vary depending on the data transfer protocol established between the particular mobile terminal 100 and the server complex 204. The keep-alive strategies involve periodically sending a message from the mobile terminal 100 to the server complex 204. The keep-alive message appears to the mobile network as a request. Subsequent messages sent back to the mobile terminal 100 can then be considered by the operator as responses to requests as long as the messages sent to the mobile terminal 100 originate from the same address the mobile terminal 100 sent the keep alive message to. The frequency of the keep-alive messages is a matter of design choice and transfer protocol used. When HTTP is used as the transfer protocol, the system uses a polling mechanism. Using this mechanism, the keep-alive message is sent frequently and acts as a poll to determine if there are any pending messages at the server complex. If there are pending messages, those messages are sent back as a response to the polling request. TCP and or UDP do not require a polling mechanism and can use keep-alive techniques, such as simply sending at least the session id in a message to the server complex 204 with a significantly longer time between messages. Sending keep-alive messages may be optimized. For instance, the keep-alive messages do not have to be sent when outbound messages 400 have been recently sent from the mobile terminal 100 to the server complex 204.

[0070] Preferably, all messages sent to the mobile terminal 100 from the server complex 204 go through the same router and possibly the same physical host server that the mobile terminal 100 attaches to in the server complex 204. This ensures that the operators can treat the messages as responses to a mobile terminal's 100 requests. Other techniques to make traffic appear to originate from the same location, such as address mapping and the like can also be used by the system.

[0071] In addition, keep-alive messages work in conjunction with other techniques described above to inform the chat server complex 204 if the address of the mobile terminal has changed. This is especially useful in cases where UDP is used as the transport protocol. On every keep-alive message sent, the server complex 204 notes the address of the mobile terminal 100. If the address changed, the server complex 204 then rebinds the session id to the new address. As such, the keep-alive message may still benefit the system even if the operator does not block network-initiated messages.

[0072] It is possible that the server complex 204 is unable to deliver a message to a mobile terminal 100 because it doesn't have the most up-to-date address -- the address of the mobile terminal 100 may have changed before a keep-alive message is sent. In this situation, the system may, for example, hold on to the undelivered message for a period until the next keep-alive message arrives; it may drop the message and inform the sender that it failed to send the message; or it may send the message using some out-of-band mechanism, such as the out-of bad mechanism described in connection with FIG. 15.

[0073] A problem in some currently deployed wireless packet data networks is communication channel resource contention. While a wireless data connection is established, some systems (e.g., CDMA's 1xRTT) can loose the capability to route telephony calls and other wireless related services to the mobile terminals 100. As such, the keep-alive strategy used by the system described above can become problematic. To solve this problem, the preferred embodiment uses a back-off strategy that is based on predicting the user's involvement in the chatting service. The back-off strategy uses a dynamic timeout scheme. For example, when the mobile terminal 100 is presenting a chat history display where there are active updates (i.e., inbound messages 500) and the likelihood if participation is high, the length of timeout is significantly longer than when there are no updates or when the mobile terminal 100 is presenting a buddy list display and the likelihood pf

participation is lower. The purpose of the timeout is to guard against cases where the user might have forgotten or otherwise inadvertently left the chatting application running preventing any incoming telephony calls or other communications from reaching the user. When a timeout occurs, the user is given the opportunity to continue the session. A prompt notifying the user that the connection between the mobile terminal 100 and the server complex 204 is about to be severed. The user can choose to cancel the action and keep the connection alive. Otherwise, if the user doesn't cancel within the allotted time to respond, the connection is automatically terminated. When the mobile terminal is disconnected, it can no longer receive chat messages through the previously established packet data connections.

[0074] Alternative disconnect schemes can be used. For example, the chatting program running on the mobile terminal may choose to periodically reconnect with the server complex 204 to see if there are any messages pending delivery. If not, the chatting program on the mobile unit may automatically disconnect. Otherwise, the messages are delivered and the program updates the chat history display as described above and resumes operations until either the user terminates the session or a timeout occurs as described above.

[0075] FIG. 15 illustrates how the overall system architecture of a wireless communication system comprising the elements described in FIG. 2 is extended to integrate with a legacy mobile terminal 1502. Within the context of the systems described herein, a legacy mobile terminal 1502 is capable of transmitting and receiving at least text messages over some well-established conventional mechanism, such as Short Messaging Service (commonly referred to in the art as SMS messages or simply SMS.) However, unlike a mobile terminal 100, the legacy mobile terminal 1501 lacks the elements required to communicate directly with the chat server complex 204 and or to directly participate in any chatting transactions described herein.

[0076] To integrate a legacy terminal, the chat server complex 204 communicates with at least one SMS aggregator 1501 via the communication network 203 (such as the Internet or World Wide Web). The SMS aggregator 1501, which can be a commercially-available device, comprises all those elements needed to allow entities that may not have any direct affiliation with wireless carriers to inject SMS messages into at least one wireless carrier network 202. The SMS aggregator 1501 takes as input (via its interfaces to the communication network) a description of the SMS. The

description comprises all the elements needed to send a message to the target mobile terminal 100. The description comprising at least the originator's address, such as a mobile terminal's 100 address, or a special return address known as a short code or a long code, the destination address, such as a terminal 100 address, and the content of the message.

[0077] The SMS aggregator 1501 communicates with the target operator via its wireless carrier network 202 interfaces and injects an SMS on behalf of the requestor. In this system, the requestor is the chat server complex 204 or any agents acting on its behalf.

[0078] The mobile terminal 100 allows a user to enter the address of a legacy mobile terminal 1502. This can be done in an ad-hoc fashion where the user is prompted for the address at the time of creating the outbound message 400. The address in this context is typically the telephone number of the mobile terminal 1502. Alternatively, for a user frequently targeting a particular legacy mobile terminal 1502, the system may provide that user means to build a buddy presence in the system comprising at least a presence data record 700 and a nickname data record 800. Conventional data collection and construction methods for the processes of adding a legacy buddy or using ad-hoc addressing, can be employed.

[0079] The legacy address, be it the actual address or a recipient's id of legacy buddy, can be used in the same manner as any other recipient id. It is placed in the list of recipient ids (403 and 502) in outbound messages 400 and inbound messages 500. In the case where the actual address is used, the address presentation is usually distinguishable from non-legacy addresses. That allows the system to process the address in a different manner than the remaining recipient ids.

[0080] The legacy address can be a part of a group communication with at least another legacy mobile terminal 1502 and at least another [non legacy] mobile terminal 100. Alternatively, the legacy address can be the only address supplied in a one-to-one communication with the legacy terminal. The legacy address can be part of initiating a new thread of conversation, or it can be part of a reply to an existing thread.

[0081] In the case of ad-hoc entry of legacy address, the system has to establish recipient fields (503-505) in inbound messages 500. The system may place generic representation in these fields. For example, it can use the address as the recipient's name 503. Where available, the system may query public address books to find the actual name. Other techniques may also be deployed.

For example, in cases where the information is considered private and the system is not permitted to present it, the mobile terminal 100 (or the server complex 204) may replace the information with proxy representations.

[0082] The outbound message 400 carrying a legacy address is sent to the message broadcaster 303 in the chat server complex 204. The message broadcaster 303 detects the legacy address of the legacy mobile terminal 1502 (either the actual address or a reference to it using a legacy buddy recipient id). For each non-legacy mobile terminals 100, the message broadcaster 303 builds inbound messages 500 as described above herein.

[0083] For each of the target legacy terminals 1502, the broadcaster 303 sends an SMS request to the SMS aggregator 1501. To do this, the broadcaster 303 sets the originator address of the SMS request to the mobile address of the sender's mobile terminal 100 initiating the message. The SMS aggregator 1501 sends an SMS on behalf of the chat server complex 204 and the sending user to the legacy mobile terminal 1502.

[0084] The message sent to the legacy mobile terminal 1502 contains at least the original message. Other information can be included in the message. For example, the message may comprise the list of other recipients, the thread identification, the time of delivery, a service provider identity, an advertisement, or the like. In the case of a voice message that can not be delivered via the out-of-band messaging scheme, the chat server complex 204 can replace the voice content with textual content. Where speech-to-text service are available, the chat server complex 204 can place the derived text message whole or truncated. Otherwise, the chat server complex 204 can place a representation of the discussion. For example, it may drop the voice part and only send the text part similar to what is displayed on a chat history display when an inbound voice message is received.

[0085] Once the SMS is delivered to the recipient's legacy mobile terminal 1502, the SMS application native to the legacy mobile terminal 1502, which typically resides in an application storage and is executed on a CPU within terminal 1502 intercepts the SMS and notifies the user allowing the user to read the contents of the message. The recipient may respond to the message using the SMS application on the legacy mobile terminal 1502. In that case, the application builds a reply SMS that targets the sender using the originator address in the original inbound SMS that was supplied by the chat server complex 204. In this situation, the message does not go back to the chat

server complex 204. Instead, the reply SMS goes directly to the target mobile terminal 100 via the wireless carrier's network 202. When the response reaches the target mobile terminal 100, the chat application, intercepts the message and displays it as part of the chat history display as described in FIG. 11) as inbound message.

[0086] Some mobile terminals do not allow the chat application to access the out-of-band messaging system. In that case, the user would either have to respond using the native out-of-band application, move the message (in part or in whole) between the two applications, or otherwise manage the message in the application.

[0087] Currently most SMS systems do not comprise the elements necessary to allow the chat server complex 204 to predictably embed any information that would manifest itself in an SMS response coming back from the legacy mobile terminal 1502 (such as a thread id, list of recipients, or the like.) As such, the reply SMS is not guaranteed to have any identification that would allow the chat application program on the mobile terminal 100 to bind the inbound message to an existing thread. As a result, the message may appear in the chat history display as a new message in a new thread. The client on the mobile terminal 100 under these conditions can generate the thread id on behalf of the legacy mobile terminal 1502. In the event the user replies, the new message and the legacy mobile terminal's 1502 address (i.e., the originator address of the reply SMS address) are sent to the chat server complex 204.

[0088] In an alternate embodiment, the chat server complex 204 does not place the sender's mobile address as the SMS originator address as described in the preferred embodiment. Instead, the chat server complex 204 uses a long code or alternatively, a short code. In this case, the SMS reply from the legacy mobile terminal 1502 goes back to the server complex 204. The chat server complex 204 can de-multiplex the messages from the legacy mobile terminals 1502 over of codes using various conventional techniques to bind a reply SMS to an existing thread. In this case, the message broadcaster 303 in the chat server complex's 204 can broadcast the message back to all the participants in the thread via the appropriate channels. For example, if another legacy mobile device was participating in the thread, the message broadcaster 303 could send the message via the SMS aggregator 1501 as described above herein.

[0089] The legacy integration role of the message broadcaster 303 can be performed at the mobile terminal 100 instead of in the chat server complex 204. In this case, the mobile terminal 100 does not use the SMS aggregator 1501. Instead, the mobile terminal 100 could inject the SMS directly into at least one wireless carrier network 202 for each of the targeted legacy mobile terminal(s) 1502.

[0090] Other out-of-band communication mechanisms can be used such as email, Multimedia Messaging Services (MMS), or the like. In such cases, other gateway forms replace the SMS aggregator 1501. Other delivery mechanisms may allow embedding other information in the reply message from the legacy terminal, further allowing the system to bind the replies to the existing threads.

[0091] A problem confronted by some mobile terminals 100 is loss of application context when the user initiates another, non-chat application on the terminal 100. For example, when a user on a mobile terminal 100 receives an incoming telephony call, the mobile terminal 100 may drop data connection resources, suspend or halt executing the chat program, and/or otherwise disable the chat application from communicating and fulfilling chat transactions with the chat server complex 204. In this case, the user may shutdown the chat application when there is little perceived activity or the chatting program may disconnect automatically to free up resources, as described above herein. As such, what was once considered a valid mobile terminal 100 for chatting according to the systems disclosed herein may act in a manner indistinguishable from that of a legacy mobile terminal 1501. The techniques that are described above as methods to integrate the chat environment with legacy mobile terminals 1502 can be applied in these situations as well. The out-of-band delivery of messages (via SMS for example) acts as a hailing to the user. It informs the recipient that a chat thread is in progress. The user may then choose to re-activate the chat program and resume the chat conversation. Alternatively, if resumption is not possible or convenient, the user may still chose to participate using the available out-of-band mechanism. In cases where the chatting application has access to the incoming out-of-band message, the chatting application on the mobile terminal 100 many extract the content and place them in the chat history display. It may also allow the recipient to reply to the sender. The reply may go back as an out-of-band message or it may go through the chatting system as an outbound message 500 band through the chat systems disclosed herein.

[0092] The presence status 702 represented on the mobile terminal 100 by presence status indicators 904 and 911 describes what is referred to as availability. Availability in such contexts indicates that a user is able to receive inbound messages 500 (and optionally the type of inbound messages 500.) A status that indicates lack of availability in such contexts presents the fact that a user is unable to receive inbound messages 500 (or a particular type thereof). As such, either the system will drop messages targeting the unavailable user, or it will store the messages for some time until the user is available again. For example, the system may always attempt to deliver the message (even to legacy mobile terminals 1502). In addition, the availability (as defined by the current art) of legacy mobile terminals 1502 may not be determinable. Furthermore, it could be argued that the usefulness of availability (as defined by the current art) is somewhat diminished in cases where the mobile terminal 100 (and 1502) accompany the user the majority of time.

[0093] The presence status 702 can implement availability as defined above. In addition, the systems use presence status 702 and presence status indicators 904 and 911 to communicate other information, such as message delivery type. To accomplish this, the user on the mobile terminal 100 is presented with a representation of the means the system will likely use to deliver the message such as using in-band communications over the wireless packet data or through an out-of-band method such as SMS, email, or the like. It may also provide a representation of the subset or type of the messages that are likely be delivered. For example, an SMS-text-only representation can indicate that only the text portions of the message would likely be sent via SMS to the target recipient. As such, any attachments (e.g., pictures) as well as any speech components of outbound messages 400 would likely be dropped or otherwise not delivered to the target recipient. Such representation is better suited to the mobile user. For example, it may communicate to the user the cost associated with the delivery of the message, the expected delays, and or quality of service.

[0094] FIGS. 16-17 show a chat history/text editor display combination in accordance with a preferred embodiment of the present invention.

[0095] FIG. 16 illustrates a terminal screen 1600 in a first display mode. In the first display mode, the screen 1600 presents the chat history 1602, as well as graphic user interface (GUI) controls 1604. Other information can also be presented on the screen 1600, as disclosed herein. As shown in the example, the chat session history 1602 that includes a sequence of messages posted by

participants in the current chat group. As described above herein, the displayed messages identify the sender and show the posted text.

[0096] By activating the GUI controls 1604, a user can selectively place the terminal screen 1600 in second mode, as shown in FIG. 17. For example, in the preferred embodiment, the user may select a reply to message or a compose new message option from the selection list control 1604. In the second mode, the screen 1600 presents the chat history 1702 concurrently with a text edit area 1704. The chat history 1702 continues to be updated and can scroll on the screen while the text edit area 1704 is presented. A text editor resident on the mobile terminal is also activated so that the user can write one or more text messages in the edit area 1704 while simultaneously viewing the chat history 1702 as it progresses. The GUI controls 1604 permit the user to post the messages composed in the text edit area 1704 to the chat session. They are then displayed in the chat history 1702 in chronological order. Preferably, once the user sends the message using the GUI control 1604, the text editor can be deactivated by the user to collapse the text edit area 1704 so that the text edit area 1704 is removed and the screen switches back automatically to the first mode. The chat history 1702 can then be expanded to occupy the entire screen area.

[0097] Preferably, the screen 1600 can be switched back and forth between the first and second modes using a user-selectable area of the mobile terminal GUI, such as a button or selection included in a pull-down menu or toolbar. However, other user-operable switches, such as a momentary contact switch, key pad button(s), configurable soft key(s), or the like can be used to place the terminal display screen into either mode.

[0098] The functionality for the display modes illustrated in FIGS. 16-17 can be implemented by software included in the mobile terminal, and is preferably implemented by the chat client application.

[0099] What has been described above is merely illustrative of the application of the principles of the present invention. Other arrangements and methods can be implemented by those skilled in the art without departing from the spirit and scope of the present invention.

[00100] What is claimed is:

CLAIMS

1. A method of presenting a chat session on the display of a wireless mobile unit, comprising:

showing, on the display, a chat conversation that is progressively updated so that messages included in the conversation scroll on the display;

providing a user-operable switch for selectively activating an edit text message function; and

in response to user activation of the edit text message function via the user-operable switch, presenting a text edit area on a portion of the display while continuing to show the chat conversation on another portion of the display.

2. The method of claim 1, wherein the user-operable switch is a user-selectable area of a graphical user interface presented by the display.

3. The method of claim 1, further comprising:

providing a text edit interface that allows the user to compose a message in the text edit area while the chat conversation progresses.

4. The method of claim 3, wherein the message is a response to the chat conversation.

5. The method of claim 1, further comprising:

providing a user-operable switch for selectively deactivating an edit text message function; and

in response to a user deactivation of the edit text message function via the user-operable switch, removing the text edit area and expanding the chat conversation to reoccupy the removed text edit area of the display.

6. A wireless mobile unit, comprising:

a screen;

means for displaying on the screen a chat conversation that is updated so that messages in the conversation progressively scroll on the screen;

a user-operable switch for selectively activating a text edit area;

means, responsive to the user-operable switch, for presenting the text edit area on a portion of the screen while continuing to show the chat conversation on another portion of the screen.

7. The wireless mobile unit of claim 6, wherein the user-operable switch is a user-selectable area of a graphical user interface presented on the screen.

8. The wireless mobile unit of claim 6, further comprising:

a text editor allowing a user to compose a message in the text edit area while the chat conversation progresses.

9. The wireless mobile unit of claim 6, wherein the message is a response to the chat conversation.

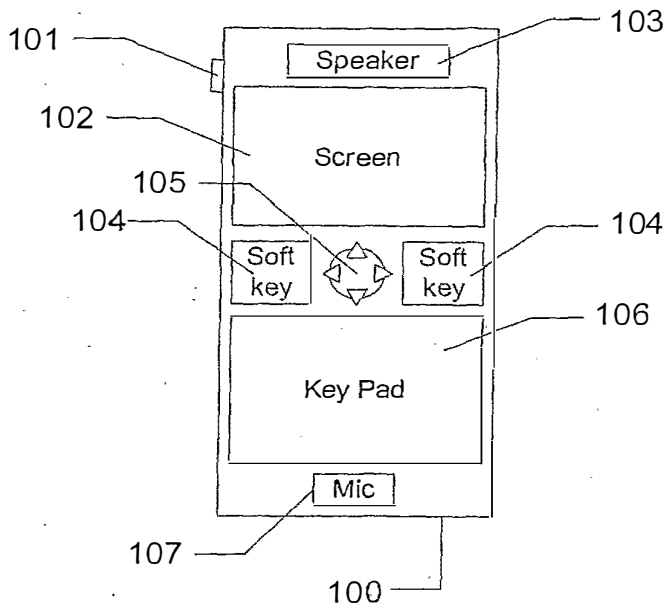

101
103
Speaker
102
Screen
105
104
104
Soft key
Soft key
106
Key Pad
Mic
107
100

FIG. 1

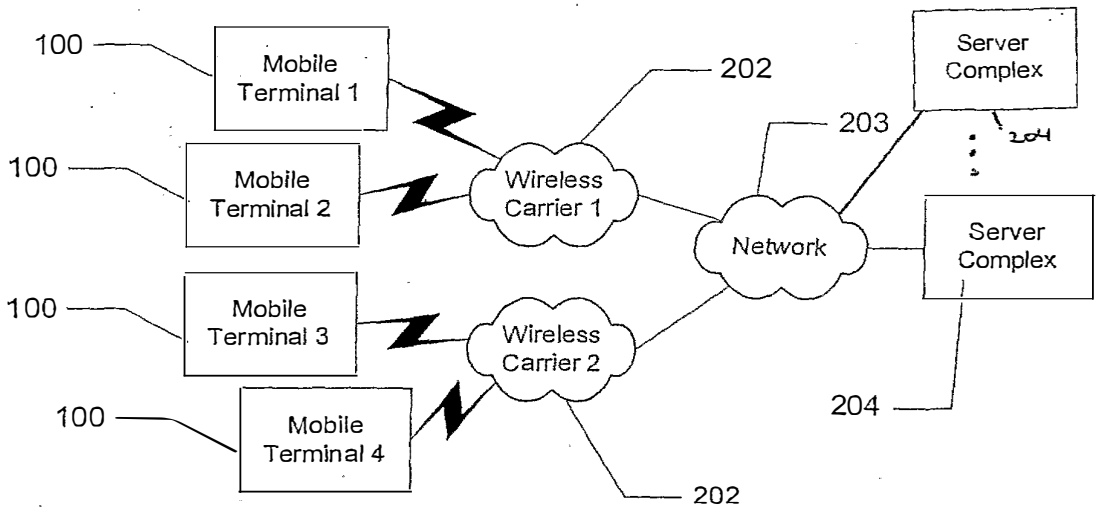

100
Mobile Terminal 1
202
Server Complex
203
100
Mobile Terminal 2
Wireless Carrier 1
Network
Server Complex
100
Mobile Terminal 3
Wireless Carrier 2
204
100
Mobile Terminal 4
202

FIG. 2

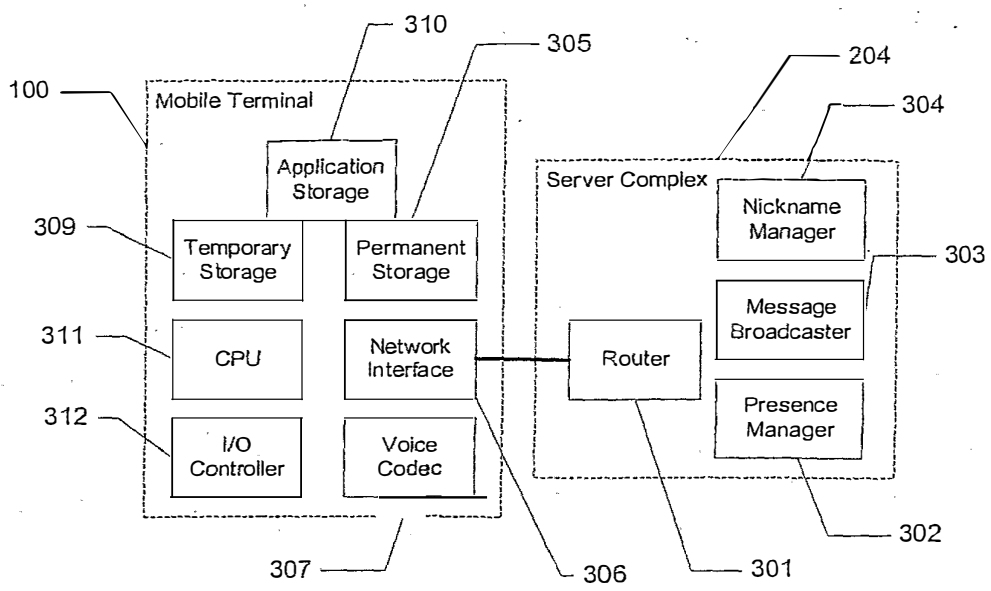

310
305
204
100
Mobile Terminal
304
Application Storage
Server Complex
Nickname Manager
309
Temporary Storage
Permanent Storage
303
Message Broadcaster
311
CPU
Network Interface
Router
Presence Manager
312
I/O Controller
Voice Codec
302
307
306
301

FIG. 3

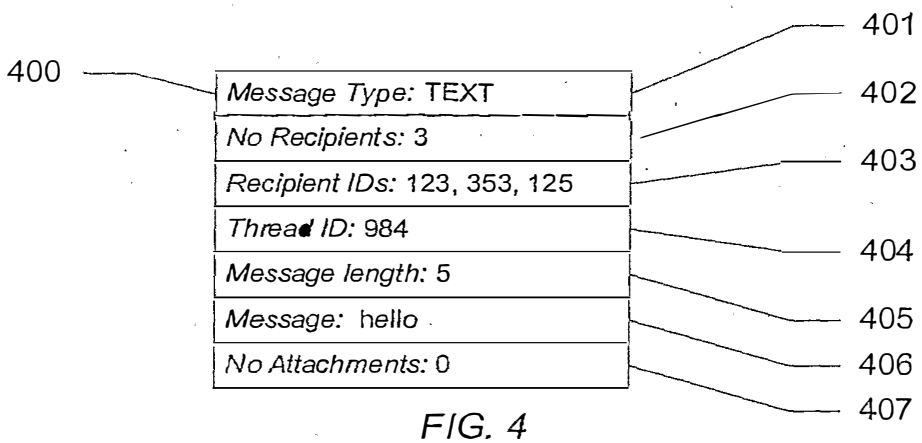

400
401
Message Type: TEXT
402
No Recipients: 3
403
Recipient IDs: 123, 353, 125
Thread ID: 984
404
Message length: 5
405
Message: hello
406
No Attachments: 0
407

FIG. 4

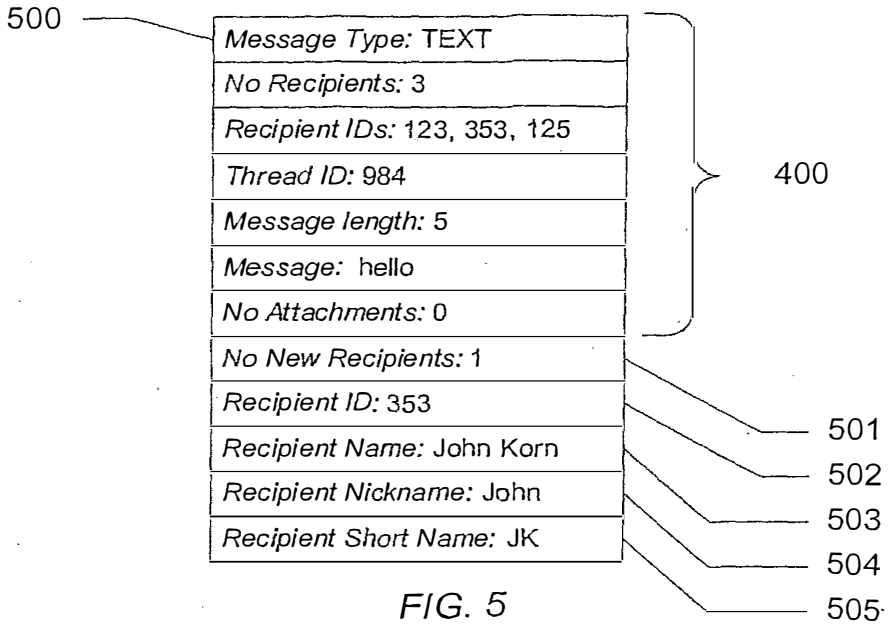

500
Message Type: TEXT
No Recipients: 3
Recipient IDs: 123, 353, 125
Thread ID: 984
Message length: 5
Message: hello
No Attachments: 0
No New Recipients: 1
Recipient ID: 353
Recipient Name: John Korn
Recipient Nickname: John
Recipient Short Name: JK
400
501
502
503
504
505

FIG. 5

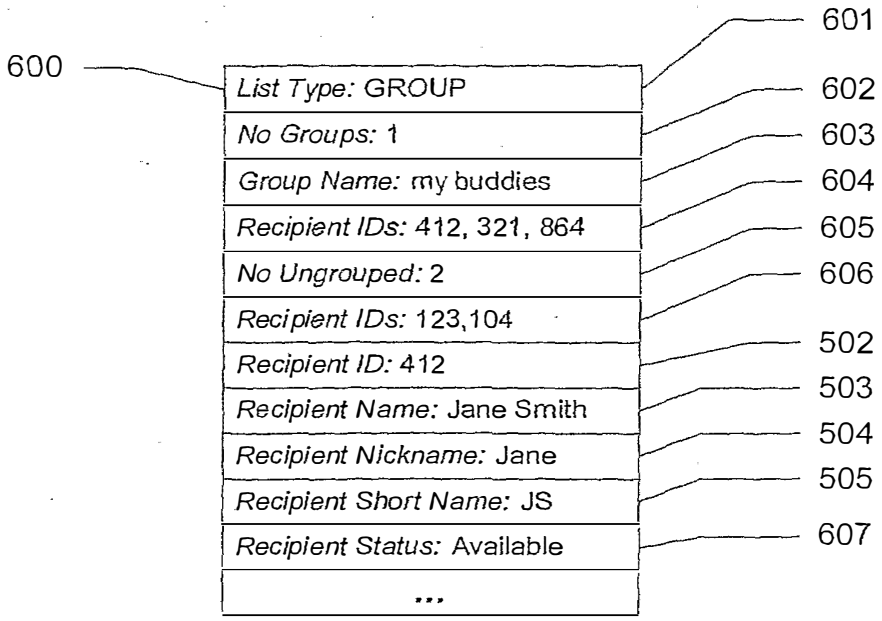

600
List Type: GROUP
No Groups: 1
Group Name: my buddies
Recipient IDs: 412, 321, 864
No Ungrouped: 2
Recipient IDs: 123,104
Recipient ID: 412
Recipient Name: Jane Smith
Recipient Nickname: Jane
Recipient Short Name: JS
Recipient Status: Available
...
601
602
603
604
605
606
502
503
504
505
607

FIG. 6

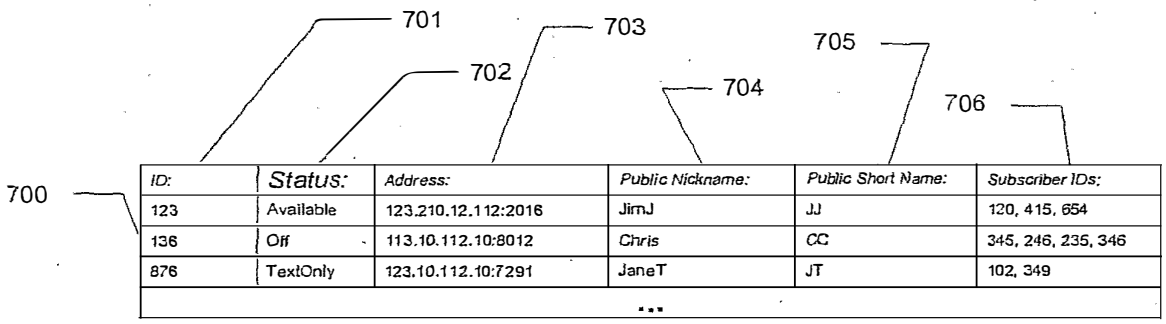

700
701
702
703
704
705
706
ID:
Status:
Address:
Public Nickname:
Public Short Name:
Subscriber IDs:
123
Available
123.210.12.112:2016
JimJ
JJ
120, 415, 654
136
Off
113.10.112.10:8012
Chris
CC
345, 246, 235, 346
876
TextOnly
123.10.112.10:7291
JaneT
JT
102, 349
...

FIG. 7

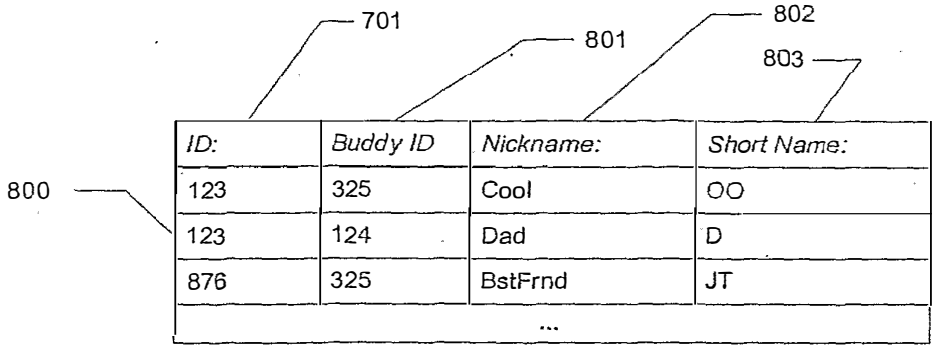

701
801
802
803
800
ID:
Buddy ID
Nickname:
Short Name:
123
325
Cool
OO
123
124
Dad
D
876
325
BstFrnd
JT
...

FIG. 8

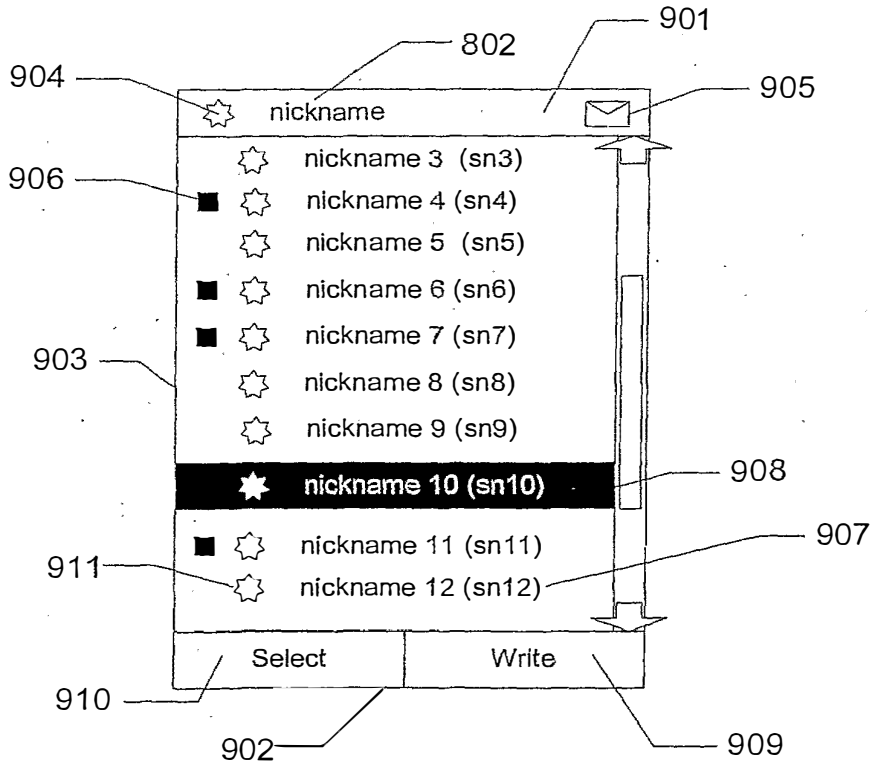

901
802
904
905
nickname
906
nickname 3 (sn3)
nickname 4 (sn4)
nickname 5 (sn5)
nickname 6 (sn6)
nickname 7 (sn7)
903
nickname 8 (sn8)
nickname 9 (sn9)
nickname 10 (sn10)
908
907
911
nickname 11 (sn11)
nickname 12 (sn12)
Select
Write
910
902
909

FIG. 9

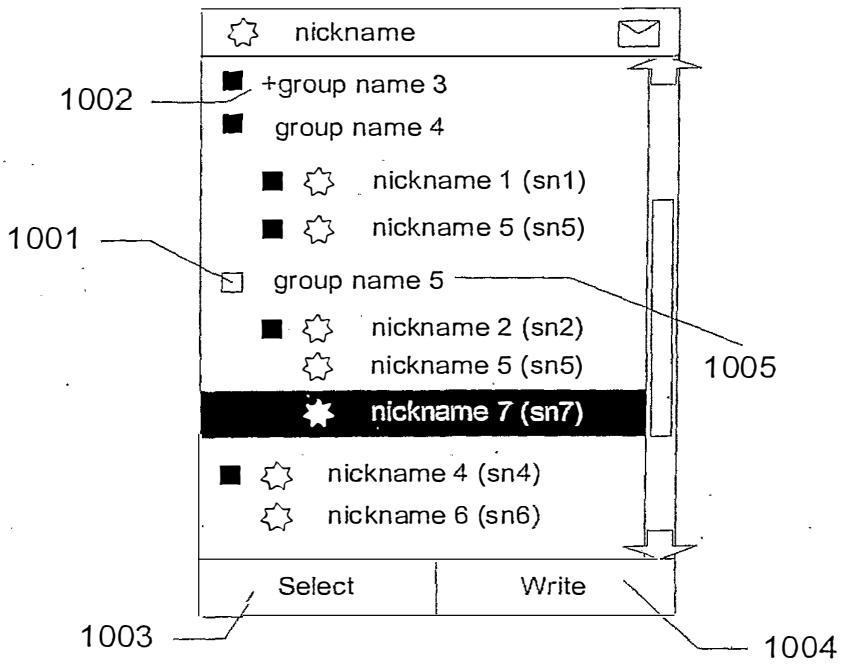

nickname
+group name 3
group name 4
nickname 1 (sn1)
nickname 5 (sn5)
group name 5
nickname 2 (sn2)
nickname 5 (sn5)
nickname 7 (sn7)
nickname 4 (sn4)
nickname 6 (sn6)
Select
Write
1001
1002
1003
1004
1005

FIG. 10

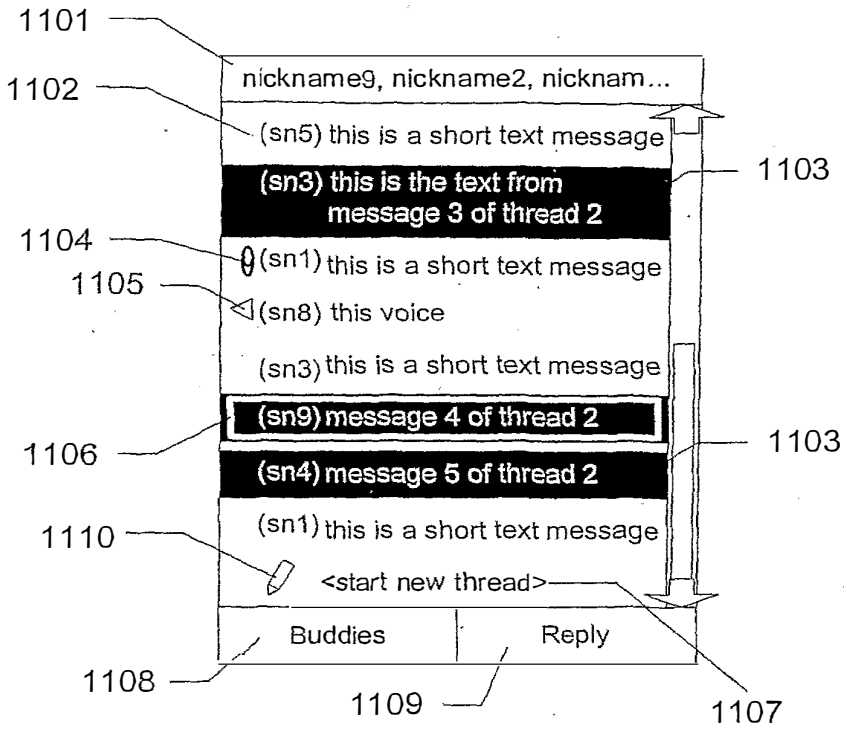

1101
1102
nickname9, nickname2, nicknam...
(sn5) this is a short text message
1103
(sn3) this is the text from message 3 of thread 2
1104
(sn1) this is a short text message
1105
(sn8) this voice
(sn3) this is a short text message
(sn9) message 4 of thread 2
1106
1103
(sn4) message 5 of thread 2
1110
(sn1) this is a short text message
<start new thread>
Buddies
Reply
1108
1109
1107

FIG. 11

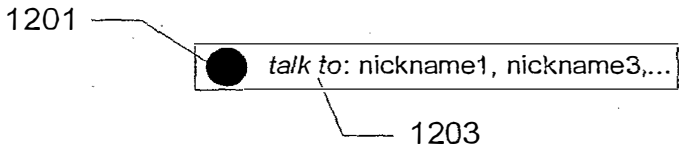

1201
talk to: nickname1, nickname3,...
1203

FIG. 12

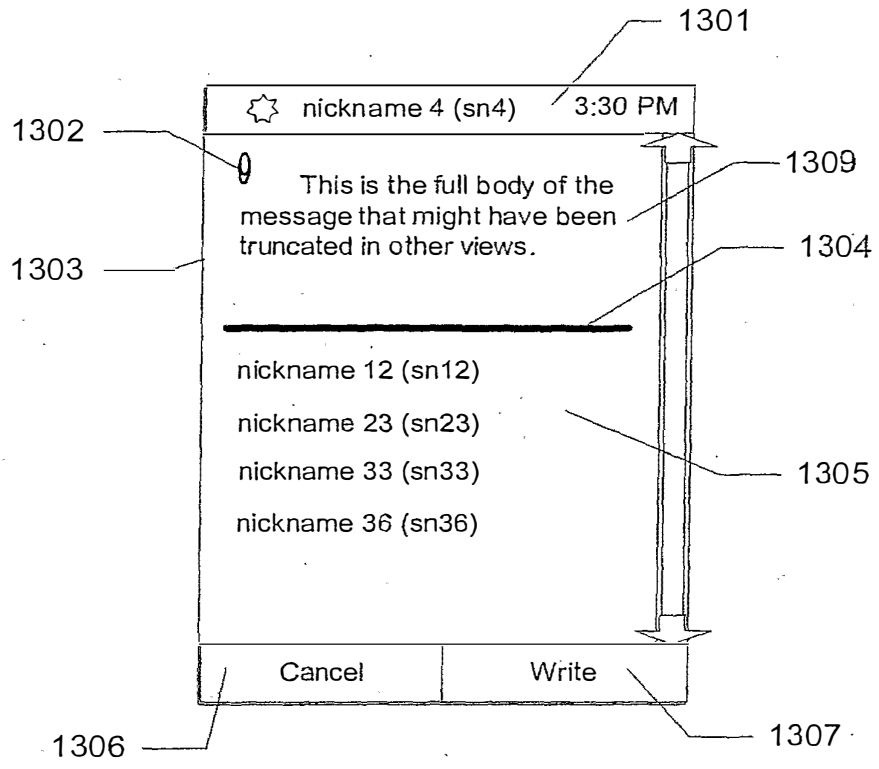

1301
nickname 4 (sn4)
3:30 PM
1302
1309
This is the full body of the message that might have been truncated in other views.
1303
1304
nickname 12 (sn12)
nickname 23 (sn23)
nickname 33 (sn33)
nickname 36 (sn36)
1305
Cancel
Write
1306
1307

FIG. 13

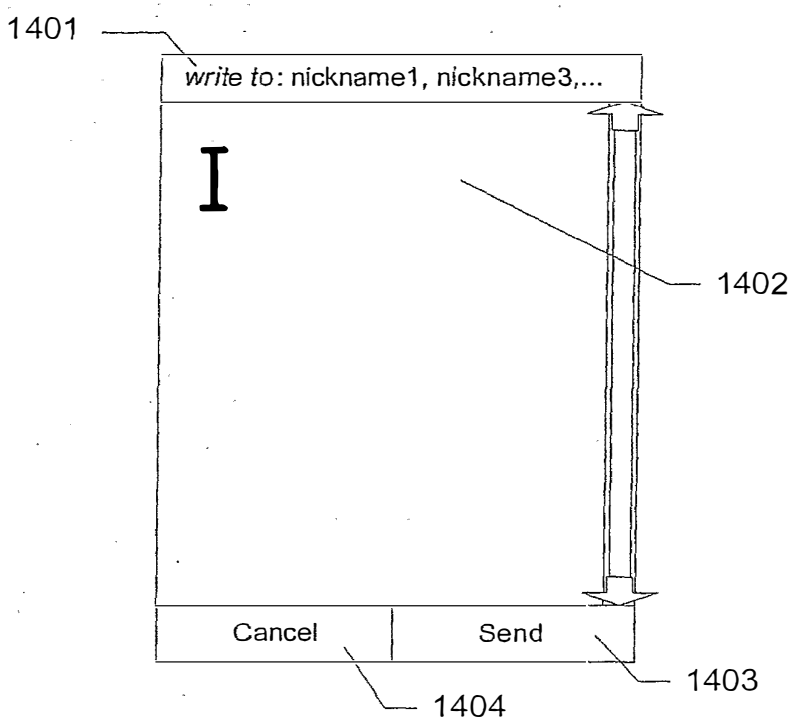

1401
write to: nickname1, nickname3,...
1402
Cancel
Send
1403
1404

FIG. 14

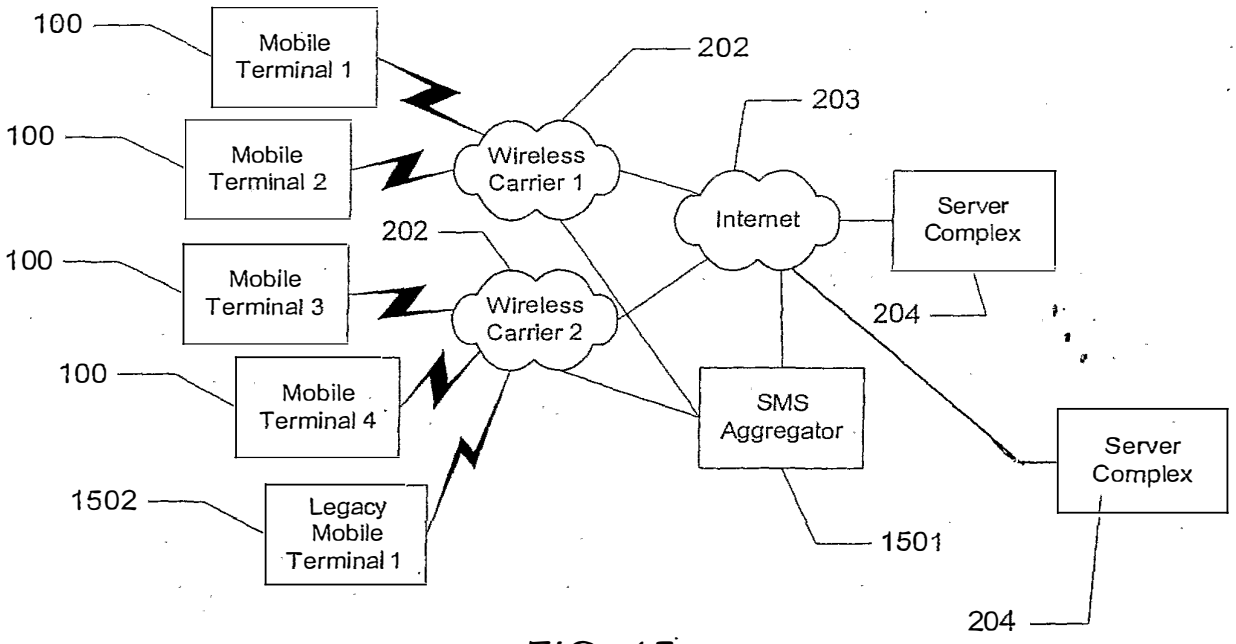

100
Mobile Terminal 1
100
Mobile Terminal 2
100
Mobile Terminal 3
100
Mobile Terminal 4
1502
Legacy Mobile Terminal 1
202
Wireless Carrier 1
202
Wireless Carrier 2
203
Internet
Server Complex
204
SMS Aggregator
1501
Server Complex
204

FIG. 15

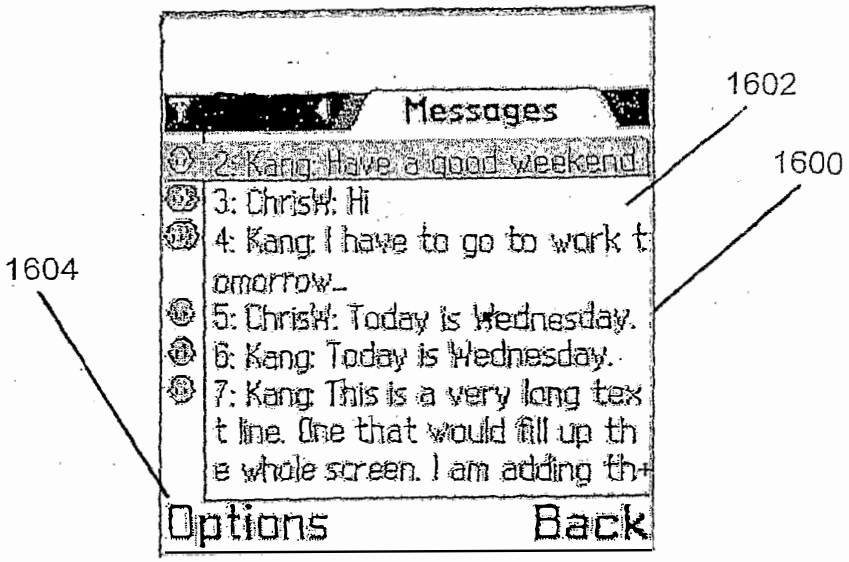

Messages
2: Kang: Have a good weekend
3: ChrisW: Hi
4: Kang: I have to go to work t
omorrow_
5: ChrisW: Today is Wednesday.
6: Kang: Today is Wednesday.
7: Kang: This is a very long tex
t line. One that would fill up th
e whole screen. I am adding th+
Options
Back
1602
1600
1604

FIG. 16

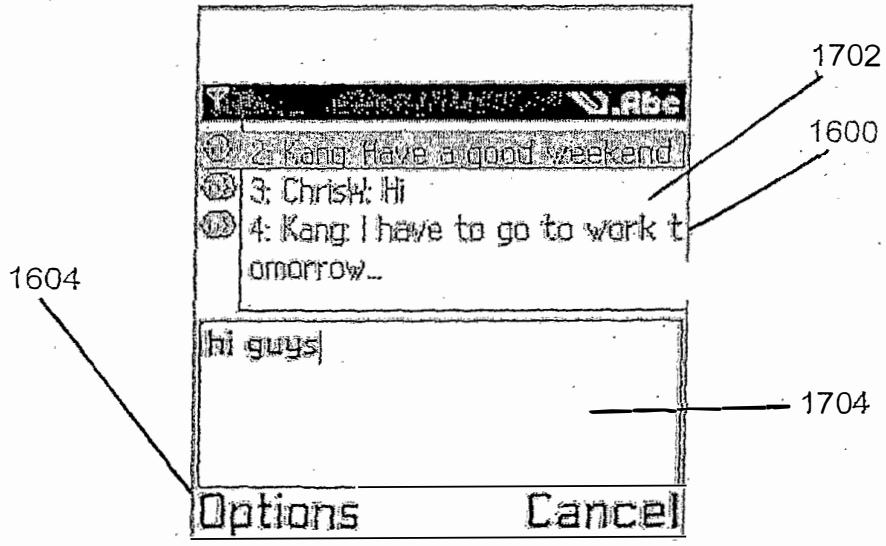

Abc
2: Kang: Have a good weekend
3: ChrisW: Hi
4: Kang: I have to go to work t
omorrow_
hi guys
Options
Cancel
1702
1600
1604
1704

FIG. 17

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/22358

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 15/16

US CL : 709/204, 205, 206, 207; 345/751, 752, 753, 758, 759

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 709/204, 205, 206, 207; 345/751, 752, 753, 758, 759

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

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

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,301,609 B1 (ARAVAMUDAN et al) 09 OCTOBER 2001, ABSTRACT, COL. 3, LINES 25-67 AND COL. 4, LINES 1-64	1-9
Y	US 6,061,716 A (MONCREIFF) 09 MAY 2000, ABSTRACT, FIGURES 4 THROUGH 11.	1-9

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

☐ See patent family annex.

* Special categories of cited documents:

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

"E" earlier application or patent published on or after the international filing date

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

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

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

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

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

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"&" document member of the same patent family

Date of the actual completion of the international search

05 September 2003 (05.09.2003)

Date of mailing of the international search report

26 SEP 2003

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

William C. Vaughn, Jr.

Telephone No. (703) 305-9700

Form PCT/ISA/210 (second sheet) (July 1998)

Continuation of B. FIELDS SEARCHED Item 3:
EAST
search terms: mobile, pda, palm, wireless, cellular, handheld, collaboration, chat, conference

Electronic Acknowledgement Receipt

EFS ID:	12386042
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	James W. Rose/natasha marciel
Filer Authorized By:	James W. Rose
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	26-MAR-2012
Filing Date:	26-FEB-2008
Time Stamp:	19:06:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	REBLP003_IDS_Regular_Transmittal_3_26_12.pdf	24692 73a8a440b96aa9d8f03a5f2d3c3bb25f6cf197	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	REBLP003_1449_IDS_3_26_12.pdf	25670 6bc77124e65bc8876d5a746424d8dbf95fa6f600	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	WO2004_008336.PDF	2533288 4b3d4db50338daff141ab9195709424bdde228aa	no	50
Warnings:					
Information:					
4	Non Patent Literature	AU_Exam_report_2_7_12pdf.pdf	2176174 a01d412d3f4e2c04ded744c58c15fdbcf0dafc6a	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	4759824		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003/VOX-P003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on March 26, 2012.

Signed: _____/Natasha L. Marciel/_____
Natasha L. Marciel

INFORMATION DISCLOSURE STATEMENT
37 CFR §§1.56 AND 1.97(b)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The reference(s) identified in the attached PTO Form 1449 (copies of non-U.S. references are attached) may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that the identified reference(s) indeed constitute prior art.

This Information Disclosure Statement is: (i) filed within three (3) months of the filing date of the above-referenced application, (ii) believed to be filed before the mailing date of a first Office Action on the merits, or (iii) believed to be filed before the mailing of a first Office Action after the filing of a Request for Continued Examination under §1.114. Accordingly, it is believed that no fees are due in connection with the filing of this Information Disclosure Statement.

However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-4481 (Order No. REBLP003).

Respectfully submitted,

/James W. Rose/
James W. Rose
Registration No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687
650-315-8401

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	3519

76743 7590 04/06/2012
BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687

EXAMINER	
RAMAKRISHNAIAH, MELUR	
ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
04/06/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTOmail@beyerlaw.com

Office Action Summary	Application No.	Applicant(s)	
	12/037,256	KATIS ET AL.	
	Examiner	Art Unit	
	MELUR RAMAKRISHNAIAH	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 July 2011.*

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *44-106* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *44-106* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet.*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. ____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :9/4/10, 6/14/10, 12/4/09, 3/9/09, 3/26/12, 2/10/12, 1/11/12, 11/16/11, 4/26/11 .

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 44-106 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-46 of copending Application No. 12/028,400. Although the conflicting claims are not identical, they are not patentably distinct from each other because for example claim 44 of the current application is an obvious variation of claim 23 of copending Application No. 12/028,400

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 44, 46, 50-57, 60-63, 65, 67, 72-78, 81-84, 86, 88, 92-99, 102-105, are rejected under 35 U.S.C 102(e) as being anticipated by Jennings (US 2006/0160,522A1).

Regarding claim 44, Jennings a computer readable application embedded in a non-transitory computer readable medium (paragraphs: 0011; 0013) and intended to run on a client communication device, the application comprising: a network receive module configured to progressively receive from a sender (106, fig. 1) media of a

message transmitted over the network (fig. 1) to the communication device, a storage module (510, fig. 5) configured to progressively store the received media of the message in the client communication device, a render module (504, fig. 5) configured to selectively render the media of the message on the communication device, the rendering options for rendering the media of the message for the first time including both: (i) progressively as the media of message is progressively received over the network (fig. 1), (ii) some time after the media was received and stored in the client communication device (figs. 1-5; paragraphs: 0031-0035; 0025-0030).

Regarding claim Jennings discloses a client communication device, comprising: a network receive element (502, fig. 5) configured to progressively receive from a sender (106, fig. 1) a media of a message transmitted over a network to the client communication device (fig. 5; paragraph: 0034), a storage element (510, fig. 5) configured to progressively store the received media of the message on the client device as the media is received, and a render element (504, fig. 5) configured to selectively render the media of the message on the client communication device, the rendering options for rendering the media of the message for the first time including both: (i) progressively as the media of message is progressively received over the network (fig. 1), (ii) sometime after the media was received and stored in the client communication device (figs. 1-5; paragraphs: 0031-0035; 0024-0030).

Regarding claim 86, Jennings discloses a method, comprising: progressively receiving at a client communication device (fig. 5; paragraph: 0034) of a message from a sender (106, fig. 5; paragraphs: 0021-0023), progressively storing the received media

of the message on the client communication device as the media is progressively received (fig. 5; paragraph: 0034), and selectively rendering the media of the message on the client communication device, the rendering options for rendering the media of the message for the first time including both: (i) progressively as the media of message is progressively received over the network (fig. 1), (ii) sometime after the media was received and stored in the client communication device (figs. 1-5; paragraphs: 0031-0035; 0024-0030).

Regarding claims 46, 50-57, 60-62, 67, 71-77, 81-83, 88, 92-99, 102-104, Jennings further teaches the following: (i) occurs sometime after the media was created by the sender due to delay, (i) further comprises rendering the media of the message while creation of the media of a the message by the sender is ongoing, (i) further comprises progressively rendering the media of the message, behind the head of the message, while the creation of media of the message by the sender is ongoing, (ii) occurs after the entire message has been received and stored, (ii) occurs while receipt and storage of the media message is ongoing, (ii) further comprises progressively rendering the media of the message, behind the head of the message, while the creation of the media of the message by the sender is ongoing, render module (504, fig. 5) is further configured to selectively transition the progressive rendering of the media of the message from (i) to (ii), render module (504, fig. 5) is further configured to selectively transition the progressive rendering of the media of the message from (ii) to (i), the media of the message is time-indexed, transmit module (in 106, fig. 1) configured to transmit messages originating at the client terminal, render module and

transmit module to cooperate so that the client communication device running an application may selectively engage in synchronous/asynchronous communication with a remote communication device that sent the message (figs. 1-5; paragraphs: 0031-0035; 0024-0030).

Regarding claims 63, 84, 105, Jennings teaches: conversation comprise one or more of the following voice, video, text, etc (abstract).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 45, 66, 87are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings in view of Berstis et al. (US 2007/0192427A1, filed 2-16-06, hereinafter Berstis).

Jennings differs from claim 45 in that he does not specifically disclose: (i) further comprises progressively rendering the media of the message as the media is created and transmitted over the network.

However, Berstis discloses ease of use feature for audio communications with chat conferencing which teaches: (i) further comprises progressively rendering (reads on streaming) the media of the message as the media is created and transmitted over the network (paragraph: 0039).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Jennigs' system to provide for the following: (i) further comprises progressively rendering the media of the message as the media is created and transmitted over the network as this arrangement would give flexibility to the user to render the media to suite his needs as taught by Berstis.

Claims 66, 87 are rejected in the same basis as claim 45.

7. Claims 47-49, 68-70, 89-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings.

Jennings differs from the claims 47-49 in that he does not specifically disclose: delay is caused by latency on the network, delay is due to the sender not connected to the network when the media of the message is created, delay is due to the sender designating the transmission of the message sometime after the media of the message is created.

However, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Jennigs' system to provide for the following: delay is caused by latency on the network, delay is due to the sender not connected to the network when the media of the message is created, delay is due to the sender designating the transmission of the message sometime after the media of the message is created in order to accommodate various delay situations for while sending and receiving messages.

Claims 68-70, 89-91 are rejected on the same basis as claims 47-49.

8. Claims 58-59, 79-80, 10-101 and 63, 84, 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings in view of Kraft et al. (US 2006/0248149A1, hereinafter Kraft).

Jennings differ from claims 58-59, in that he does not specifically disclose: comprising a conversation module configured to associate transmitted and received messages sharing a common attribute into a conversation, conversation module is further configured to string together the transmitted and received messages of in time-index manner.

However, Kraft discloses mobile communication terminal and method which teaches: comprising a conversation module configured to associate transmitted and received messages sharing a common attribute (for, e,g., sent or received audio messages) into a conversation, conversation module is further configured to string together the transmitted and received messages of in time-index manner (fig. 8, paragraph: 0147).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Jennigs' system to provide for the following: comprising a conversation module configured to associate transmitted and received messages sharing a common attribute into a conversation, conversation module is further configured to string together the transmitted and received messages of in time-index manner as this arrangement would facilitate to keep track of messages sent or received and play them in chronological order as taught by Kraft.

Claims 79-80, 10-101 are rejected on the same basis as claims 58-59.

9. Claims 64, 85, 106 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jennings in view of Crouch et al. (US 2004/0207724A1, hereinafter Crouch).

Jennings differs from claims 64, 85, 106 in that he does not specifically disclose: render module further includes one or more of the following rendering options: play, play faster, play slower, catch up to the head of the message, etc.

However, Crouch discloses system and method for real time playback of conference streams which teaches: render module further includes one or more of the following rendering options: play, play faster, play slower, catch up to the head of the message, etc (paragraph: 0032).

Thus, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Jennigs' system to provide for the following: render module further includes one or more of the following rendering options: play, play faster, play slower, catch up to the head of the message, etc as this arrangement would provide flexibility to the user render the message to suite his needs as taught by Crouch.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELUR RAMAKRISHNAIAH whose telephone number is (571)272-8098. The examiner can normally be reached on 9 Hr schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melur Ramakrishnaiah/
Primary Examiner, Art Unit 2614

Notice of References Cited	Application/Control No. 12/037,256	Applicant(s)/Patent Under Reexamination KATIS ET AL.	
	Examiner MELUR RAMAKRISHNAIAH	Art Unit 2614	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
1	A	US-2006/0160522	07-2006	Jennings, Cullen	455/404.1
*	B	US-2007/0192427	08-2007	Berstis et al.	709/207
*	C	US-2006/0248149	11-2006	Kraft et al.	709/206
*	D	US-2004/0207724	10-2004	Crouch et al.	348/014.09
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure Statement By Applicant	Applicant	KATIS, et al.
	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.						
	2.						
	3.						
	4.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
	5.							
	6.							
	7.							
	8.							

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
/MR/	9.	Office Action in EP 08769254.7, dated July 12, 2010.
	10.	
	11.	
	12.	
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	14.	
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	16.	
	17.	
	18.	
	19.	

Examiner	/Melur Ramakrishnaiah/	Date Considered	09/16/2010

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure Statement By Applicant	Applicant	KATIS et al.
	Filing Date	02/26/08
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 3

U.S. Patent Documents							
Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
/MR/	1.	2009/0175425	07/09/09	Lee			01/03/08
	2.	2005/0102358	05/12/05	Gold et al.			11/09/04
	3.	2009/0063698	03/05/09	Xu et al.			09/04/07
	4.	6,807,565	10/19/04	Dodrill et al.			06/27/00
	5.	6,931,114	08/16/05	Martin			12/22/00
	6.	7,039,040	05/02/06	Burg			06/07/99
	7.	7,039,675	05/02/06	Kato			06/30/99
	8.	7,047,030	05/16/06	Forsyth			05/02/02
	9.	7,111,044	09/19/06	Lee			11/12/02
	10.	7,305,438	12/04/07	Christensen et al.			12/09/03
	11.	7,626,951	12/01/09	Croy et al.			08/15/06
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	13.	6,175,619	01/16/01	DeSimone			01/16/01
	14.	6,564,261	05/13/03	Gudjonsson et al.			05/09/00
	15.	6,721,703	04/13/04	Jackson et al.			03/02/01
	16.	2009/0003544	01/01/09	Katis et al.			03/05/08
	17.	2009/0003545	01/01/09	Katis et al.			04/14/08
	18.	2009/0003563	01/01/09	Katis et al.			04/15/08
	19.	2009/0003557	01/01/09	Katis et al.			04/25/08

Foreign Patent or Published Foreign Patent Application								
Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
/MR/	20.	WO 2007/026320	03/08/07	PCT				

Examiner	/Melur Ramakrishnaiah/	Date Considered	09/16/2010

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure Statement By Applicant	Applicant	KATIS et al.
	Filing Date	02/26/08
	Group	2614
(Use Several Sheets if Necessary)		Page 2 of 3

Other Documents		
Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
/MR/	21.	WikiPedia – The Free Encyclopedia, "*Eudora (email client)*," http://en.wikipedia.org/wiki/Eudora_(e-mail_client), Downloaded on 08/20/09, 3 pages.
	22.	"*Eudora*," Answers.com, http://www.answers.com/topic/eudora-e-mail-client, Downloaded on 08/20/09, 4 pages.
	23.	"*The Eudora Open Messaging Advantage*," Qualcomm, 1997, Part Number 100-50030-1, 23 pages.
	24.	"*Aspera – Next Generation File Transport – Broadcasting & Entertainment Media*," Asperasoft.com, http://www.asperasoft.com/en/industries/digital_media_10/Broadcast_Entertainment_Media_5, Downloaded on 09/22/09, 2 pages.
	25.	"*Aspera – Next Generation File Transport – fasp™ transfer times*," Asperasoft.com, http://www.asperasoft.com/en/technology/fasp_transfer_times_14/fasp_transfer_times_14, Downloaded on 09/22/09, 1 page.
	26.	"*Aspera – Next Generation File Transport – the fasp solution*," Asperasoft.com, http://www.asperasoft.com/en/technology/fasp_solution_3/the_fasp_solution_3, Downloaded on 09/22/09, 3 pages.
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Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure Statement By Applicant	Applicant	KATIS et al.
	Filing Date	02/26/08
	Group	2614
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Form 1449 (Modified)	Atty Docket No.	REBLP003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
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	3.	2004/0207724	10/21/04	Crouch et al.			04/17/03
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Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
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Examiner	/Melur Ramakrishnaiah/	Date Considered	03/29/2012

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Form 1449 (Modified)	Atty Docket No.	REBLP003
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Examiner	Date Considered
/Melur Ramakrishnaiah/	03/29/2012

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Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
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Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
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Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
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Examiner	/Meiur Ramakrishnaiah/	Date Considered	03/29/2012

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	Art Unit
	Melur Ramakrishnaiah	2614

SEARCHED

Class	Subclass	Date	Examiner
379	93.01, 90.01, 88.04, 88.06-88.08, 88.22-88.28, 93.24, 202.01	9-16-10	mrk
370	260-261	9-6-10	mrk
709	204-206	9-6-10	mrk

SEARCH NOTES

Search Notes	Date	Examiner
WEST database	9-16-10	mrk

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

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/MR/	9.	Office Action in EP 08747806.1, dated April 27, 2010.
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Examiner	Date Considered
/Melur Ramakrishnaiah/	09/16/2010

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	12037256	KATIS ET AL.
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✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012							
	1	✓	-							
	2	✓	-							
	3	✓	-							
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	37	✓	-							
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	73		✓							
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	106		✓							

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BIB DATA SHEET

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SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/037,256	02/26/2008	379	2614	REBLP003/VOX-P003

APPLICANTS

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Mary G. Panttaja, Healdsburg, CA;
Matthew J. Ranney, Oakland, CA;

**** CONTINUING DATA ***************************

This application is a CON of 12/028,400 02/08/2008
which claims benefit of 60/937,552 06/28/2007
and claims benefit of 60/999,619 10/19/2007

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
03/07/2008

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged /MELUR RAMAKRISHNAIAH/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		WY	33	22	1

ADDRESS

BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687
UNITED STATES

TITLE

TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS

FILING FEE RECEIVED		
1551	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

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Information Disclosure Statement By Applicant	Applicant	KATIS et al.
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	Group	2614
(Use Several Sheets if Necessary)		Page 10 of 11

Other Documents		
Examiner Initial	**No.**	**Author, Title, Place (e.g. Journal) of Publication, Date**
/MR/	177.	Apple Inc., "*iPhone: About Visual Voicemail*," http://www.support.apple.com/kb/HT1486, Downloaded on 09/26/08, 3 pages.
	178.	Jabber.org, "*Products // Jabber XCP // Benefits*," http://www.jabber.com/CE/JabberXCPBenefits, downloaded on 9/26/08, 1 page.
	179.	Jabber.org, "*Products // Jabber Clients*," http://www.jabber.com/CE/JabberClients, downloaded on 9/26/08, 1 page.
	180.	Jabber.org, "*Products // JabberNow*" http://www.jabber.com/CE/JabberNow, downloaded on 9/26/08, 1 page.
	181.	KillerStartups.com, "*Kadoink.com - Mobilizing your Socializing*," http://www.killerstartups.com/Web20/kadoink-com-moblizing-your-socializing, Downloaded on 09/26/08, 3 pages.
	182.	CNETNews.com, "*Kadoink's phonecast lines officially open for texting*," http://news.cnet.com/8301-17939_109-9829877-2.html, downloaded on 9/26/08, 1 page.
	183.	BusinessWire.com, "*LignUp 4.0 Delivers Industry's Most Comprehensive Suite of Communications Web Services*," April 30, 2007, http://www.businesswire.com/portal/site/google/?ndmViewId=news_view&newsId=20070430005498&newsLang=en, Downloaded on 09/26/08, 6 pages.
	184.	VOIP-News.com, "*Company Profile – LignUp*," http://www.voip-news.com/vendors/lignup/, Downloaded on 10/03/08, 6 pages.
	185.	JustAnotheriPhoneBlog.com, "*Nikotalkie - Just Talk, Don't Type*," http://justanotheriphoneblog.com/wordpress/2007/10/13/nikotalkie-just-talk-dont-type/, Downloaded on 09/26/08, 10 pages.
	186.	WikiPedia – The Free Encyclopedia, "*Push To Talk*" http://en.wikipedia.org/wiki/Push_to_talk, Downloaded on 09/26/08, 3 pages.
	187.	WikiPedia – The Free Encyclopedia, "*Slingbox*" http://en.wikipedia.org/wiki/Slingbox, Downloaded on 09/26/08, 4 pages.
	188.	About.com, "*Linux / Unix Command: talk*,"http://linux.about.com/od/commands/l/blcmdl1_talk.htm, Downloaded on 09/26/08, 2 pages.

Examiner	/Melur Ramakrishnaiah/	Date Considered	09/16/2010

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)	Atty Docket No.	REBLP003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 11 of 11

Other Documents		
Examiner Initial	**No.**	**Author, Title, Place (e.g. Journal) of Publication, Date**
/MR/	189.	Fall, Kevin, "*A Delay-Tolerant Network Architecture for Challenged Internets*," February 2003, http://www.dtnrg.org/docs/papers/IRB-TR-03-003.pdf, 15 pages.
	190.	Chuah et al., "*Store-and-Forward Performance in a DTN*," Vehicular Technology Conference, 2006. VTC 2006-Spring. IEEE 63rd, Publication Date: 7-10 May 2006, Volume: 1, On page(s): 187-191.
	191.	Krishnan, et al., "*The SPINDLE Disruption-Tolerant Networking System*," Military Communications Conference, 2007. MILCOM 2007. IEEE Volume , Issue , 29-31 Oct. 2007 Page(s):1 – 7.
	192.	WikiPedia – The Free Encyclopedia, "*Visual Voicemail*" http://en.wikipedia.org/wiki/Visual_voicemail, downloaded on 9/26/08, 1 page.
	193.	Amir et al., "*An Overlay Architecture for High Quality VoIP Streams*,", IEEE Transactions on Multimedia, Publication Date: Dec. 2006, Volume: 8, Issue:6, On page(s): 1250-1262.
	194.	Rothermel et al., "*An Adaptive Stream Synchronization Protocol*," Lecture Notes In Computer Science; Vol. 1018, Proceedings of the 5th International Workshop on Network and Operating System Support for Digital Audio and Video, Pages: 178 – 189, Year of Publication: 1995.
	195.	Baset et al., "*An Analysis of the Skype Peer-to-Peer Internet Telephony Protocol*," INFOCOM 2006. 25th IEEE International Conference on Computer Communications. Proceedings (2006), pp. 1-11.
	196.	Cerf et al., "*A Protocol for Packet Network Intercommunication*," Communications, IEEE Transactions on, Volume 22, Issue 5, May 1974 Page(s): 637 – 648.
	197.	International Search Report from PCT/US2008/062941, mailed October 24, 2008.
	198.	Written Opinion from PCT/US2008/062941, mailed October 24, 2008.
	199.	International Search Report from PCT/US2008/062049, mailed January 12, 2009.
	200.	Written Opnion from PCT/US2008/062049, mailed January 12, 2009.

Examiner	Date Considered
/Melur Ramakrishnaiah/	09/16/2010

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIAMANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on April 25, 2012.

Signed: _____/Laura M. Dean/_____
Laura M. Dean

AMENDMENT A

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action dated April 6, 2012, please amend the above-identified patent application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begin on page 3 of this paper.

Remarks/Arguments begin on page 15 of this paper.

Amendments to the Specification:

Please amend paragraph [0128] of the substitute specification filed July 8, 2011 as follows:

[0128] The application 78 on each Server 16 potentially serves multiple tenants, meaning it serves multiple Users of the system 10. The PIMB 85 of the server application 78 is therefore significantly larger and is used to store the media payloads of multiple Users, as opposed to the PIMB 30, which is used to store just the generated or received payloads of only a single User. The main purpose of the Store and Stream module 84 is to receive Messages transmitted by the Clients 12 and transmit Messages to other Clients 12. **When a Client 12 transmits a message, the message contains an identifier associated with the target recipient. In response, the Server 16 finds a delivery route to a Client 12 associated with the intended or targeted recipient.** As Messages are received, they are stored in the PIMB 85 and transmitted to the next Server 16 (i.e., the net "hop") of the network layer 14 along the path to the intended recipient(s), or to the recipient(s) directly depending on the system configuration. The archive-retriever 88 is responsible for archiving the media payloads stored in the PIMB 85 in archive 89. As the physical space in the PIMB 85 is exhausted, media payloads in the PIMB 85 are moved to the archive 89, which is a mass storage device. In various embodiments, the payloads stored in the PIMB 85 may be archived in accordance with User defined criteria and/or any known replacement algorithm, such as first-in-first-out (FIFO) or least recently used (LRU). It should be noted that only a single Server 16 is illustrated in Figure 1 for simplicity. It should be understood that in actual embodiments, multiple servers or a "server farm" may be used for a network with a large number of Users.

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 106. (Cancelled)

107. (New) Computer code embedded in a non-transitory computer readable medium and intended to run on a communication device configured to be connected to a network, the computer code configured to:

progressively store streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device; and

progressively transmit, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that:

(i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and

(ii) guarantees delivery of the streaming media to the second communication device.

108. (New) The computer code of claim 107, wherein the code is further configured to guarantee the delivery of the streaming media during the transmission session without the need for a second transmission session.

109. (New) The computer code of claim 107, wherein the code is further configured to guarantee the delivery of a complete copy of the streaming media by retransmitting streaming media designated as missing and/or defective so that both the communication device and the second communication device have identical copies of the streaming media.

110. (New) The code of claim 109, wherein the code is further configured to retransmit, in response to requests for retransmission, the streaming media designated as missing and/or defective, the retransmission guaranteeing delivery of the complete copy of the streaming media to the second communication device associated with the recipient.

111. (New) The code of claim 107, wherein the code is further configured to transmit the streaming media out of storage when conditions on the network are not adequate for transmitting the streaming media as the streaming media is created.

112. (New) The code of claim 107, wherein the code is further configured to transmit the streaming media out of storage when:

(i) the streaming media was created when the communication device was disconnected from the network; and

(ii) the communication device reconnects to the network.

113. (New) The code of claim 107, wherein the code is further configured to progressively transmit the streaming media as fast as conditions on the network permit.

114. (New) The code of claim 107, wherein the code is further configured to progressively transmit the streaming media at a bit rate commensurate with the available bit rate on the network.

115. (New) The code of claim 107, wherein the code is further configured to progressively store incoming streaming media so that the transmitted streaming media and the incoming streaming media may be selectively rendered on the communication device from storage.

116. (New) The code of claim 107, wherein the code is further configured to generate retransmission requests for incoming streaming media noted as missing and/or defective at the communication device so that a complete copy of the incoming streaming media as transmitted is received and stored on the communication device when the retransmission requests are satisfied.

117. (New) The code of claim 107, wherein the code is further configured to selectively render incoming streaming media:

(i) in a near real-time rendering mode by progressively rendering the incoming streaming media as the media is progressively received over the network; and

(ii) in a time-shifted mode by retrieving and progressively rendering the incoming streaming media out of storage.

118. (New) The code of claim 117, wherein the code is further configured to progressively render the incoming streaming media in either the real-time mode or the time-shifted mode without interfering with the progressive storage on the communication device of the incoming or transmitted streaming media.

119. (New) The code of claim 115, wherein the code is further configured to selectively render the transmitted streaming media and the incoming streaming media from storage when the communication device is disconnected from the network.

120. (New) The code of claim 107, wherein the code is further configured to transmit the streaming media in the form of outgoing messages and to receive incoming streaming media in the form of incoming messages.

121. (New) The code of claim 120, wherein the code is further configured to thread together the outgoing messages and the incoming messages sharing a common attribute into a conversation.

122. (New) The code of claim 121, wherein the common attribute comprises one of the following:

(i) a conversation name;

(ii) a conversation subject;

(iii) the name of a participant of the conversation; or

(iv) a name of a group of participants of the conversation.

123. (New) The code of claim 121, wherein the conversation includes one or more of the following types of media:

(i) voice;

(ii) text;

(iii) photos; and

(iv) video.

124. (New) The code of claim 121, wherein the code is further configured to enable a user of the communication device to participate in multiple conversations.

125. (New) The code of claim 120, wherein the incoming messages and the outgoing messages are each asynchronous messages.

126. (New) The code of claim 120, wherein the code is further configured to provide an asynchronous messaging experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at different times with respect to one another.

127. (New) The code of claim 120, wherein the code is further configured to provide a synchronous communication experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at substantially the same time with respect to one another.

128. (New) The code of claim 107, wherein the code is further configured to transmit an identifier associated with the recipient when transmitting the streaming media to the recipient during the session.

129. (New) The code of claim 128, wherein the identifier is a non-IP address identifier.

130. (New) The code of claim 128, wherein the code is further configured to progressively transmit the streaming media with the identifier during the session to a server located on the network, the server delivering the streaming media to the recipient using the identifier to find a delivery route over the network to the recipient.

131. (New) The code of claim 107, wherein the code is further configured to operate the communication device in a full-duplex communication mode.

132. (New) The code of claim 107, wherein the streaming media comprise one or more of the following types of streaming media: voice, video, sensor data, radio signals, position or GPS information, or any combination thereof.

133. (New) The code of claim 107, wherein the communication device intended to run the code comprises one of the following: a land-line phone, a wireless phone, a mobile phone, a computer, a radio, a satellite phone, a satellite radio, a tactical radio, or a tactical phone.

134. (New) A method performed on a communication device configured to be connected to a network, the method comprising:

progressively storing streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device; and

progressively transmitting, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that:

(i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and

(ii) guarantees delivery of the streaming media to the second communication device.

135. (New) The method of claim 134, wherein progressively transmitting further comprises guaranteeing the delivery of the streaming media during the transmission session without the need for a second transmission session.

136. (New) The method of claim 134, wherein progressively transmitting further comprises guaranteeing the delivery of a complete copy of the streaming media by retransmitting streaming media designated as missing and/or defective so that both the communication device and the second communication device have identical copies of the streaming media.

137. (New) The method of claim 136, further comprising retransmitting, in response to requests for retransmission, the streaming media designated as missing and/or defective, the retransmission guaranteeing delivery of the complete copy of the streaming media to the second communication device associated with the recipient.

138. (New) The method of claim 134, further comprising transmitting the streaming media out of storage when conditions on the network are not adequate for transmitting the streaming media as the streaming media is created.

139. (New) The method of claim 134, further comprising transmitting the streaming media out of storage when:

(i) the streaming media was created when the communication device was disconnected from the network; and

(ii) the communication device reconnects to the network.

140. (New) The method of claim 134, further comprising progressively transmitting the streaming media as fast as conditions on the network permit.

141. (New) The method of claim 134, further comprising progressively transmitting the streaming media at a bit rate commensurate with the available bit rate on the network.

142. (New) The method of claim 134, further comprising progressively storing incoming streaming media so that the transmitted streaming media and the incoming streaming media may be selectively rendered on the communication device from storage.

143. (New) The method of claim 134, further comprising generating retransmission requests for incoming streaming media noted as missing and/or defective at the communication device so that a complete copy of the incoming streaming media as transmitted is received and stored on the communication device when the retransmission requests are satisfied.

144. (New) The method of claim 134, further comprising selectively rendering incoming streaming media:

(i) in a near real-time rendering mode by progressively rendering the incoming streaming media as the media is progressively received over the network; and

(ii) in a time-shifted mode by retrieving and progressively rendering the incoming streaming media out of storage.

145. (New) The method of claim 144, further comprising progressively rendering the incoming streaming media in either the real-time mode or the time-shifted mode without interfering with the progressive storage on the communication device of the incoming or transmitted streaming media.

146. (New) The method of claim 142, further comprising selectively rendering the transmitted streaming media and the incoming streaming media from storage when the communication device is disconnected from the network.

147. (New) The method of claim 134, further comprising:

(i) creating outgoing messages from the transmitted streaming media; and

(ii) receiving incoming messages of streaming media.

148. (New) The method of claim 147, further comprising threading together the outgoing messages and the incoming messages sharing a common attribute into a conversation.

149. (New) The method of claim 148, wherein the common attribute comprises one of the following:

(i) a conversation name;

(ii) a conversation subject;

(iii) the name of a participant of the conversation; or

(iv) a name of a group of participants of the conversation.

150. (New) The method of claim 148, wherein the conversation includes one or more of the following types of media:

(i) voice;

(ii) text;

(iii) photos; and

(iv) video.

151. (New) The method of claim 148, further comprising enabling a user of the communication device to participate in multiple conversations.

152. (New) The method of claim 147, wherein the incoming messages and the outgoing messages are each asynchronous messages.

153. (New) The method of claim 147, further comprising providing an asynchronous messaging experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at different times with respect to one another.

154. (New) The method of claim 147, further comprising providing a synchronous communication experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at substantially the same time with respect to one another.

155. (New) The method of claim 134, further comprising transmitting an identifier associated with the recipient when transmitting the streaming media to the recipient during the session.

156. (New) The method of claim 155, wherein the identifier is a non-IP address identifier.

157. (New) The method of claim 155, further comprising progressively transmitting the streaming media with the identifier during the session to a server located on the network, the server delivering the streaming media to the recipient using the identifier to find a delivery route over the network to the recipient.

158. (New) The method of claim 134, further comprising operating the communication device in a full-duplex communication mode.

159. (New) The method of claim 134, wherein the streaming media comprise one or more of the following types of streaming media: voice, video, sensor data, radio signals, position or GPS information, or any combination thereof.

160. (New) The method of claim 134, wherein the communication device for performing the method comprises one of the following: a land-line phone, a wireless phone, a mobile phone, a computer, a radio, a satellite phone, a satellite radio, a tactical radio, or a tactical phone.

161. (New) A communication device configured to be connected to a network, the communication device comprising:

a storage element configured to progressively store streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device; and

a transmission element configured to progressively transmit, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that:

(i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and

(ii) guarantees delivery of the streaming media to the second communication device.

162. (New) The communication device of claim 161, wherein the transmission element is further configured to guarantee the delivery of the streaming media during the transmission session without the need for a second transmission session.

163. (New) The communication device of claim 161, wherein the transmission element is further configured to guarantee the delivery of a complete copy of the streaming media by retransmitting streaming media designated as missing and/or defective so that both the communication device and the second communication device have identical copies of the streaming media.

164. (New) The communication device of claim 163, wherein the transmission element is further configured to retransmit, in response to requests for retransmission, the streaming media designated as missing and/or defective, the retransmission guaranteeing delivery of the complete copy of the streaming media to the second communication device associated with the recipient.

165. (New) The communication device of claim 161, wherein the transmission element is further configured to transmit the streaming media out of storage when conditions on the network are not adequate for transmitting the streaming media as the streaming media is created.

166. (New) The communication device of claim 161, wherein the transmission element is further configured to transmit the streaming media out of storage when:

(i) the streaming media was created when the communication device was disconnected from the network; and

(ii) the communication device reconnects to the network.

167. (New) The communication device of claim 161, wherein the transmission element is further configured to progressively transmit the streaming media as fast as conditions on the network permit.

168. (New) The communication device of claim 161, wherein the transmission element is further configured to progressively transmit the streaming media at a bit rate commensurate with the available bit rate on the network.

169. (New) The communication device of claim 161, wherein the storage element is further configured to progressively store incoming streaming media so that the transmitted streaming media and the incoming streaming media may be selectively rendered on the communication device from storage.

170. (New) The communication device of claim 161, further comprising a retransmission request element configured to generate retransmission requests for incoming streaming media noted as missing and/or defective at the communication device so that a complete copy of the incoming streaming media as transmitted is received and stored on the communication device when the retransmission requests are satisfied.

171. (New) The communication device of claim 161, further comprising a render element configured to selectively render incoming streaming media:

(i) in a near real-time rendering mode by progressively rendering the incoming streaming media as the media is progressively received over the network; and

(ii) in a time-shifted mode by retrieving and progressively rendering the incoming streaming media out of storage.

172. (New) The communication device of claim 171, wherein the render element is further configured to progressively render the incoming streaming media in either the real-time mode or the time-shifted mode without interfering with the progressive storage on the communication device of the incoming or transmitted streaming media.

173. (New) The communication device of claim 169, wherein the render element is further configured to selectively render the transmitted streaming media and the incoming streaming media from storage when the communication device is disconnected from the network.

174. (New) The communication device of claim 161, further comprising a message element configured to:

(i) create outgoing messages from the transmitted streaming media; and

(ii) receive incoming messages from incoming streaming media.

175. (New) The communication device of claim 174, further comprising a conversation element configured to thread together the outgoing messages and the incoming messages sharing a common attribute into a conversation.

176. (New) The communication device of claim 175, wherein the common attribute comprises one of the following:

(i) a conversation name;

(ii) a conversation subject;

(iii) the name of a participant of the conversation; or

(iv) a name of a group of participants of the conversation.

177. (New) The communication device of claim 175, wherein the conversation includes one or more of the following types of media:

(i) voice;

(ii) text;

(iii) photos; and

(iv) video.

178. (New) The communication device of claim 175, wherein the conversation element is further configured to enable a user of the communication device to participate in multiple conversations.

179. (New) The communication device of claim 174, wherein the incoming messages and the outgoing messages are each asynchronous messages.

180. (New) The communication device of claim 174, wherein the communication device is configured to provide an asynchronous messaging experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at different times with respect to one another.

181. (New) The communication device of claim 174, wherein the communication device is configured to provide a synchronous communication experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at substantially the same time with respect to one another.

182. (New) The communication device of claim 161, wherein the transmission element is further configured to transmit an identifier associated with the recipient when transmitting the streaming media to the recipient during the session.

183. (New) The communication device of claim 182, wherein the identifier is a non-IP address identifier.

184. (New) The communication device of claim 182, wherein the transmission element is further configured to progressively transmit the streaming media with the identifier during the session to a server located on the network, the server delivering the streaming media to the recipient using the identifier to find a delivery route over the network to the recipient.

185. (New) The communication device of claim 161, wherein the communication device is configured to operate in a full-duplex communication mode.

186. (New) The communication device of claim 161, wherein the streaming media comprise one or more of the following types of streaming media: voice, video, sensor data, radio signals, position or GPS information, or any combination thereof.

187. (New) The communication device of claim 161, wherein the communication device comprises one of the following: a land-line phone, a wireless phone, a mobile phone, a computer, a radio, a satellite phone, a satellite radio, a tactical radio, or a tactical phone.

REMARKS

In the Office Action dated April 6, 2012, the Examiner rejected claims 44-106 on the ground of non-statutory, obviousness type, double patenting in view of the claims of co-pending, commonly assigned application no. 12/028,400, rejected claims 44-106 as either anticipated by Jennings in US Publication 2006/0160522 or obvious over various combinations of Jennings and Berstis in US Publication 2007/0192427 or Kraft in US Publication 2006/0248149. In response thereto, claims 44-106 have been cancelled. New claims 107-187 have been added.

Amendment to the Specification

The applicants have amended paragraph [0128] of the substitute specification filed July 8, 2011. Support for the amended paragraph is provided in U.S. provisional Patent Application 60/999,619, incorporated into the subject application by reference. See specifically 3.b on page 44 of the provisional application, which describes the use of an "***Identifier***" of the transmission target under the description of the "Data Elements" transmitted in messages by the Packet Quality Manager (element 26g or "PQM" in the subject application) and the description of "Access Servers", which recites on page 56 of the provisional that the Access Servers "***Provide RebelVox Routing (RV Routing (finds Home Servers, Access Servers and Clients) ….***": No new matter has been added.

The Art Rejection

The newly added claims are directed to code, a method and communication device configured to progressively store streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device. The media is also progressively transmitted, during a transmission session, as the streaming media is created and stored, using a transmission protocol that (i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient and (ii) guarantees delivery of the streaming media to the second communication device. None of the prior art references of record, either alone or in combination, teach this combination of features.

Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,

/James W. Rose/
James W. Rose
Reg. No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687
650-315-8401

Electronic Patent Application Fee Transmittal

Application Number:	12037256
Filing Date:	26-Feb-2008
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Filer:	James W. Rose/Laura Dean
Attorney Docket Number:	REBLP003/VOX-P003

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	18	30	540
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**720**

Electronic Acknowledgement Receipt

EFS ID:	12621177
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	James W. Rose/Laura Dean
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Attorney Docket Number:	REBLP003/VOX-P003
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Time Stamp:	21:15:26
Application Type:	Utility under 35 USC 111(a)

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Deposit Account	504481
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	1449_Form_IDS_6.pdf	25743 6306ccb5deb52632e4b53753a7a9345df28656f	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
2	Non Patent Literature	12028400_NOA_4_4_2012.pdf	555746 27fd058ba1c6998c9c982534dc858407d6e8605c	no	13
Warnings:					
Information:					
3	Non Patent Literature	12032426_NOA_4_4_2012.pdf	586896 ef3098935bf4c38dffd58fcb22e6fd73d3bbc42c6f	no	14
Warnings:					
Information:					
4	Miscellaneous Incoming Letter	Amendment_A_Transmittal.pdf	22837 1d77e2e61c83914ce3459b331365a810acd0a1cd	no	1
Warnings:					
Information:					
5	Transmittal Letter	IDS_Before_FOA_or_Notice_of_Allow.pdf	25058 614f049488326f289aafcc60ff24706b433ca609	no	2
Warnings:					
Information:					
6		REBLP003_Amendment_A.pdf	77264 89dfbb5f650ce17c8661a6bc244e123e7153 2ee0	yes	16

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Specification	2	2
Claims	3	14
Applicant Arguments/Remarks Made in an Amendment	15	16

Warnings:

Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	32130 5a16832f70a63591f950a3c297af645aa8a6455d	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1325674	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.						
	2.						
	3.						
	4.						
	5.						
	6.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
	7.							
	8.							

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	9.	Notice of Allowance in U.S. 12/028,400, dated April 4, 2012.
	10.	Notice of Allowance in U.S. 12/032,426, dated April 4, 2012.
	11.	
	12.	
	13.	
	14.	
	15.	
	16.	
	17.	
	18.	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIAMANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on April 25, 2012.

Signed: _____/Laura M. Dean/_____
Laura M. Dean

AMENDMENT A TRANSMITTAL

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an Amendment in the above-identified application.

The fee has been calculated as shown below.

	Claims After Amendment		Highest Previously Paid For	Present Extra	Small Entity Rate Fee	Large Entity Rate Fee
Total Claims	81	MINUS	63	18	x 30 = $540.00	x 60 = $0.00
Independent Claims	3	MINUS	3	0	x 125 = $0.00	x 250 = $0.00
Multiple Dependent Claim Present and Fee Not Previously Paid						
				Total	$540.00	$0.00

☒ Applicant(s) believe that no (additional) Extension of Time is required; however, if it is determined that such an extension is required, Applicant(s) hereby petition that such an extension be granted and authorize the Commissioner to charge the required fees for an Extension of Time under 37 CFR 1.136 to Deposit Account No. 50-4481.

☒ Please charge the required fees, or any additional fees required to facilitate filing the enclosed response, to Deposit Account No. 50-4481 (Order No. REBLP003).

Respectfully submitted,

/James W. Rose/
James W. Rose
Reg. No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIAMANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on April 25, 2012.

Signed: _____/Laura M. Dean/_____
Laura M. Dean

INFORMATION DISCLOSURE STATEMENT BEFORE FINAL ACTION OR NOTICE OF ALLOWANCE (37 CFR §§ 1.56 AND 1.97(c))

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The reference(s) identified in the attached PTO Form 1449, (copies of non-U.S. references are attached), may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that the reference(s) indeed constitutes prior art.

This Information Disclosure Statement is being filed after the mailing date of the first Office Action on the merits, or after three months from the filing date of this application, whichever event occurred last, but it is believed before the mailing date of either: (i) a final action under §1.113 or (ii) a notice of allowance under §1.311, whichever occurs first.

Accompanying this Information Disclosure Statement is the fee set forth in 37 CFR 1.17(p).

The Commissioner is hereby authorized to charge Deposit Account 50-4481 (Order No. REBLP003) for $180.00 in payment of the Information Disclosure Statement Fee. If it is determined that any additional fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-4481 (Order No. REBLP003).

Respectfully submitted,

/James W. Rose/
James W. Rose
Reg. No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687
650-315-8401

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/037,256	Filing Date 02/26/2008	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x $ =		OR	x $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x $ =			x $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	04/25/2012	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 81	Minus	** 63	= 18	x $30 =	540	OR	x $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	x $125 =	0	OR	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	540	OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	x $ =		OR	x $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x $ =		OR	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/ANNETTE SMITH/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	3519

76743 7590 06/01/2012
BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687

EXAMINER	
RAMAKRISHNAIAH, MELUR	
ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
06/01/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTOmail@beyerlaw.com

Office Action Summary	Application No.	Applicant(s)	
	12/037,256	KATIS ET AL.	
	Examiner	Art Unit	
	MELUR RAMAKRISHNAIAH	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2012*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *107-187* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *107-187* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4-25-12*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This application is in condition for allowance except for the following formal matters:

Terminal Disclaimer to overcome double patenting rejection as set forth below.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 25 USPQ 74, 453 O.G. 213, (Comm'r Pat. 1935).

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 107-187 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-39 of U.S. Patent No. 8,180,029. Although the conflicting claims are not identical, they are not patentably distinct from each other because for example independent claim 161 combined with dependent claim 169 is an obvious variation of claim 16 of U.S. Patent No. 8,180,029.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

--(2005/0210394A1) to Crandall et al. discloses method for providing concurrent audio-video and audio instant messaging sessions which teaches: Methods and systems for allowing users to participate in concurrent real-time audio or audio-video communication sessions over the Internet, the public telephone networks, and other networks. A user may switch among two or more conversations, and upon doing so, can play back the conversational content that was created while the user was engaged in

other conversations or other tasks. After playing back part or all of the new conversational content, the user can reply with an audio or audio-video instant message that can then be played by the other conversation participants. Temporary storage of the conversation content (the instant messages) can occur on network servers, on the sender's terminal or on the recipient's terminal, depending upon preferences and the capacity of the terminal devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELUR RAMAKRISHNAIAH whose telephone number is (571)272-8098. The examiner can normally be reached on 9 Hr schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melur Ramakrishnaiah/

Primary Examiner, Art Unit 2614

Notice of References Cited	Application/Control No. 12/037,256	Applicant(s)/Patent Under Reexamination KATIS ET AL.	
	Examiner MELUR RAMAKRISHNAIAH	Art Unit 2614	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2005/0210394	09-2005	Crandall et al.	715/752
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

SEARCHED

Class	Subclass	Date	Examiner
379	93.01, 90.01, 88.04, 88.06-88.08, 88.22-88.28, 93.24, 202.01	9-16-10	mrk
370	260-261	9-6-10	mrk
709	204-206	9-6-10	mrk
Search updated		5-24-12	mrk

SEARCH NOTES

Search Notes	Date	Examiner
WEST database	9-16-10	mrk
WEST database	5-24-12	mrk

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.						
	2.						
	3.						
	4.						
	5.						
	6.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes / No
	7.						
	8.						

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	9.	Notice of Allowance in U.S. 12/028,400, dated April 4, 2012.
	10.	Notice of Allowance in U.S. 12/032,426, dated April 4, 2012.
	11.	
	12.	
	13.	
	14.	
	15.	
	16.	
	17.	
	18.	

Examiner	/Melur Ramakrishnaiah/	Date Considered	05/24/2012

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MR/

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012						
	1	✓	-	-						
	2	✓	-	-						
	3	✓	-	-						
	4	✓	-	-						
	5	✓	-	-						
	6	✓	-	-						
	7	✓	-	-						
	8	✓	-	-						
	9	✓	-	-						
	10	✓	-	-						
	11	✓	-	-						
	12	✓	-	-						
	13	✓	-	-						
	14	✓	-	-						
	15	-	-	-						
	16	✓	-	-						
	17	✓	-	-						
	18	✓	-	-						
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	21	✓	-	-						
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	25	✓	-	-						
	26	✓	-	-						
	27	✓	-	-						
	28	✓	-	-						
	29	✓	-	-						
	30	✓	-	-						
	31	✓	-	-						
	32	✓	-	-						
	33	✓	-	-						
	34	✓	-	-						
	35	✓	-	-						
	36	✓	-	-						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012						
	37	✓	-	-						
	38	✓	-	-						
	39	✓	-	-						
	40	✓	-	-						
	41	✓	-	-						
	42	✓	-	-						
	43	✓	-	-						
	44		✓	-						
	45		✓	-						
	46		✓	-						
	47		✓	-						
	48		✓	-						
	49		✓	-						
	50		✓	-						
	51		✓	-						
	52		✓	-						
	53		✓	-						
	54		✓	-						
	55		✓	-						
	56		✓	-						
	57		✓	-						
	58		✓	-						
	59		✓	-						
	60		✓	-						
	61		✓	-						
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	65		✓	-						
	66		✓	-						
	67		✓	-						
	68		✓	-						
	69		✓	-						
	70		✓	-						
	71		✓	-						
	72		✓	-						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012						
	73		✓	-						
	74		✓	-						
	75		✓	-						
	76		✓	-						
	77		✓	-						
	78		✓	-						
	79		✓	-						
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	103		✓	-						
	104		✓	-						
	105		✓	-						
	106		✓	-						
	107			✓						
	108			✓						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012						
	109			✓						
	110			✓						
	111			✓						
	112			✓						
	113			✓						
	114			✓						
	115			✓						
	116			✓						
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	120			✓						
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	138			✓						
	139			✓						
	140			✓						
	141			✓						
	142			✓						
	143			✓						
	144			✓						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012						
	145			✓						
	146			✓						
	147			✓						
	148			✓						
	149			✓						
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	173			✓						
	174			✓						
	175			✓						
	176			✓						
	177			✓						
	178			✓						
	179			✓						
	180			✓						

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012						
	181			✓						
	182			✓						
	183			✓						
	184			✓						
	185			✓						
	186			✓						
	187			✓						

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 3519

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/037,256	02/26/2008 RULE	379	2614	REBLP003/VOX-P003

APPLICANTS

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Mary G. Panttaja, Healdsburg, CA;
Matthew J. Ranney, Oakland, CA;

**** CONTINUING DATA ***************************

This application is a CON of 12/028,400 02/08/2008 PAT 8,180,029
which claims benefit of 60/937,552 06/28/2007
and claims benefit of 60/999,619 10/19/2007

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
03/07/2008

Foreign Priority claimed	☐ Yes ☑ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☐ No		WY	33	22	1
Verified and Acknowledged	/MELUR RAMAKRISHNAIAH/ Examiner's Signature	Initials				

ADDRESS

BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687
UNITED STATES

TITLE

TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS

FILING FEE RECEIVED		
2091	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	8,121,270	02/21/12	Katis et al.			05/16/08
	2.	8,130,921	03/06/12	Katis et al.			04/25/08
	3.	8,180,029	05/05/12	Katis et al.			02/08/08
	4.	8,180,030	05/15/12	Katis et al.			02/15/08
	5.	2011/0019662	01/27/11	Katis et al.			09/15/10
	6.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
	7.							
	8.							

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	9.	
	10.	
	11.	
	12.	
	13.	
	14.	
	15.	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIAMANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on June 12, 2012.

Signed: _____/Natasha L. Marciel/_____
Natasha L. Marciel

AMENDMENT B TRANSMITTAL

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an Amendment in the above-identified application.

The fee has been calculated as shown below.

	Claims After Amendment		Highest Previously Paid For	Present Extra	Small Entity Rate Fee	Large Entity Rate Fee
Total Claims	81	MINUS	81	0	x 30 = $0.00	x 60 = $0.00
Independent Claims	3	MINUS	3	0	x 125 = $0.00	x 250 = $0.00
Multiple Dependent Claim Present and Fee Not Previously Paid						
				Total	$0.00	$0.00

☒ Applicant(s) believe that no (additional) Extension of Time is required; however, if it is determined that such an extension is required, Applicant(s) hereby petition that such an extension be granted and authorize the Commissioner to charge the required fees for an Extension of Time under 37 CFR 1.136 to Deposit Account No. 50-4481.

☒ Please charge the required fees, or any additional fees required to facilitate filing the enclosed response, to Deposit Account No. 50-4481 (Order No. REBLP003).

Respectfully submitted,
BEYER LAW GROUP LLP

/Steve D Beyer/
Steve D Beyer
Reg. No. 31,234

P.O. Box 1687
Cupertino, CA 95015-1687

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIAMANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on June 12, 2012.

Signed: _____/Natasha L. Marciel/_____
Natasha L. Marciel

RESPONSE TO EX PARTE QUAYLE ACTION
AMENDMENT B

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Ex Parte Quayle Office Action dated June 1, 2012, please enter the following remarks. No amendments have been made to the claims.

Listing of the Claims – a listing of claims begins on page 2 of this paper. No amendments are being made herein.

Remarks/Arguments begin on page 15 of this paper.

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. – 106. (Cancelled)

107. (Previously Presented) Computer code embedded in a non-transitory computer readable medium and intended to run on a communication device configured to be connected to a network, the computer code configured to:

progressively store streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device; and

progressively transmit, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that:

(i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and

(ii) guarantees delivery of the streaming media to the second communication device.

108. (Previously Presented) The computer code of claim 107, wherein the code is further configured to guarantee the delivery of the streaming media during the transmission session without the need for a second transmission session.

109. (Previously Presented) The computer code of claim 107, wherein the code is further configured to guarantee the delivery of a complete copy of the streaming media by retransmitting streaming media designated as missing and/or defective so that both the communication device and the second communication device have identical copies of the streaming media.

110. (Previously Presented) The code of claim 109, wherein the code is further configured to retransmit, in response to requests for retransmission, the streaming media designated as missing and/or defective, the retransmission guaranteeing delivery of the complete copy of the streaming media to the second communication device associated with the recipient.

111. (Previously Presented) The code of claim 107, wherein the code is further configured to transmit the streaming media out of storage when conditions on the network are not adequate for transmitting the streaming media as the streaming media is created.

112. (Previously Presented) The code of claim 107, wherein the code is further configured to transmit the streaming media out of storage when:

(i) the streaming media was created when the communication device was disconnected from the network; and

(ii) the communication device reconnects to the network.

113. (Previously Presented) The code of claim 107, wherein the code is further configured to progressively transmit the streaming media as fast as conditions on the network permit.

114. (Previously Presented) The code of claim 107, wherein the code is further configured to progressively transmit the streaming media at a bit rate commensurate with the available bit rate on the network.

115. (Previously Presented) The code of claim 107, wherein the code is further configured to progressively store incoming streaming media so that the transmitted streaming media and the incoming streaming media may be selectively rendered on the communication device from storage.

116. (Previously Presented) The code of claim 107, wherein the code is further configured to generate retransmission requests for incoming streaming media noted as missing and/or defective at the communication device so that a complete copy of the incoming streaming media as transmitted is received and stored on the communication device when the retransmission requests are satisfied.

117. (Previously Presented) The code of claim 107, wherein the code is further configured to selectively render incoming streaming media:

(i) in a near real-time rendering mode by progressively rendering the incoming streaming media as the media is progressively received over the network; and

(ii) in a time-shifted mode by retrieving and progressively rendering the incoming streaming media out of storage.

118. (Previously Presented) The code of claim 117, wherein the code is further configured to progressively render the incoming streaming media in either the real-time mode or the time-shifted mode without interfering with the progressive storage on the communication device of the incoming or transmitted streaming media.

119. (Previously Presented) The code of claim 115, wherein the code is further configured to selectively render the transmitted streaming media and the incoming streaming media from storage when the communication device is disconnected from the network.

120. (Previously Presented) The code of claim 107, wherein the code is further configured to transmit the streaming media in the form of outgoing messages and to receive incoming streaming media in the form of incoming messages.

121. (Previously Presented) The code of claim 120, wherein the code is further configured to thread together the outgoing messages and the incoming messages sharing a common attribute into a conversation.

122. (Previously Presented) The code of claim 121, wherein the common attribute comprises one of the following:

(i) a conversation name;

(ii) a conversation subject;

(iii) the name of a participant of the conversation; or

(iv) a name of a group of participants of the conversation.

123. (Previously Presented) The code of claim 121, wherein the conversation includes one or more of the following types of media:

(i) voice;

(ii) text;

(iii) photos; and

(iv) video.

124. (Previously Presented) The code of claim 121, wherein the code is further configured to enable a user of the communication device to participate in multiple conversations.

125. (Previously Presented) The code of claim 120, wherein the incoming messages and the outgoing messages are each asynchronous messages.

126. (Previously Presented) The code of claim 120, wherein the code is further configured to provide an asynchronous messaging experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at different times with respect to one another.

127. (Previously Presented) The code of claim 120, wherein the code is further configured to provide a synchronous communication experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at substantially the same time with respect to one another.

128. (Previously Presented) The code of claim 107, wherein the code is further configured to transmit an identifier associated with the recipient when transmitting the streaming media to the recipient during the session.

129. (Previously Presented) The code of claim 128, wherein the identifier is a non-IP address identifier.

130. (Previously Presented) The code of claim 128, wherein the code is further configured to progressively transmit the streaming media with the identifier during the session to a server located on the network, the server delivering the streaming media to the recipient using the identifier to find a delivery route over the network to the recipient.

131. (Previously Presented) The code of claim 107, wherein the code is further configured to operate the communication device in a full-duplex communication mode.

132. (Previously Presented) The code of claim 107, wherein the streaming media comprise one or more of the following types of streaming media: voice, video, sensor data, radio signals, position or GPS information, or any combination thereof.

133. (Previously Presented) The code of claim 107, wherein the communication device intended to run the code comprises one of the following: a land-line phone, a wireless phone, a

mobile phone, a computer, a radio, a satellite phone, a satellite radio, a tactical radio, or a tactical phone.

134. (Previously Presented) A method performed on a communication device configured to be connected to a network, the method comprising:

progressively storing streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device; and

progressively transmitting, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that:

(i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and

(ii) guarantees delivery of the streaming media to the second communication device.

135. (Previously Presented) The method of claim 134, wherein progressively transmitting further comprises guaranteeing the delivery of the streaming media during the transmission session without the need for a second transmission session.

136. (Previously Presented) The method of claim 134, wherein progressively transmitting further comprises guaranteeing the delivery of a complete copy of the streaming media by retransmitting streaming media designated as missing and/or defective so that both the communication device and the second communication device have identical copies of the streaming media.

137. (Previously Presented) The method of claim 136, further comprising retransmitting, in response to requests for retransmission, the streaming media designated as missing and/or defective, the retransmission guaranteeing delivery of the complete copy of the streaming media to the second communication device associated with the recipient.

138. (Previously Presented) The method of claim 134, further comprising transmitting the streaming media out of storage when conditions on the network are not adequate for transmitting the streaming media as the streaming media is created.

139. (Previously Presented) The method of claim 134, further comprising transmitting the streaming media out of storage when:

(i) the streaming media was created when the communication device was disconnected from the network; and

(ii) the communication device reconnects to the network.

140. (Previously Presented) The method of claim 134, further comprising progressively transmitting the streaming media as fast as conditions on the network permit.

141. (Previously Presented) The method of claim 134, further comprising progressively transmitting the streaming media at a bit rate commensurate with the available bit rate on the network.

142. (Previously Presented) The method of claim 134, further comprising progressively storing incoming streaming media so that the transmitted streaming media and the incoming streaming media may be selectively rendered on the communication device from storage.

143. (Previously Presented) The method of claim 134, further comprising generating retransmission requests for incoming streaming media noted as missing and/or defective at the communication device so that a complete copy of the incoming streaming media as transmitted is received and stored on the communication device when the retransmission requests are satisfied.

144. (Previously Presented) The method of claim 134, further comprising selectively rendering incoming streaming media:

(i) in a near real-time rendering mode by progressively rendering the incoming streaming media as the media is progressively received over the network; and

(ii) in a time-shifted mode by retrieving and progressively rendering the incoming streaming media out of storage.

145. (Previously Presented) The method of claim 144, further comprising progressively rendering the incoming streaming media in either the real-time mode or the time-shifted mode without interfering with the progressive storage on the communication device of the incoming or transmitted streaming media.

146. (Previously Presented) The method of claim 142, further comprising selectively rendering the transmitted streaming media and the incoming streaming media from storage when the communication device is disconnected from the network.

147. (Previously Presented) The method of claim 134, further comprising:

(i) creating outgoing messages from the transmitted streaming media; and

(ii) receiving incoming messages of streaming media.

148. (Previously Presented) The method of claim 147, further comprising threading together the outgoing messages and the incoming messages sharing a common attribute into a conversation.

149. (Previously Presented) The method of claim 148, wherein the common attribute comprises one of the following:

(i) a conversation name;

(ii) a conversation subject;

(iii) the name of a participant of the conversation; or

(iv) a name of a group of participants of the conversation.

150. (Previously Presented) The method of claim 148, wherein the conversation includes one or more of the following types of media:

(i) voice;

(ii) text;

(iii) photos; and

(iv) video.

151. (Previously Presented) The method of claim 148, further comprising enabling a user of the communication device to participate in multiple conversations.

152. (Previously Presented) The method of claim 147, wherein the incoming messages and the outgoing messages are each asynchronous messages.

153. (Previously Presented) The method of claim 147, further comprising providing an asynchronous messaging experience for the user of the communication device when the

incoming messages are received and the outgoing messages are transmitted at different times with respect to one another.

154. (Previously Presented) The method of claim 147, further comprising providing a synchronous communication experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at substantially the same time with respect to one another.

155. (Previously Presented) The method of claim 134, further comprising transmitting an identifier associated with the recipient when transmitting the streaming media to the recipient during the session.

156. (Previously Presented) The method of claim 155, wherein the identifier is a non-IP address identifier.

157. (Previously Presented) The method of claim 155, further comprising progressively transmitting the streaming media with the identifier during the session to a server located on the network, the server delivering the streaming media to the recipient using the identifier to find a delivery route over the network to the recipient.

158. (Previously Presented) The method of claim 134, further comprising operating the communication device in a full-duplex communication mode.

159. (Previously Presented) The method of claim 134, wherein the streaming media comprise one or more of the following types of streaming media: voice, video, sensor data, radio signals, position or GPS information, or any combination thereof.

160. (Previously Presented) The method of claim 134, wherein the communication device for performing the method comprises one of the following: a land-line phone, a wireless phone, a mobile phone, a computer, a radio, a satellite phone, a satellite radio, a tactical radio, or a tactical phone.

161. (Previously Presented) A communication device configured to be connected to a network, the communication device comprising:

a storage element configured to progressively store streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device; and

a transmission element configured to progressively transmit, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that:

(i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and

(ii) guarantees delivery of the streaming media to the second communication device.

162. (Previously Presented) The communication device of claim 161, wherein the transmission element is further configured to guarantee the delivery of the streaming media during the transmission session without the need for a second transmission session.

163. (Previously Presented) The communication device of claim 161, wherein the transmission element is further configured to guarantee the delivery of a complete copy of the streaming media by retransmitting streaming media designated as missing and/or defective so that both the communication device and the second communication device have identical copies of the streaming media.

164. (Previously Presented) The communication device of claim 163, wherein the transmission element is further configured to retransmit, in response to requests for retransmission, the streaming media designated as missing and/or defective, the retransmission guaranteeing delivery of the complete copy of the streaming media to the second communication device associated with the recipient.

165. (Previously Presented) The communication device of claim 161, wherein the transmission element is further configured to transmit the streaming media out of storage when conditions on the network are not adequate for transmitting the streaming media as the streaming media is created.

166. (Previously Presented) The communication device of claim 161, wherein the transmission element is further configured to transmit the streaming media out of storage when:

(i) the streaming media was created when the communication device was disconnected from the network; and

(ii) the communication device reconnects to the network.

167. (Previously Presented) The communication device of claim 161, wherein the transmission element is further configured to progressively transmit the streaming media as fast as conditions on the network permit.

168. (Previously Presented) The communication device of claim 161, wherein the transmission element is further configured to progressively transmit the streaming media at a bit rate commensurate with the available bit rate on the network.

169. (Previously Presented) The communication device of claim 161, wherein the storage element is further configured to progressively store incoming streaming media so that the transmitted streaming media and the incoming streaming media may be selectively rendered on the communication device from storage.

170. (Previously Presented) The communication device of claim 161, further comprising a retransmission request element configured to generate retransmission requests for incoming streaming media noted as missing and/or defective at the communication device so that a complete copy of the incoming streaming media as transmitted is received and stored on the communication device when the retransmission requests are satisfied.

171. (Previously Presented) The communication device of claim 161, further comprising a render element configured to selectively render incoming streaming media:

(i) in a near real-time rendering mode by progressively rendering the incoming streaming media as the media is progressively received over the network; and

(ii) in a time-shifted mode by retrieving and progressively rendering the incoming streaming media out of storage.

172. (Previously Presented) The communication device of claim 171, wherein the render element is further configured to progressively render the incoming streaming media in either the real-time mode or the time-shifted mode without interfering with the progressive storage on the communication device of the incoming or transmitted streaming media.

173. (Previously Presented) The communication device of claim 169, wherein the render element is further configured to selectively render the transmitted streaming media and the incoming streaming media from storage when the communication device is disconnected from the network.

174. (Previously Presented) The communication device of claim 161, further comprising a message element configured to:

(i) create outgoing messages from the transmitted streaming media; and

(ii) receive incoming messages from incoming streaming media.

175. (Previously Presented) The communication device of claim 174, further comprising a conversation element configured to thread together the outgoing messages and the incoming messages sharing a common attribute into a conversation.

176. (Previously Presented) The communication device of claim 175, wherein the common attribute comprises one of the following:

(i) a conversation name;

(ii) a conversation subject;

(iii) the name of a participant of the conversation; or

(iv) a name of a group of participants of the conversation.

177. (Previously Presented) The communication device of claim 175, wherein the conversation includes one or more of the following types of media:

(i) voice;

(ii) text;

(iii) photos; and

(iv) video.

178. (Previously Presented) The communication device of claim 175, wherein the conversation element is further configured to enable a user of the communication device to participate in multiple conversations.

179. (Previously Presented) The communication device of claim 174, wherein the incoming messages and the outgoing messages are each asynchronous messages.

180. (Previously Presented) The communication device of claim 174, wherein the communication device is configured to provide an asynchronous messaging experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at different times with respect to one another.

181. (Previously Presented) The communication device of claim 174, wherein the communication device is configured to provide a synchronous communication experience for the user of the communication device when the incoming messages are received and the outgoing messages are transmitted at substantially the same time with respect to one another.

182. (Previously Presented) The communication device of claim 161, wherein the transmission element is further configured to transmit an identifier associated with the recipient when transmitting the streaming media to the recipient during the session.

183. (Previously Presented) The communication device of claim 182, wherein the identifier is a non-IP address identifier.

184. (Previously Presented) The communication device of claim 182, wherein the transmission element is further configured to progressively transmit the streaming media with the identifier during the session to a server located on the network, the server delivering the streaming media to the recipient using the identifier to find a delivery route over the network to the recipient.

185. (Previously Presented) The communication device of claim 161, wherein the communication device is configured to operate in a full-duplex communication mode.

186. (Previously Presented) The communication device of claim 161, wherein the streaming media comprise one or more of the following types of streaming media: voice, video, sensor data, radio signals, position or GPS information, or any combination thereof.

187. (Previously Presented) The communication device of claim 161, wherein the communication device comprises one of the following: a land-line phone, a wireless phone, a mobile phone, a computer, a radio, a satellite phone, a satellite radio, a tactical radio, or a tactical phone.

REMARKS

In the Ex Parte Quayle Action dated June 1, 2012, a double patenting rejection was made over co-assigned U.S. patent No. 8,180,029. That double patenting rejection is respectfully traversed. In the Office Action, claim 161 (in combination with dependent claim 169) of the application was highlighted as being an obvious variation of claim 16 of the '029 patent. It is respectfully submitted that claim 161 of the present application specifically requires features of the transmission element that are patentably distinct from any of the claims of the '029 patent including (but not limited to) the requirements that the transmission element:

> (i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and
> (ii) guarantees delivery of the streaming media to the second communication device.

To help highlight the differences, the table below presents claim 16 of the '029 patent next to claim 161 of the present application with an effort being made to align roughly similar claim elements. As can be seen therein, the claims have very different scopes. In view of the foregoing, it is respectfully submitted that the double patenting rejection should be withdrawn and that this case is now in condition for allowance.

TABLE I

Claim 16 of the '029 Patent	Claim 161 of Present Application
16. A communication device, comprising:	161. A communication device configured to be connected to a network, the communication device comprising:
a storage element configured to progressively and persistently store media created on the communication device as the media is created;	a storage element configured to progressively store streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device; and
a network receive element configured to progressively receive media over the network at the communication device;	
a transmission element configured to progressively transmit the media over a network as the media is created and persistently stored;	a transmission element configured to progressively transmit, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that:
	(i) supports near-real-time communication so that the streaming media is delivered in near real-time to a second communication device associated with a recipient; and
	(ii) guarantees delivery of the streaming media to the second communication device.
the storage element further configured to progressively and persistently store the received media as the received media is received over the network without having to first render the received media; and	
a rendering element configured to provide rendering options to selectively render the received media in both a real-time mode as the media is received over the network and in a time-shifted mode by retrieving and progressively rendering the retrieved media from persistent storage.	

Should the Examiner have any remaining questions concerning this matter, he is respectfully requested to contact Jim Rose at (650) 315-8401 or the undersigned at (408) 255-8001.

Respectfully submitted,
BEYER LAW GROUP LLP

/Steve D Beyer/
Steve D Beyer
Reg. No. 31,234

P.O. Box 1687
Cupertino, CA 95015-1687

Electronic Patent Application Fee Transmittal

Application Number:	12037256
Filing Date:	26-Feb-2008
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Filer:	Steve D. Beyer/natasha marciel
Attorney Docket Number:	REBLP003/VOX-P003

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	12993891
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	Steve D. Beyer/natasha marciel
Filer Authorized By:	Steve D. Beyer
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	12-JUN-2012
Filing Date:	26-FEB-2008
Time Stamp:	16:45:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$180
RAM confirmation Number	4181
Deposit Account	504481
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	REBLP003_IDS_Before_FOA_6_12_12.pdf	25471 5203cba19a1e3a11a7ecd80308d3aa265370859e	no	2
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	REBLP003_1449_Form_IDS_06_12_12.pdf	25568 e4726ba47c1cc62d52cad2238678e70025ce4ee7	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Transmittal Letter	REBLP003_Amendment_B_Transmittal_Response_to_Ex_Parte_Quayle.pdf	23223 ef55541bb5ec10b9f48d9d29801515e6068ec9f4	no	1
Warnings:					
Information:					
4		REBLP003_Response_to_Ex_Parte_Quayle_Amdmt_B.pdf	69625 f0a0de613d6ed95f9512a87df43d5757e2da0173	yes	17

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Claims	2	14
Applicant Arguments/Remarks Made in an Amendment	15	17

Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30335 87a0d1ea06e8effe604b3a75155a75b1d43a3b42	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	174222	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003/VOX-P003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	
Title: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS	Group: 2614
	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on June 12, 2012.

Signed: _____/Natasha L. Marciel/_____
Natasha L. Marciel

INFORMATION DISCLOSURE STATEMENT BEFORE FINAL ACTION OR NOTICE OF ALLOWANCE (37 CFR §§ 1.56 AND 1.97(c))

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The reference(s) identified in the attached PTO Form 1449, (copies of non-U.S. references are attached), may be material to examination of the above-identified patent application. Applicants identify the reference(s) in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make the identified reference(s) of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that the reference(s) indeed constitutes prior art.

This Information Disclosure Statement is being filed after the mailing date of the first Office Action on the merits, or after three months from the filing date of this application, whichever event occurred last, but it is believed before the mailing date of either: (i) a final action under §1.113 or (ii) a notice of allowance under §1.311, whichever occurs first.

Accompanying this Information Disclosure Statement is the fee set forth in 37 CFR 1.17(p).

The Commissioner is hereby authorized to charge Deposit Account 50-4481 (Order No. REBLP003) for $180.00 in payment of the Information Disclosure Statement Fee. If it is determined that any additional fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-4481 (Order No. REBLP003).

Respectfully submitted,
BEYER LAW GROUP LLP

/Steve D Beyer/
Steve D Beyer
Reg. No. 31,234

P.O. Box 1687
Cupertino, CA 95015-1687
650-315-8401

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/037,256	Filing Date 02/26/2008	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x $ =		OR	x $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x $ =			x $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
AMENDMENT	06/12/2012	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 81	Minus	** 81	= 0	x $30 =	0	OR	x $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	x $125 =	0	OR	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x $ =		OR	x $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x $ =		OR	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/JOY J. DOBBS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

76743 7590 06/26/2012
BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687

EXAMINER
RAMAKRISHNAIAH, MELUR

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 06/26/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	3519

TITLE OF INVENTION: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$870	$300	$0	$1170	09/26/2012

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

76743 7590 06/26/2012

BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	3519

TITLE OF INVENTION: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$870	$300	$0	$1170	09/26/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
RAMAKRISHNAIAH, MELUR	2614	379-093010

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

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❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	3519

76743 7590 06/26/2012

BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687

EXAMINER	
RAMAKRISHNAIAH, MELUR	

ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 06/26/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1076 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1076 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	12/037,256	KATIS ET AL.	
	Examiner	Art Unit	
	MELUR RAMAKRISHNAIAH	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *6-12-12.*
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *107-187, now renumbered 1-81.*
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. ____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 6-12-12
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

Allowable Subject Matter

1. The following is an examiner's statement of reasons for allowance: This invention pertains to telecommunications, and more particularly, to a telecommunication and multimedia management method and apparatus that enables users to review the messages of conversations in either a live mode or a time-shifted mode and to transition the conversation back and forth between the two modes, participate in multiple conversations and to archive the messages of conversations for later review or processing.

The prior art of record in combination or alone fails to teach or suggest these elements of independent claims 107, 134, 161in combination with other elements. For example independent claim 107 has claim limitations such as progressively store streaming media using the communication device, as the media stream is created, so that a copy of the streaming media is stored on the communication device, progressively transmit, during a transmission session, streaming media as the streaming media is created and stored, using a transmission protocol that: (i) supports near-real time communication so that streaming media is delivered in real-time to a second communication device associated with a recipient, and (ii) guarantees delivery of streaming media to the second communication device. Independent claim 134 has similar limitation as claim 107. Independent 161 has claim limitations such as a storage element configured to progressively store streaming media created using the communication device, as the streaming media is created, so that a copy of the streaming media is stored on the communication device, and a transmission element

configured to progressively transmit, during a transmission session, the streaming media as the streaming media is created and stored, using a transmission protocol that: (i) supports near-real time communication so that streaming media is delivered in real-time to a second communication device associated with a recipient, and (ii) guarantees delivery of streaming media to the second communication device. For the above reasons independent claims 107, 134, 161 and their dependent claims 108-133, 135-160, 162-187 are allowable.

2. Claims 107-187 (now renumbered 1-81) are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELUR RAMAKRISHNAIAH whose telephone number is (571)272-8098. The examiner can normally be reached on 9 Hr schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Curt Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melur Ramakrishnaiah/
Primary Examiner, Art Unit 2614

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	8,121,270	02/21/12	Katis et al.			05/16/08
	2.	8,130,921	03/06/12	Katis et al.			04/25/08
	3.	8,180,029	05/05/12	Katis et al.			02/08/08
	4.	8,180,030	05/15/12	Katis et al.			02/15/08
	5.	2011/0019662	01/27/11	Katis et al.			09/15/10
	6.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
	7.							
	8.							

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	9.	
	10.	
	11.	
	12.	
	13.	
	14.	
	15.	

Examiner	Date Considered
/Melur Ramakrishnaiah/	06/19/2012

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MR/

WEST Search History for Application 12037256

Creation Date: 2012061911:51

Prior Art Searches

Query	DB	Op.	Plur.	Thes.	Date
(create$ near1 message) same (stor$ and transmit$ and communicat$ and telephones and stream$) and @ad<20070628	PGPB, USPT	OR	YES		06-19-2012

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 3519

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/037,256	02/26/2008 RULE	379	2614	REBLP003/VOX-P003

APPLICANTS

Thomas E. Katis, Jackson, WY;
James T. Panttaja, Healdsburg, CA;
Mary G. Panttaja, Healdsburg, CA;
Matthew J. Ranney, Oakland, CA;

**** CONTINUING DATA ***************************

This application is a CON of 12/028,400 02/08/2008 PAT 8,180,029
which claims benefit of 60/937,552 06/28/2007
and claims benefit of 60/999,619 10/19/2007

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
03/07/2008

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged /MELUR RAMAKRISHNAIAH/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		WY	33	22	1

ADDRESS

BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687
UNITED STATES

TITLE

TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS

FILING FEE RECEIVED		
2091	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Issue Classification

Application/Control No.	Applicant(s)/Patent Under Reexamination
12037256	KATIS ET AL.
Examiner	**Art Unit**
MELUR RAMAKRISHNAIAH	2614

ORIGINAL		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
379	93.01	H 0 4 M / 11/00 ()	

CROSS REFERENCE(S)

CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
379	88.13.	88.16	88.17		

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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	2		27		52		77		102	21	127	46	152	71	177
	3		28		53		78		103	22	128	47	153	72	178
	4		29		54		79		104	23	129	48	154	73	179
	5		30		55		80		105	24	130	49	155	74	180
	6		31		56		81		106	25	131	50	156	75	181
	7		32		57		82	1	107	26	132	51	157	76	182
	8		33		58		83	2	108	27	133	52	158	77	183
	9		34		59		84	3	109	28	134	53	159	78	184
	10		35		60		85	4	110	29	135	54	160	79	185
	11		36		61		86	5	111	30	136	55	161	80	186
	12		37		62		87	6	112	31	137	56	162	81	187
	13		38		63		88	7	113	32	138	57	163		
	14		39		64		89	8	114	33	139	58	164		
	15		40		65		90	9	115	34	140	59	165		
	16		41		66		91	22	116	35	141	60	166		

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 81	
/MELUR RAMAKRISHNAIAH/ Primary Examiner.Art Unit 2614 (Primary Examiner)	6-19-12 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	MELUR RAMAKRISHNAIAH	2614

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

	17		42		67		92	12	117	36	142	61	167		
	18		43		68		93	13	118	38	143	62	168		
	19		44		69		94	10	119	39	144	63	169		
	20		45		70		95	14	120	40	145	65	170		
	21		46		71		96	15	121	37	146	66	171		
	22		47		72		97	16	122	41	147	67	172		
	23		48		73		98	17	123	42	148	64	173		
	24		49		74		99	18	124	43	149	68	174		
	25		50		75		100	19	125	55	150	69	175		

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 81	
/MELUR RAMAKRISHNAIAH/ Primary Examiner.Art Unit 2614 (Primary Examiner)	6-19-12 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012	06/19/2012					
	1	✓	-	-	-					
	2	✓	-	-	-					
	3	✓	-	-	-					
	4	✓	-	-	-					
	5	✓	-	-	-					
	6	✓	-	-	-					
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	33	✓	-	-	-					
	34	✓	-	-	-					
	35	✓	-	-	-					
	36	✓	-	-	-					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	Art Unit
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012	06/19/2012					
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	69		✓	-	-					
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	71		✓	-	-					
	72		✓	-	-					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012	06/19/2012					
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	74		✓	-	-					
	75		✓	-	-					
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	104		✓	-	-					
	105		✓	-	-					
	106		✓	-	-					
1	107			✓	=					
2	108			✓	=					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012	06/19/2012					
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12	117			✓	=					
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16	122			✓	=					
17	123			✓	=					
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33	139			✓	=					
34	140			✓	=					
35	141			✓	=					
36	142			✓	=					
38	143			✓	=					
39	144			✓	=					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012	06/19/2012					
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45	151			✓	=					
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69	175			✓	=					
70	176			✓	=					
71	177			✓	=					
72	178			✓	=					
73	179			✓	=					
74	180			✓	=					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/16/2010	03/29/2012	05/24/2012	06/19/2012					
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76	182			✓	=					
77	183			✓	=					
78	184			✓	=					
79	185			✓	=					
80	186			✓	=					
81	187			✓	=					

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12037256	KATIS ET AL.
	Examiner	**Art Unit**
	Melur Ramakrishnaiah	2614

SEARCHED

Class	Subclass	Date	Examiner
379	93.01, 90.01, 88.04, 88.06-88.08, 88.22-88.28, 93.24, 202.01	9-16-10	mrk
370	260-261	9-6-10	mrk
709	204-206	9-6-10	mrk
Search updated		5-24-12	mrk
search updated		6-19-12	mrk

SEARCH NOTES

Search Notes	Date	Examiner
WEST database	9-16-10	mrk
WEST database	5-24-12	mrk
WEST database	6-19-12	mrk

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner
All classes & subclasses listed in the searched area		6-19-12	mrk

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

76743 7590 06/26/2012
BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	3519

TITLE OF INVENTION: TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$870	$300	$0	$1170	09/26/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
RAMAKRISHNAIAH, MELUR	2614	379-093010

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 Beyer Law Group LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Voxer IP LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): San Francisco, CA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☒ Advance Order - # of Copies 1

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)
☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /James W. Rose/ Date June 26, 2012

Typed or printed name James W. Rose Registration No. 34,239

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal

Application Number:	12037256
Filing Date:	26-Feb-2008
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Filer:	James W. Rose/Laura Dean
Attorney Docket Number:	REBLP003/VOX-P003

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	2501	1	870	870
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
Printed copy of patent - no color	8001	1	3	3
		Total in USD ($)		**1173**

Electronic Acknowledgement Receipt

EFS ID:	13108496
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	James W. Rose/Laura Dean
Filer Authorized By:	James W. Rose
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	26-JUN-2012
Filing Date:	26-FEB-2008
Time Stamp:	19:20:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1173
RAM confirmation Number	10458
Deposit Account	504481
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Issue_Fee-Transmittal.pdf	596230 e536c6931f2e◆e0224125◆613f495773315◆136b	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	33566 b7ea7◆665◆c◆613c8802c583acecf◆1fb04f01◆3	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	629796		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Form 1449 (Modified)	Atty Docket No.	REBLP003/VOX-P003
	Application No.:	12/037,256
Information Disclosure	Applicant	KATIS et al.
Statement By Applicant	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 1

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.						
	2.						
	3.						
	4.						
	5.						
	6.						

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-Class	Translation Yes	Translation No
	7.							
	8.							

Other Documents

Examiner Initial	No.	Author, Title, Place (e.g. Journal) of Publication, Date
	9.	Office Action in Chinese Application No. 2008800216649, mailed May 3, 2012 with English translation.
	10.	Office Action in Chinese Application No. 2008800215538, mailed May 17, 2012 with English translation.
	11.	Office Action in Chinese Application No. 2008800217251, mailed May 17, 2012 with English translation.
	12.	Office Action in Chinese Application No. 2008800160450, mailed June 26, 2012 with English translation.
	13.	
	14.	
	15.	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: KATIS et al.	Attorney Docket No.: REBLP003
Application No.: 12/037,256	Examiner: RAMAKRISHNAIAH, MELUR
Filed: February 26, 2008	Group: 2614
Title: TELECOMMUNICATION AND MULTIMEDIAMANAGEMENT METHOD AND APPARATUS	Confirmation No.: 3519

CERTIFICATE OF EFS-WEB TRANSMISSION
I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on July 12, 2012.

Signed: _____/Laura M. Dean/_____
Laura M. Dean

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §§1.56 AND 1.97

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The issue fee in the above-identified patent application was paid on June 26, 2012. Under their duty of disclosure, Applicants hereby submit copies of the cited references. Although it is discretionary at this point, Applicants respectfully request that the Examiner consider these references and make these references of official record in this application.

The undersigned hereby states that each item of information contained in the Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application no more than three months prior to the filing of the Information Disclosure Statement.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that this reference indeed constitutes prior art.

If it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-4481 (Order No. REBLP003).

Respectfully submitted,

/James W. Rose/
James W. Rose
Registration No. 34,239

P.O. Box 1687
Cupertino, CA 95015-1687
408-255-8001

Electronic Acknowledgement Receipt

EFS ID:	13242269
Application Number:	12037256
International Application Number:	
Confirmation Number:	3519
Title of Invention:	TELECOMMUNICATION AND MULTIMEDIA MANAGEMENT METHOD AND APPARATUS
First Named Inventor/Applicant Name:	Thomas E. Katis
Customer Number:	76743
Filer:	James W. Rose/Laura Dean
Filer Authorized By:	James W. Rose
Attorney Docket Number:	REBLP003/VOX-P003
Receipt Date:	12-JUL-2012
Filing Date:	26-FEB-2008
Time Stamp:	21:25:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	REBLP003_1449_Form_IDS_07_13_12.pdf	25969 3cd552354b1365cbf4b0b3eca8e056b15de227a5	no	1

Warnings:	
Information:	

This is not an USPTO supplied IDS fillable form

2	Non Patent Literature	CN_2008800216649_OA_5_3_12.pdf	8013791 2b401d091ce4be3d09d859d15e6642ec0b1ccc92	no	12
Warnings:					
Information:					
3	Non Patent Literature	CN_2008800215538_OA_5_17_12_1.pdf	4529351 6d3f0e2ade c7b0b45162fd478d95d00a3c0bd10d	no	15
Warnings:					
Information:					
4	Non Patent Literature	CN_2008800217251_OA_5_17_12_1.pdf	3468394 853f78ec9ae8a571714a4228c61f8b126865d174	no	12
Warnings:					
Information:					
5	Non Patent Literature	CN_2008800160450_OA_6_25_12_2.pdf	6618340 60d94d71292f0c47ab5da9e36a3c581dc74190fc	no	18
Warnings:					
Information:					
6	Transmittal Letter	IDS_Transmittal_After_Issue_Fee.pdf	22878 a4c5ca92346cd905d1e35fbb20b9945840b1c694	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	22678723		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	3519

7590 07/18/2012

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P.O. BOX 1687
Cupertino, CA 95015-1687

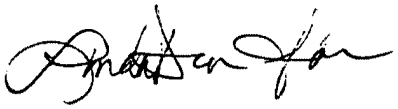
EXAMINER	
RAMAKRISHNAIAH, MELUR	
ART UNIT	**PAPER NUMBER**
2614	
NOTIFICATION DATE	**DELIVERY MODE**
07/18/2012	ELECTRONIC

NOTICE OF NON-COMPLIANT INFORMATION DISCLOSURE STATEMENT

An Information Disclosure Statement (IDS) filed 7/12/12 in the above-identified application fails to meet the requirements of 37 CFR 1.97(d) for the reason(s) specified below. Accordingly, the IDS will be placed in the file, but the information referred to therein has not been considered.

The IDS is not compliant with 37 CFR 1.97(d) because:

- ☐ The IDS lacks a statement as specified in 37 CFR 1.97(e).
- ☐ The IDS lacks the fee set forth in 37 CFR 1.17(p).
- ☒ The IDS was filed after the issue fee was paid. Applicant may wish to consider filing a petition to withdraw the application from issue under 37 CFR 1.313(c) to have the IDS considered. See MPEP 1308.



571-272-4200 or 1-888-786-0101
Application Assistance Unit
Office of Data Management

Form 1449 (Modified)	Atty Docket No.	REBLP003
	Application No.:	12/037,256
Information Disclosure Statement By Applicant	Applicant	KATIS et al.
	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 4 of 11

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
/MR/	82.	6,104,757	8/15/00	Rhee			05/15/98
	83.	6,233,389	5/15/01	Barton, et al.			07/30/98
	84.	6,262,994	7/17/01	Dirschedl, et al.			11/14/97
	85.	6,378,035	4/23/02	Parry, et al.			04/06/99
	86.	6,480,783	11/12/02	Myr			03/17/00
	87.	6,507,586	1/14/03	Satran, et al.			08/24/98
	88.	6,577,599	6/10/03	Gupta, et al.			06/30/99
	89.	6,580,694	6/17/03	Baker			08/16/99
	90.	6,671,732	12/20/03	Weiner			07/24/00
	91.	6,717,925	4/6/04	Leppisaari, et al.			08/10/98
	92.	6,791,949	8/14/04	Ryu, et al.			04/28/00
	93.	6,807,578	10/19/04	Satran, et al.			03/14/01
	94.	6,829,473	12/7/04	Raman, et al.			12/17/02
	95.	6,834,039	12/21/04	Kelly, et al.			11/27/00
	96.	6,850,965	2/1/05	Allen			06/26/01
	97.	6,912,544	06/28/05	Weiner			08/31/00
	98.	6,970,926	11/29/05	Needham, et al.			10/03/00
	99.	6,973,309	12/6/05	Rygula, et al.			03/14/02
	100.	6,993,009	1/31/06	Kelly, et al.			12/08/00
	101.	6,996,624	2/7/06	LeCroy, et al.			09/27/01
	102.	7,002,913	2/21/06	Huang, et al.			01/18/01
	103.	7,117,521	10/3/06	Puthiyedath			08/31/01
	104.	7,139,371	11/21/06	McElvaney			12/13/05
	105.	7,171,491	1/30/07	O'Toole, et al.			05/24/01
	106.	7,187,941	3/6/07	Siegel			11/14/02
	107.	7,218,709	~~7/15/04~~	Garg, et al. May 15, 2007			12/22/03
	108.	7,233,589	6/19/07	Tanigawa, et al.			08/30/02

Change(s) applied to document, /S.H./ 7/3/2012

Examiner	/Melur Ramakrishnaiah/	Date Considered	09/16/2010

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Form 1449 (Modified)	Atty Docket No.	REBLP003
	Application No.:	12/037,256
Information Disclosure Statement By Applicant	Applicant	KATIS et al.
	Filing Date	February 26, 2008
	Group	2614
(Use Several Sheets if Necessary)		Page 1 of 11

Change(s) applied /MR/ to document, /S.H./ 7/3/2012

U.S. Patent Documents							
Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	1.	2001/0025377	98/27/01	Hinderks			12/29/00
	2.	2002/0128029	9/12/02	Nishikawa, et al.			01/07/02
	3.	2002/0150094	10/17/02	Cheng, et al.			10/26/01
	4.	2002/0154745	10/24/02	Shtivelman			04/24/01
	5.	2002/0159600	10/31/02	Weiner			07/27/01
	6.	2002/0184368	12/5/02	Wang			04/06/01
	7.	2003/0027566	02/06/03	Weiner			07/30/01
	8.	2003/0028632	2/6/03	Davis			08/02/01
	9.	2003/0099198	5/29/03	Kiremidjian, et al.			11/27/01
	10.	2003/0126162	7/3/03	Yohe, et al.			01/03/02
	11.	2003/0186722	10/02/03	Weiner			03/28/02
	12.	2004/0017905	1/29/04	Warrier, et al.			12/17/02
	13.	2004/0019539	1/29/04	Raman, et al.			12/17/02
	14.	2004/0074448	4/22/04	Bunt			10/25/01
	15.	2004/0090959	5/13/04	Cinghita, et al.			09/04/02
	16.	2004/0095900	05/20/04	Siegel			11/14/02
	17.	2004/0117722	6/17/04	Harada			11/18/03
	18.	2004/0192353	9/30/04	Mason, et al.			12/23/03
	19.	2004/0192378	09/30/04	Wulkan			03/25/03
	20.	2004/0252679	12/16/04	Williams et al.			04/24/03
	21.	2004/0255148	12/16/04	Monteiro, et al.			05/04/04
	22.	2004/0258220	12/23/04	Levine et al.			03/29/02
	23.	2005/0021819	01/27/05	Kilkki			01/23/04
	24.	2005/0025308	02/03/05	Tischer et al.			08/30/04
	25.	2005/0030932	02/10/05	Kelly et al.			09/14/04
	26.	2005/0037706	2/17/05	Settle			08/01/03
	27.	2005/0053033	3/10/05	Kelly, et al.			09/15/04

Examiner	/Melur Ramakrishnaiah/	Date Considered	09/16/2010

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/037,256	08/14/2012	8243894	REBLP003/VOX-P003	3519

76743 7590 07/25/2012

BEYER LAW GROUP LLP / VOXER IP
P.O. BOX 1687
Cupertino, CA 95015-1687

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 1206 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Thomas E. Katis, Jackson, WY;
James T. Panttaja, Healdsburg, CA;
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APPLICATION #	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET #	REQUEST ID
12/037,256	02/26/2008	Thomas E. Katis	REBLP003/VOX-P003	156347

The entity status change request below filed through Patent Center on 02/01/2024 has been accepted.

Certifications

APPLICANT CHANGING TO REGULAR UNDISCOUNTED FEE STATUS

Signature

I certify, in accordance with 37 CFR 1.4(d)(4), that I am one of the signatories making the entity status change.

Signature	Name	Registration #
/James W Rose/	James Rose	34239