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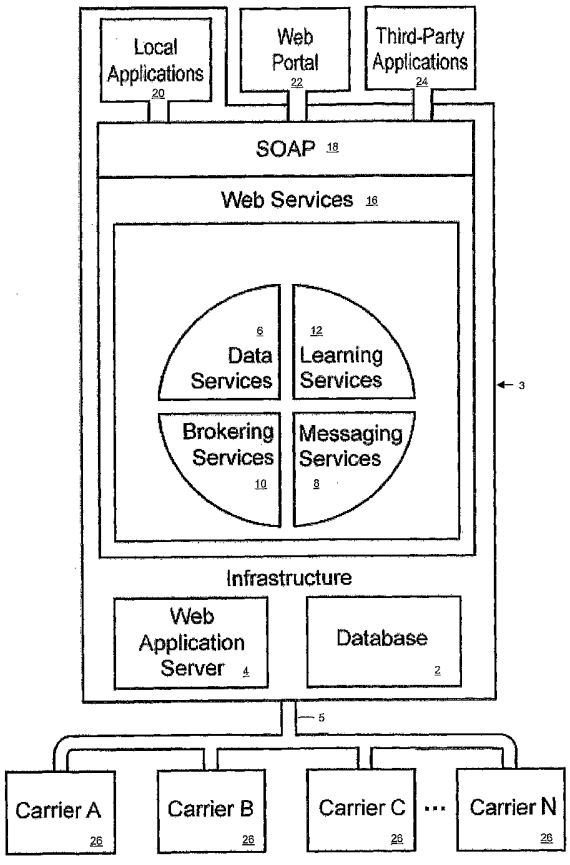
(54) Title: INTERACTIVE MESSAGING SYSTEM




(57) Abstract: The interactive messaging system of the present invention provides for an interactive communication process between users, both senders and recipients. The sender composes a message by filing in a template stored in data services. Once completed, the sender pushes the mesage to a recipient's wireless device if the wireless device contains a WAP browser which is capable of receiving pushed messages. Typically the message includes a question along with answers for the recipient to choose from. Each answer corresponds with a pre-assigned response key and the recipient answers the question by selecting one of the pre-assigned response keys. The recipient's response is available to the sender in the form of an email, WAP Push, on-line access or interactive message that is shown to the sender on an on-line status screen.

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# INTERACTIVE MESSAGING SYSTEM

## FIELD OF THE INVENTION

**[0001]** The present invention relates generally to the field of text messaging. More particularly, the present invention relates to an interactive messaging system.

## BACKGROUND OF THE INVENTION

**[0002]** Today, wireless or mobile devices are becoming more common as wireless carriers build out their networks, rates decrease and device technology increases. Users of the wireless devices have been able to send a message to a wireless device using Short Message Service (SMS) messaging. SMS messaging was introduced in the first phase of GSM during 1991 as a simple store-and-forward text message system. Using SMS messaging, a user can use a computer or a wireless phone to compose a text message and send it to a wireless device. SMS messaging has enjoyed steady growth and it is estimated that a total of 360 billion messages were sent in the year 2002.

**[0003]** Despite the popularity of text messaging, SMS messaging growth in the United States has been somewhat slower compared to growth in Europe. The difference in growth can be attributed to the technology limitations of SMS messaging on wireless devices. Users composing a text message, or a reply, on a mobile device must use a somewhat awkward Man Machine Interface (MMI) which requires users to press multiple keys or buttons (multi-tapping) on the wireless device for each letter. For example, to type the letter "s", a user needs to press the number 7 key on the device 4 times (i.e. PQRS).

**[0004]** Text on nine keys (T9®) was then developed as a faster alternative to multi-tapping. It enables users to type letters with a single key tap per letter and then uses predictive software to guess the word the user intended to type. However, many users find predictive text entry somewhat frustrating when the software guesses the incorrect word and still tedious as each letter still requires a single key tap. Furthermore, both the SMS messaging and T9® required numerous presses of keys or buttons. The user may be required to press keys or buttons over 100 times with SMS messaging and over 300 times using T9®.

**[0005]** Another technology that enables the delivery of data to wireless devices is Wireless Application Protocol (WAP). WAP is a global specification and open standard that enables wireless device users to interact and access services and information. WAP is both a communications protocol and application environment that can be built on numerous operating systems and provides interoperability between different device families. WAP is used by a variety of devices including mobile phones, mobile pagers, two-way radios, smartphones and communicators. WAP is designed to work with multiple wireless networks such as CDPD, CDMA, GSM, PDC, PHS, TDMA, FLEX, ReFLEX, iDEN, TETRA, DECT, DataTAC, Mobitex and GPRS.

**[0006]** One of the recent technology advances with WAP is the development of the WAP Push. A push can be a WAP browser session that appears on the screen of a mobile device without an explicit request from the user at the time the session is initiated. In the normal client/server model, a client requests a service or information from a server, which responds by providing the information to the client. This is known as "pull" technology, i.e. the client pulls the information from the server. An example of pull technology is the Internet, a user enters a URL which is sent to a server and the server responds by sending a web page to the user. Although WAP Push is also based on the client/server model, it provides the means to initiate a WAP application session on the user's device without an explicit request from the

user.

**[0007]** With WAP Push, a user can receive a pushed message and can immediately respond to the message by pressing a key. For example, a user can subscribe to a service which will cause a pushed message to be sent to the user's wireless device for predetermined events and times. At predetermined times during the day, a stock quote can be pushed to the user's wireless device giving the user the option to purchase stock by selecting a buy button. WAP Push, however, does not provide for a sender composing an interactive message by filling in a template with a question with a recipient responding by selecting at least one answer corresponding to a pre-assigned response key. Furthermore, WAP Push does not provide for brokering an event among multiple parties.

## SUMMARY OF THE INVENTION

**[0008]** It is an object of the present invention to compose an interactive message by filling in a template and pushing the interactive message to a wireless device user.

**[0009]** It is another object of the present invention to package complex data and messages into a format for wireless devices wherein the user can easily respond by selecting at least one pre-assigned response key.

**[0010]** It is yet another object of the present invention to broker an event among multiple parties by sending out an invitation and re-sending the invitation after user indicated pause intervals until all parties are available.

**[0011]** It is yet another object of the present invention for an application server to manage an interactive workflow and collaboration between users, including both a sender and a recipient.

**[0012]** It is yet another object of the present invention to send data and messages to multiple users and summarize the responses received from all users.

**[0013]** It is yet another object of the present invention to maintain profile settings for each user, the settings include filtering, blocking, prioritization and level of intrusion.

**[0014]** It is yet another object of the present invention to provide a web services framework allowing third party applications to access the application framework.

**[0015]** In the present invention, an application framework is used to integrate data systems to wireless devices. A web services platform, located on the application framework, shares business logic, data and process through a programmatic interface across a network amongst core services. Core services are comprised of data services, messaging services, brokering services and learning services. The core services are utilized by users to send interactive messages to other users.

**[0016]** The interactive messaging system of the present invention provides for an interactive communication process between users, both senders and recipients. The sender composes a message by filling in a template stored in data services. Once completed, the sender pushes the message to a recipient's wireless device if the wireless device contains a WAP browser which is capable of receiving pushed messages. Typically the message includes a question along with answers for the recipient to choose from. Each answer corresponds with a pre-assigned response key and the recipient answers the question by selecting one of the pre-assigned response keys. The recipient's response is available to the sender in the form of an e-mail, WAP Push, on-line access or interactive message that is shown to the sender on an on-line status screen.

**[0017]** The interactive messaging system of the present invention can be utilized in many ways including to propose a question to a recipient and receive the recipient's response, to broker an event such as a call, a conference call a game, etc., as an interactive learning tool, as an interactive reminder and to receive approval for a specified event or purchasing of an item.

**[0018]** The foregoing, together with other features and advantages of the present invention, will become more apparent when referring to the following specification, claims and accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0019]** The present invention will be better understood from the following detailed description of an exemplary embodiment of the invention, taken in conjunction with the accompanying drawings in which like reference numerals refer to like parts and in which:

Figure 1 illustrates an application framework showing core services;

Figure 2 illustrates a work flow diagram of a method of the present invention for pushing an interactive message to a wireless device;

Figure 3 illustrates a method of pushing an interactive message to a wireless device;

Figure 4 illustrates a work flow diagram for an interactive call invitation method of the present invention;

Figure 5 illustrates an example of the interactive call invitation method of the present invention;

Figure 6 illustrates a work flow diagram for an interactive birthday or holiday reminder of the present invention;

Figure 7 illustrates an example of the interactive birthday or holiday reminder of the present invention;

Figure 8 illustrates a work flow diagram for an interactive multi-player game invitation method of the present invention;

Figure 9 illustrates an example of the interactive multi-player game invitation method of the present invention;

Figure 10 illustrates the process logic used for an interactive learning method;

Figure 11 illustrates a work flow diagram for the interactive learning method of the present invention;

Figure 12 illustrates a method of pushing an interactive question to the wireless device of a user;

Figure 13 illustrates an example of the interactive multi-player game invitation method combined with the interactive learning method;

Figure 14 illustrates a user registration and profile forms of the present invention; and

Figure 15 illustrates an example of a turn based interactive game utilizing the interactive messaging system of the present invention.

## DETAILED DESCRIPTION OF THE DRAWINGS

**[0020]** Figure 1 illustrates an application framework 3 of the present invention for allowing communication with wireless device users, both senders and recipients, by sending or pushing interactive messages to the wireless devices. Messages are composed by filling in a pre-formed template and the application framework 3 pushes the messages to carriers A-N 26, which are connected to the framework 3 via a network connection 5, the messages are then sent to wireless devices. Although four carriers are shown, additional carriers may to connected to the framework 3. A messaging protocol on the application framework 3 allows both local applications and outside or third party applications to talk to core services. Core services, located on the application framework, facilitate the delivery of messages by providing essential details and information that the framework uses to send or push the

messages to wireless devices. In the preferred embodiment, the core services are comprised of data services 6, messaging services 8, brokering services 10 and learning services 12, although additional services may be defined and utilized. The core services are exposed via web services 16.

**[0021]** The learning services 12 are used to facilitate learning by sending or pushing study material, such as in the form of multiple choice questions, to recipients, such as students. For example, vocabulary questions can be sent to the recipient when studying for the SAT®. A word with four possible definitions can be pushed to the student's wireless device. The learning services 12 accomplishes this by managing a process for the user learning new information including concept presentation, pre-testing, mastery drilling, final testing and follow up review. Furthermore, learning services 12 allows external applications and third parties to add data or additional learning curriculum to learning modules stored in the learning services 12. Learning services also reports on learning status by user and by curriculum module. Additionally, learning services can also present curriculum to users in a game context wherein players compete on response time and accuracy.

**[0022]** The data services 6 stores information, including profiles of the users, which determine if and when the interactive message is to be sent to the recipient. Information stored within the profiles can include an access control list that filters or blocks specific senders, photographs and sounds which may be included in the message and a do not disturb window specifying when the recipient does not want to be disturbed with an interactive message. Additional information in the profiles can include a priority profile where the user can specify the level of intrusion for receiving the interactive message by the sender (i.e. do not interrupt if on a call) and also stores ID and password information, frequently used response lists to be included in the message, a list of birthdays and anniversaries of friends and family and other holidays. Other information, such as pending messages and system

information is stored in data services. Furthermore, the data services 6 can store learning profiles for storing user progress across learning modules and learning module setup, learning curriculum and responses. Each user creates his profile and stores the profile on a database 2 located on the application framework 3. Other information contained in the profiles includes a list of people whose messages should be immediately sent, a picture of the user and times when a user does not want to receive a message. These profiles can be accessed through a web portal 22 allowing senders and recipients to update their profile.

**[0023]** The messaging services 8 pushes the interactive message to the wireless device of a recipient. Before the message can be pushed, messaging services 8 first determines if the recipient's wireless device is capable of receiving a pushed message. If the wireless device is capable of receiving the message, messaging services 8 converts the message into a format readable by the wireless device and in turn pushes the message to the wireless device. If the wireless device is not capable of receiving a pushed message, message services 8 converts the message to a short message service (SMS) message and sends as a SMS message. Furthermore, messaging services 8, if necessary, is capable of formatting the message into a format that includes multimedia capabilities such as text, sound, graphics, W.L., MIME, video or a turn based interactive game. Messaging services 8 also has the capability of providing the sender with a status of the message, i.e. if the recipient has responded and what the response is. The status of the message can be delivered to the sender with electronic data exchange, e-mail, instant messaging, on-line access (i.e. check the status via a web site) and WAP Push. The sender can set the form that the status of delivery is sent in his profile or when filling out the template to send the message.

**[0024]** The brokering services 10 manages the coordination of users, both senders and recipients, and the delivery of messages to wireless devices. Senders can specify a day and time for the messages to be

delivered to the recipients. (Senders can include both people and devices/servers.) Recipients have the option of re-scheduling the response of messages to their wireless devices by selecting a "snooze" feature. The "snooze" feature terminates the interactive message and schedules a future time when the message will be resent to the recipient. Once this feature is selected, the brokering services 10 will resend the message at a later time such as in 10 minutes, 30 minutes, an hour or any other time specified by the recipient. Brokering services also manages the level of intrusion of the message based on receiver-maintained profile criteria via the web portal 22 with settings by originator, data type, priority and access control list. Additionally, if the interactive messaging system is being used to send invitations to invited parties or participants for an event, brokering services negotiates a time among multiple parties when all can participate in the event, such as a conference call, game, etc. Upon receiving the message, recipients have the option of indicating if they are available or hitting the snooze button. The message is resent to all participants at the end of the snooze period. The status of all invitees is shown to all participants. Brokering services manages a snooze or ready responses until all participants are ready and available.

**[0025]** The application framework 3 utilizes application logic to define how the business policies, rules and required services of the interactive messaging system of the present invention function. Local applications 20 store the application logic and call web services 16 using SOAP messaging 18 and instruct or trigger the construction and delivery of the interactive messages. Web services 16 shares business logic, data and process through a programmatic interface across a network amongst the core services. Since web services 16 are not tied to any one operating system or programming language, different applications from different sources communicate with each other without time consuming custom coding since all communication is in XML. As a result, web services 16 provides a platform for exposing or making accessible the core services to third party applications using software that is running on different operating systems and devices, written using different

programming languages and tools from multiple vendors, all potentially developed and deployed independently. As a result, an open architecture for third parties is created. Furthermore, web services 16 enables the interactive messaging system of the present invention to be used with or without a browser.

**[0026]** Also located on the framework 3 is a web application server 4. The web application server 4 is comprised of software that runs on the framework 3, answers web calls from (1) a wireless device (2) via web portal 22 and (3) third parties and local applications. When answering a call, web services looks up the requested information in a database 2, databases such as Oracle® may be utilized. The database 2 is used to store data, information and rules for pushing the interactive messages to a wireless device. Specifically, stored within the database are user preferences, photographs, sounds, drop down menus, learning curriculum, birthday/anniversary lists and other holidays. Upon receiving a call, the web application server 4 retrieves the information in the database 2 via data services 6.

**[0027]** The application framework 3 discussed with reference to figure 1 enables users to send various types of interactive messages. The various types of messages include scheduling a meeting, sending a reminder, initiating a multi-player game on a wireless device and interactive learning. These and other embodiments are discussed below.

**[0028]** Figure 2 illustrates a flow diagram of a method of the present invention for pushing interactive messages to a wireless device. In preparing and pushing an interactive message to a recipient's wireless device, a sender composes questions and responses on a pre-formed template 28. The template, located in the data services 6 of the framework 3, is typically accessed by the sender by using a computer connected to the internet. Once the message has been composed, the interactive message is sent to a mobile access gateway 30. Upon receiving the interactive message, the mobile

access gateway pushes the interactive message to the recipient's wireless device 32. The recipient's wireless device receives the interactive message and a browser session is started by a session initiation application (SIA). The SIA displays a screen with the question and response options composed by the sender.

**[0029]** Once the question and responses appear on the screen of the recipient's wireless device, the recipient may select a response corresponding to a pre-assigned response key 34. Furthermore, the recipient may select a snooze message key which closes the interactive messaging system 40 and causes a pre-defined delay to occur before the interactive message is again pushed to the recipient's wireless device. The status of the recipient's response, i.e. selecting the snooze key, is shown to the sender on an on-line status screen or any other method, such as e-mail defined in the template. The interactive message is then paused for the length of time specified by the snooze key 44. After this specified time period is over, the question and responses are resent by the mobile access gateway and steps 30, 32 and 34 are repeated.

**[0030]** The recipient can also choose to cancel the interactive messaging session by selecting a pre-assigned response key corresponding to a dismiss feature 46. By dismissing the interactive message, the message will not be resent to the recipient and the interactive messaging session is closed 48. The result or status of this session, i.e. the session is closed, is sent back to the sender in the form of an e-mail, WAP Push, on-line access or interactive message 50 that is shown to the sender or an on-line status screen 52.

**[0031]** If the recipient chooses to respond to the interactive message 36, the response is made available to the sender via an e-mail and on-line. Furthermore, the interactive messaging session will be closed 48 as mentioned previously. The result of the interactive messaging session, i.e.

the selected response, is sent to the sender 50 in the form of an e-mail, WAP Push, on-line access or interactive message that is shown to the sender on an on-line status screen 52. After the recipient has selected a pre-assigned response key, the sender, based upon the response, may compose a new message with a new question and response choices that are sent to the recipient to clarify or follow-up on the response 54. If the sender chooses to push a new message to the recipient 56, the whole process is repeated starting with step 28. If the sender chooses not to push a new message to the recipient the transaction has been completed and the interactive messaging session is closed 58.

**[0032]** Figure 3 illustrates a method of pushing an interactive message to the wireless device of a recipient. A template 60 is utilized by a sender to compose the interactive message, including the question and responses, that will be pushed to a recipient's wireless device. A computer connected to the Internet or a wireless device can be used to access the template. Several fields are included on the template, including drop down menus from which the sender can select from a variety elements to be included in the message. Elements can include the type of template and the priority of the message to be sent. Other fields to be filled in by the sender can include the recipient of the message, the sender of the message, the question included in the message, several responses corresponding to pre-assigned response keys for the recipient to choose from, the method of notification of the response to selected individuals and the priority of the message. In the preferred embodiment, a send time default is immediate, however, a sender can schedule to have the message sent at a specific data and time in the future.

**[0033]** Templates can vary, such as requiring a varying amount of response options to be entered (i.e. 4 response options, 6 response options, etc.) as well as the type of data used for the question and response options. The question and response options can be a graphic image, a sound, animation, WML, MIME, a video clip or a turn based interactive game. The priority option allows the sender to indicate the priority and specify the level of

intrusiveness for the message to be delivered. For example, do not interrupt the recipient if he is on the phone.

**[0034]** If the sender chooses to cancel the interactive messaging session prior to sending the message, the sender selects a quit button 63 located on the template 60. However, if the sender chooses to send the message, the sender selects a send button 62 located on the template 60 after the template 60 has been filled in. After selecting the send button 62, the interactive message is sent to a web application server 64 which immediately sends the message to a mobile access gateway 66 or holds the message to be sent in the future time and date specified by the sender in the template. The mobile access gateway 66 is a server in the carrier's network that allows messages to be transformed into a WAP Push over the carrier's network to the recipient's wireless device, if the recipient's wireless device contains a WAP browser 68. If the recipient's wireless device does not contain a WAP browser 68 or the WAP browser 68 does not have the capability of receiving pushed messages, the message is sent to the wireless device in the form of a SMS message.

**[0035]** Once the message is pushed to the recipient's wireless device, a browser session is started by the Session Initiation Application (SIA) which displays a screen 70 with the question and response options corresponding to pre-assigned response keys. The sender has the option of selecting one of the pre-assigned response keys in response to the question, selecting the dismiss button 72 or selecting the snooze button 74. If the recipient selects one of the pre-assigned response keys 76, the interactive messaging session is completed and the browser session is closed. Selecting the dismiss button 72 cancels the interactive messaging session and selecting the snooze button 74 temporarily terminates the interactive message and schedules the message to be resent at a later time.

**[0036]** Once the recipient has selected a response, notification of the

response selected is sent via e-mail, WAP Push, instant messaging or on-line access as specified in the template 60. The notification can show the question, the response options, the response selected and the date the selection was made. As specified in the template 60, notification of the selected response can be sent to at least one third party in addition to the sender of the message. As shown in figure 3, third party notification can be automatically sent in the form of an e-mail 78, a message pushed to a wireless device 80 or an instant message 84 as specified in the template. When the notification is pushed to a wireless device 80, the interactive messaging system can be cancelled by selecting an OK button 82. The sender can also receive the recipient's response by accessing the status of the message on-line 86. On-line notification or status illustrates the question sent by the sender, a drop down box 87 allows the sender to select previous questions sent as well as the responses received. The on-line status 86 also illustrates a summarization table 88 showing status, time and response by user. This table is useful in summarizing results from multiple respondents. An export button 90 can be selected for exporting into a comma delimited text file so that it can be imported into a spreadsheet for further analysis. Selecting a new question button 92 allows the sender to access the original template to compose or edit a new question to follow up or clarify the question based on the recipient's response.

**[0037]** An example of an interactive message is shown in figure 3. A sender, Bill Smith, composes a message to Frank Hollingsworth by filling in a template with a question, four possible responses and the names of those to receive the response. The question, who will be the presenter for a presentation, is pushed to Frank along with the four possible answers to the question. Upon receiving this message, Frank selects the presenter by selecting a pre-assigned response key corresponding to name of the presenter. Once selected, a status is sent to all people identified in the template to receive the response. The interactive message of the present invention can also be used to confirm appointments, such as a doctor's

appointment, a dentist appointment, a hair appointment, etc. Furthermore, a message can be pushed to a recipient asking if the recipient can still make the appointment. The recipient responds to the question by either selecting a "yes" key or a "no" key. If the recipient is unable to make the appointment, that time can be allocated to another person. Interactive messaging can also be used for opinion surveys and by schools to send information to parents about their children.

**[0038]** Figure 4 illustrates a work flow diagram for an interactive call invitation method of the present invention. In the interactive call invitation method, a sender uses a WAP browser, a computer connected to the Internet or a JAVA application located on a wireless device to compose an invitation by filling in a template 94. In the template, the sender fills in the name or names of the recipients of the invitation or the invitees, the topic of the call and the priority of the call. Alternatively, the sender can fill in the phone number of number of the invitees instead of their names. Once the invitation has been composed, the invitation is sent to an application server as described with reference to figure 2. Upon receipt of the invitation, the application server sends the invitation to the mobile access gateway 96 which immediately sends the invitation to an invitee's wireless device or holds the invitation until a specified time and date indicated in the template. If the invitee's wireless device has a WAP browser the invitation is pushed to the invitee's wireless device 98. However, if the invitee's wireless device does not contain a WAP browser or the WAP browser does not have the capability of receiving pushed messages, the invitation is sent to the invitee's wireless devices in the form of a SMS message.

**[0039]** When the invitee receives the invitation, the invitee has the option of selecting a snooze button 100 or a call button 108. If the snooze button is selected 102, the invitee has the option of selecting the duration of the pause or delay 104 before the invitation is resent to the invitee or to dismiss the invitation and close the messaging session. If the snooze button

is selected, the sender is notified 106 that the invitee has delayed responding to the invitation as well as the length of the delay. Furthermore, the interactive session is closed 107 until the length of the delay 109 has been completed and the invitation is resent, repeating steps 96 and 98. If the call button is selected, the invitee has accepted the invitation, the invitee's wireless device automatically auto dials the sender 111 and the interactive session is completed 113. Although sending the invitation to only one invitee has been described, the interactive call invitation method can be used to invite more than one invitee. Brokering services manages the responses from all invitees until all invitees are either ready to participate in the call or have selected the dismiss key.

**[0040]** Figure 5 illustrates an example of the interactive call invitation method as described with reference to figure 4. In this method, a sender fills in a template 112 to invite the recipient or invitee to participate in a telephone call. The sender enters the name or telephone number of the invitee, the topic to be discussed in the call and the priority of the message. The invitee can be entered manually or selected from the sender's address or phone book. Once this information has been filled in, the sender selects an invite button 114 and the invitation is sent to the recipients as a WAP Push message or a SMS message if the invitee's wireless device does not contain a WAP browser or the WAP browser does not have the capability of receiving pushed messages. As described with reference to figure 4, the invitation can be sent to more than one invitee.

**[0041]** After selecting the invite button 114, the invitation is sent to a web application server 116 which immediately sends the message to a mobile access gateway 118 or holds the message to be sent in a future time and date specified by the sender. The mobile access gateway verifies that the invitee's wireless device has a WAP browser 120 and pushes the invitation to the invitee's wireless device. If the invitee's wireless device does not contain a WAP browser 120 or the WAP browser 120 does not have the capability of

receiving pushed messages, the invitation is sent to the wireless device in the form of a SMS message. Once sent to the invitee's wireless device, a browser session is initiated by the Session Initiation Application (SIA) and displays a screen showing the invitation 122. Upon receipt of the invitation, the invitee has the option of selecting a call button 124 or a snooze button 126. If the invitee selects the call button 124, the invitee's wireless device automatically dials the sender. If the invitee does not want to talk to the sender at the present moment, or does not want to talk to the sender at any time, the invitee selects the snooze button 126.

**[0042]** Upon selecting the snooze button 126, a display screen 128 with several pre-assigned response keys and a dismiss button 130 are displayed on the invitee's wireless device. Selecting the dismiss button 130 closes the interactive session and the invitee will not receive the invitation again. The pre-assigned response keys correspond to the length of snooze or delay before the message is resent to the recipient. Selecting one of the pre-assigned response keys will terminate or pause the interactive session for a period of time that the invitee selected. When an invitee selects the snooze button 126 and selects the length of pause, a status screen 132 is sent to the sender indicating that the invitee has selected the snooze button 126 and the length pause that the invitee has selected. Upon receiving this screen, the sender can select a dismiss key 134 and close the interactive session or select an OK button 136 accepting the invitee's delay and the pause selected by the invitee occurs 137.

**[0043]** After the length of pause selected by the invitee, a display screen showing the invitation 138 is pushed to the invitee's wireless device. The invitee now has the option of selecting a ready button 140 or another snooze button 142. If the invitee still does not want to talk to the sender at the present moment, the invitee selects the snooze button 142 and the process as described with reference to screen 128 is repeated. If the recipient selects the ready button 140, a display screen 144 is sent or pushed to the sender

advising the sender that the recipient is available to talk. Upon receiving this screen 144, the sender can select a snooze key 148 and the process as described with reference to screen 128 is repeated or the sender can select a call button 146 and the sender's wireless device automatically dials the invitee initiating the call 147.

**[0044]** An example of an interactive message is shown in figure 5. Eric Johnson pushes a message to Laura Cox inviting her to dinner. Laura communicates with Eric as to a best time to talk to finalize dinner plans. Furthermore, this interactive message can be utilized to schedule calls to take place in the future where messages are pushed to all parties at the time of the call to determine if it is a good time to talk. If any party selects snooze, all parties are reminded of the call at a later time until both parties indicate they are available and the event can take place.

**[0045]** The interactive messaging system can also be used for sending interactive reminders at pre-defined times. Figure 6 illustrates a work flow diagram for an interactive birthday reminder of the present invention. In the interactive birthday reminder method, a sender or congratulator schedules a birthday reminder to be sent to their wireless device by using a computer connected to the Internet or by using a wireless device to fill in a template 150. In the template, the congratulator enters the name of the person having a birthday (celebrator) and the date and time that the reminder will be pushed to the congratulator's wireless device. Once the template has been completed, the reminder is stored in the application server until the scheduled time for delivery.

**[0046]** On the scheduled day and time, the application server pushes the reminder to the congratulator's wireless device 152. Upon receiving the reminder, the congratulator can send an invitation using a WAP browser, as described with reference to figures 4 and 5, to the celebrator. If the congratulator sends an invitation to the celebrator, the application server

sends the invitation to the mobile access gateway 156. If the celebrator's wireless device has a WAP browser the invitation is pushed to the celebrator's wireless device 158. However, if the celebrator's wireless device does not contain a WAP browser or the WAP browser does not have the capability of receiving pushed messages, the invitation is sent to the celebrator's wireless devices in the form of a SMS message.

**[0047]** When the celebrator receives the invitation, the celebrator has the option of selecting a snooze button 160 or a call button 168. If the snooze button is selected 162, the celebrator has the option of selecting the duration of the pause or delay 164 before the invitation is resent to the celebrator or to dismiss the invitation and close the messaging session. If the snooze button is selected, the congratulator is notified 166 that the celebrator has delayed responding to the invitation as well as the length of the delay. Furthermore, the interactive session is closed 167 until the length of the delay 169 has been completed. After the delay is over, the invitation is resent and steps 150-160 are repeated. If the call button 168 is selected, the celebrator has accepted the invitation, the congratulator is notified 170, the celebrator's wireless device automatically dials the sender 171 and the interactive session is completed 173. Although an interactive birthday reminder has been illustrated, the interactive birthday reminder of the present invention can also be utilized for additional holidays such as Mother's Day, Father's Day, Valentine's Day and Christmas,

**[0048]** Figure 7 illustrates an example of the interactive birthday reminder or reminders of other holidays of the present invention. In this method, a congratulator fills in a template 172 to set up reminders and reminder types for acquaintances. This template can be accessed on a computer connected to the Internet or on a wireless device. The congratulator can enter information about the celebrator such as his name, his phone number and wireless device carrier. Furthermore, the congratulator enters the day and time to push the reminder of the event (such as a birthday)

to the congratulator's wireless device, whether to remind the congratulator to buy a gift and whether to initiate an interactive call invitation as described previously with reference to figure 5. Once this information has been filled in, the congratulator selects a submit button 175 and the reminder is sent to a web application server 176 until the scheduled time for delivery.

**[0049]** At the time scheduled for delivery, the reminder is sent to the congratulator's wireless device 174. The congratulator has the option of selecting an invite button 177. Selecting the invite button 177 immediately sends an invitation to a mobile access gateway 178. The mobile access gateway 178 pushes the reminder to the celebrator's wireless device. If the celebrator's wireless device does not contain a WAP browser 180 or the WAP browser 180 does not have the capability of receiving pushed messages, the message is sent to the wireless device in the form of a SMS message. Once sent to the celebrator's wireless device, a browser session is initiated by the Session Initiation Application (SIA) and a screen showing the reminder 182 is displayed on the wireless device. Upon receiving the display screen, the celebrator has the option of selecting a call button 181 or a snooze button 183. If the celebrator selects the call button 181, the celebrator's wireless device automatically dials the congratulator. If the celebrator does not want to talk to the congratulator at the present moment, or does not want to talk to the congratulator at any time, the celebrator selects the snooze button 183.

**[0050]** Upon selecting the snooze button 183, a display screen 184 with several pre-assigned response keys and a dismiss button 185 are displayed on the celebrator's wireless device. Selecting the dismiss button 185 closes the interactive session and the celebrator will not receive the invitation again. The pre-assigned response keys correspond to the length of snooze or delay before the invitation is resent to the celebrator. Selecting one of the pre-assigned response keys will terminate or pause the interactive session for a period of time that the celebrator selected. When a celebrator selects the snooze button 183 and selects the length of pause, a status

screen 186 is sent to the congratulator indicating that the celebrator has selected the snooze button 183 and the length pause that the celebrator has selected. Upon receiving this screen 186, the congratulator can select a dismiss key 187 and close the interactive session or select an OK button 189 accepting the celebrator's delay and the pause selected by the celebrator occurs 191.

**[0051]** After the length of pause selected by the celebrator, a display screen showing the invitation 188 is pushed to the celebrator's wireless device. The celebrator now has the option of selecting a ready button 193 or another snooze button 195. If the celebrator still does not want to talk to the sender at the present moment, the sender selects the snooze button 195 and the process as described with reference to screen 184 is repeated. If the celebrator selects the ready button 193, a display screen 190 is sent or pushed to the congratulator advising the congratulator that the celebrator is available to talk. Upon receiving this screen 190, the congratulator can select a snooze key 197 and the process as described with reference to screen 184 is repeated or select a call button 199 and the congratulator's wireless device automatically dials the celebrator initiating the call 201.

**[0052]** The present invention can also be used for an interactive multi-player game. Figure 8 illustrates a work flow diagram for an interactive multi-player game invitation method. In the multi-player game invitation method, a sender uses a WAP browser or a computer connected to the Internet to compose a game invitation by filling in a template 192. In the template, the sender fills in the name of the invitee, the name of the game and the desired number of people required to play the game. Once the invitation has been composed, the invitation is sent to an application server as described with reference to figure 2. Upon receipt of the invitation, the application server sends the invitation to the mobile access gateway 194 which immediately sends the invitation to the player via his wireless device. If the player's wireless device has a WAP browser the invitation is pushed to the player's

wireless device 196. However, if the player's wireless device does not contain a WAP browser or the WAP browser does not have the capability of receiving pushed messages, the invitation is sent to the player's wireless device in the form of a SMS message.

**[0053]** When the player receives the invitation, the player has the option of selecting a snooze button 198 or a ready button 204. If the snooze button is selected, the player has the option of selecting the duration of the pause or delay 200 before the invitation is resent to the player or to dismiss the invitation and close the messaging session. If the snooze button is selected, the sender is notified 202 that the player has delayed responding to the invitation as well as the length of the delay. Furthermore, the interactive session is closed 203 until the length of the delay 205 has been completed and the invitation is resent. If the ready button 204 is selected, the player has accepted the invitation and now must select a play button 206. The multi-player game is initiated if the desired number of player are available 208 and the transaction is completed 209. Although sending the invitation to only one player has been described, the interactive multi-player game method can be used to invite more than one player. Brokering services manages the responses from all players until the desired number of players ready to play the game has been reached.

**[0054]** Figure 9 illustrates an example of the interactive multi-player game invitation method as described with reference to figure 8. In this method, a sender fills in a template 210 to invite at least one player to participate in a game. The sender enters the name of the player, the name of the game and the desired number of people required to play the game. The player's name can be entered manually or selected from the sender's address or phone book. Once this information has been filled in, the sender selects an invite button 211 and the invitation is sent to the player as a WAP Push message or a SMS message if the player's wireless device does not contain a WAP browser or the WAP browser does not have the capability of receiving

pushed messages.

**[0055]** After selecting the invite button 211, the invitation is sent to a web application server 212 which immediately sends the message to a mobile access gateway 214 or holds the message to be sent in a future time and date specified by the sender. The mobile access gateway verifies that the player's wireless device has a WAP browser 216 and pushes the invitation to the player's wireless device. If the player's wireless device does not contain a WAP browser 216 or the WAP browser 216 does not have the capability of receiving pushed messages, the message is sent to the wireless device in the form of a SMS message. Once sent to the player's wireless device, a browser session is initiated by the Session Initiation Application (SIA) and displays a screen showing the invitation 218. The player has the option of selecting a play button 220 or a snooze button 222. If the player selects the play button 220, a message is sent to the sender indicating the player is ready to play. If the player does not want to play the game at the present moment, or does not want to play the game at any time, the player selects the snooze button 222.

**[0056]** Upon selecting the snooze button 222, a display screen 224 with several pre-assigned response keys and a dismiss button 234 are displayed on the player's wireless device. Selecting the dismiss button 234 closes the interactive session and the player will not receive the invitation again. The pre-assigned response keys correspond to the length of snooze or delay before the invitation is resent to the player. Selecting one of the pre-assigned response keys will terminate or pause the interactive session for a period of time that the player selected. When a recipient selects the snooze button 222 and selects the length of pause, a status screen 228 is sent to the sender indicating that the player has selected the snooze button 222 and the length of pause that the player has selected. Upon receiving this screen 228, the sender can select a dismiss key 230 and close the interactive session or select an OK button 232 accepting the player's delay and the pause selected by the player occurs 233.

**[0057]** After the length of pause selected by the player, a display screen showing the invitation 263 is pushed to the player's wireless device. The player now has the option of selecting a ready button 238 or another snooze button 240. If the player still does not want to play the game at the present moment, the player selects the snooze button 240 and the process as described with reference to screen 224 is repeated. If the recipient selects the ready button 238, a display screen 242 is sent or pushed to the sender advising the sender that the player is available to play. Upon receiving this screen 242, the sender can select a snooze key 246 and the process as described with reference to screen 224 is repeated or select a play button 244 and the game is initiated 245.

**[0058]** As an example of the multi-player game invitation method is shown in figure 9. In this example, Eric Johnson sends an invitation to Laura Cox to play the game Star Fighter on their wireless devices. When Laura is ready to play, the game is initiated on each of their wireless devices.

**[0059]** As described previously, the interactive messaging system of the present invention can be used as a learning tool. As illustrated in figure 10, the interactive learning method uses process logic which is comprised of several steps to complete the learning process. The first step in the process logic is a concept presentation 248 step where the application server uses WAP Push to send the question and correct answer to the wireless device user to review. Afterwards, the web application server uses WAP Push to sequentially send all questions to the wireless device user to determine competency in a pre-testing step 250. Furthermore, questions that are answered incorrectly are marked by the web application server to be used in the mastery drilling step 256.

**[0060]** After the pre-testing is complete, the web application server determines if the specified completion has been made. For example, a 95%

completion threshold could be set so that the user must answer 95% of the questions correctly to achieve competency 252. If the user has achieved competency, the application next moves to a follow up review 264. In the follow up review, questions are sent to the wireless device user for a time period specified in the system to reinforce long term retention. When the competency has not been achieved the user moves to the mastery drilling step 256. In the mastery drilling step 256, the web application server maintains a pool of questions that will be sent to the wireless device user. Questions are randomly selected from the pool and pushed to the user using WAP Push until the pool is depleted. Incorrectly answering questions during the mastery drilling phase adds additional questions to the pool. Correctly answering questions during the mastery drilling phase deletes questions from the pool. Questions that have been correctly answered during the pre-testing step initially establish the pool. For example, if the user incorrectly answered three questions during the pre-test phase, the pool would contain an initial volume of nine questions, or three instances of each question incorrectly answered during the pre-test phase.

**[0061]** During the mastery drilling step 256, the pool of questions increases or decreases based on the performance of the wireless device user. For example, if the pool had a beginning volume of nine questions and the user correctly answered the first question, the pool would be decreased by one resulting in a remaining volume of eight questions. However, if the mobile device user incorrectly answered the next question, three instances of the incorrectly answered question are added to the pool resulting in a new volume of ten total questions in the pool. During the mastery drilling step, the user increments or decrements the total number of questions until the pool is depleted which initiates the next step, post-testing 258. In the post-testing phase, all questions in the module are sent to the user using WAP Push. After the post-testing phase, the system determines if competency has been achieved 262 as described above. If competency has not been achieved, steps 252, 256 and 258 are repeated. If competency has been achieved, the

user is sent to the follow-up review 264 as described above.

**[0062]** Figure 11 illustrates a work flow diagram for an interactive learning method of the present invention. In the interactive learning method, a user selects from various learning modules stored in learning curriculum in the learning services 266 of the application framework. Learning modules can include vocabulary lessons, science lessons, history lessons, math lessons, social science lessons or any other lesson defined by the user. Lessons typically consist of a question with multiple responses that the recipient can select from, however, the lessons can be in the form of a statement. Once the curriculum is selected, questions or statements are scheduled to be sent to the user using WAP Push based on the scheduling criteria set up by the user. At the scheduled time, the next question in the module is sent to the user's wireless device from the web application server to the mobile access gateway 268. Upon receiving the interactive message, the mobile access gateway pushes the interactive message to the user's wireless device 270. The user's wireless device receives the interactive message with the question and possible answers and a browser session is started by a session initiation application (SIA). The SIA displays a screen with the question and possible answers.

**[0063]** Once the question and possible answers appear on the screen of the user's wireless device, the user may select an answer corresponding to a pre-assigned response key 272. If the user selects an answer 274, feedback is given to the user showing whether the selected answer was correct or incorrect 276. If the incorrect answer was selected, feedback given to the user includes the correct answer that should have been selected. After receiving feedback, the user may select to have the next scheduled question pushed to their wireless device and continue the session or terminate the session 278. If the user elects to continue the session, the process is repeated starting with step 268. If the user elects to terminate the session 280, the WAP session is closed 294. The summary of the user's session, i.e.

which questions were and were not answered correctly, is available using a computer accessing the Internet 296 and the transaction has been completed 298.

**[0064]** If the user does not want to answer the question, the user may respond to the question by selecting a pre-assigned response key corresponding to a snooze feature 282. Selecting the snooze message key 284 closes the interactive learning method and a pre-defined delay occurs before the question is again pushed to the user's wireless device. After selecting the snooze key, the interactive learning method is closed 286. The status or results of the user's responses/answers are available on-line 288. The interactive learning method is then paused 290 for the length of time specified by the snooze key. After a specified time period is over, the question and answers are resent by the mobile access gateway and steps 268, 270 and 272 are repeated.

**[0065]** The recipient can choose to cancel the interactive learning session by selecting a pre-assigned response key corresponding to a dismiss feature 292. By dismissing the interactive learning session, the question will not be resent to the user and the session is closed 294. The summary of the user's session, i.e. which questions were and were not answered correctly, is available using a computer accessing the Internet 296 and the transaction has been completed 298.

**[0066]** Figure 12 illustrates a method of the interactive learning method of the present invention. A template 300 is utilized by a user to enter curriculum. A computer connected to the Internet or a wireless device can be used to access the template. In the template is a drop down box that allows the user to select from a variety of templates. Templates can vary, such as requiring a varying amount of response options to be entered (i.e. 4 response options, 6 response option, etc.) as well as the type of data used for the question and response options. The question and response options can be a

graphic image, a sound, animation, WML, MIME, a video clip or a turn based interactive game.

**[0067]** The user enters the question, response choices and specifies which response is correct. One of the template forms that can be specified is random incorrect responses wherein the web application server randomly picks incorrect responses to a question by randomly selecting from a pool of correct responses entered for other questions in the module and presenting them as incorrect response choices to the current question. This method greatly simplifies developing a module because instead of having to input up to three incorrect answers per question, the user needs to only specify each question and its correct response.

**[0068]** Once the curriculum has been entered, the user uses a curriculum set up screen 302 to select the curriculum as well as the timing and frequency for questions to be pushed to his wireless device. The start and end time defines the time when questions will periodically be pushed to the user's wireless device and the frequency defines how many times the questions are pushed to the user's wireless device during the start and end time. For example, the user can select to have a question sent to his wireless device twice per day. Furthermore, the user can specify if the questions are to be presented in a game mode. When game mode is selected, time between presentation of the question and response choices and user response can be set so that if the question is not answered within the specified window of time, it is considered a wrong answer. Also, during game mode, the wireless device can vibrate, play a specific sound and scoring can be utilized to give points for quickness and accuracy so a total score is calculated at the end of the module. In the curriculum set up screen 302, the user can also select a completion threshold which sets the percentage of accuracy that is required in review, mastery drilling and post-testing before moving onto the next module. The set up screen 302 also allows the user to select a follow-up time period which is a period after competency is reached

that questions will be randomly sent to the user for follow-up review.

**[0069]** If the user chooses to cancel the interactive learning session prior to sending the set up screen to the application server 306, the user selects the quit button 303 located on the set up screen 302. However, if the user chooses to send the set up screen to the application server 306, the user selects an apply button 304 located on the set up screen after being filled in. After selecting the apply button 304, the user settings are saved on the web application server 306 and questions are scheduled to be sent to the user's wireless device. At the scheduled time, the questions are pushed to the mobile access gateway 308 which the pushes the question and responses to the wireless device via a WAP browser 310.

**[0070]** Once the question is pushed to the user's wireless device, a browser session is started by the Session Initiation Application (SIA) which displays a screen 312 with the question and response options corresponding to pre-assigned response keys. The user has the option of selecting one of the pre-assigned response keys in response to the question or selecting a snooze button 314. If the user selects the snooze button 314, the session is terminated and the question and responses are resent to the user at a later time, such as in 60 minutes. If the user selects one of responses corresponding to one of the pre-assigned response keys, the user receives instant feedback whether the response selected was correct or incorrect 316. When receiving the feedback, the user is given the option of selecting a dismiss button 318 or a next button 320. Selecting the dismiss button 318 cancels the session and selecting the next button 320 the user is requesting the additional questions in the curriculum be pushed to his wireless device.

**[0071]** Users can access a summary using a computer connected to the Internet. The summary shows and status and results by module 322 and as well as by users 328. The summary by module 322 allows the user to select various modules by using a drop down list 324. Once selected, user

summary information is displayed for the selected module. An export button 236 allows the summary information to be exported to a comma delimited text file for use in a spreadsheet application for further analysis. A quit button 327 exits the user out of the summary. The summary by user 328 allows the user to select various users by using a drop down list 330. Once selected, module summary information is displayed for the selected user. As with the summary by module, an export button 332 allows the summary information to be exported to a comma delimited text file for use in a spreadsheet application for further analysis. A quit button 333 exits the user out of the summary.

**[0072]** An example of the interactive learning method is shown in figure 12. A vocabulary word, peruse, is entered along with four possible answers. Several vocabulary words with respective answers can be stored on the application server to be later sent to help a person study. This method is not related to vocabulary and can also include questions relating to math, history, a foreign language, geography, trivia etc.

**[0073]** Figure 13 illustrates an example or the interactive multi-player game invitation method combined with the interactive learning method. In this method, an invitation can be composed to join a game 328. The sender enters the phone number, activity or game and the desired number of players required to play the game by accessing a template on his wireless device. Once this information has been filled in, the sender selects an invite button 329 and the invitation is sent to the invitee or player as a WAP Push message.

**[0074]** After selecting the invite button 329, the invitation is sent to a web application server 330 which immediately sends the message to a mobile access gateway 332. The mobile access gateway verifies that the invitee's wireless device has a WAP browser 334 and pushes the invitation to the invitee's wireless device. Once sent to the invitee's wireless device, a browser session is initiated by the Session Initiation Application (SIA) and

displays a screen showing the invitation 336. The invitee has the option of selecting a play button 335 or a snooze button 337. If the invitee selects the play button 335, a message is sent to the sender indicating that the invitee is ready to play. If the invitee does not want to play at the present moment, or does not want to play the game at any time, the sender selects the snooze button 337.

**[0075]** Upon selecting the snooze button 337, a display screen 338 with several pre-assigned response keys and a dismiss button 339 are displayed on the invitee's wireless device. Selecting the dismiss button 339 closes the interactive session and the invitee will not receive the invitation again. The pre-assigned response keys correspond to the length of snooze or delay before the invitation is resent to the invitee. Selecting one of the pre-assigned response keys will terminate or pause the interactive session for a period of time that the invitee selected. When a invitee selects the snooze button 337 and selects the length of pause, a status screen 340 is sent to the sender indicating that the player has selected the snooze button 337 and the length of pause that the invitee has selected. Upon receiving this screen, the sender can select a dismiss key 341 and close the interactive session or select and OK button 343 accepting the invitee's delay and the pause selected by the invitee occurs 345.

**[0076]** After the length of pause selected by the invitee, a display screen showing the invitation 342 is pushed to the invitee's wireless device. The invitee now has the option of selecting a ready button 347 or another snooze button 349. If the invitee still does not want to play the game or activity at the present moment, the player selects the snooze button 349 and the process as described with reference to screen 338 is repeated. If the invitee selects the ready button 347, a display screen 344 is sent or pushed to the sender advising the sender that the invitee is available to play. Upon receiving this screen 344, the sender can select a snooze key 351 and the process as described with reference to screen 338 is repeated or select a play

button 353 and the game is initiated. Upon initiating the game, the first question is pushed to the wireless device of both the sender 346 and the invitee 348. Both the sender and invitee have the option of again selecting snooze keys 355, 357. If either the sender or invitee selects the snooze key, the process as described with reference to screen 338 is repeated. If both the sender and invitee opt to play, each choose a response to the question and display screens 350 are pushed to the wireless device of each indicating whether each selected the correct response to the question. Upon receiving the display screens 350, both the sender and invitee have the option of selecting a snooze button 359 or a next button 361. If either the sender or the invitee select the snooze button 359, the process as described with reference to screen 336 is repeated. If the next button 361 is selected by both the sender and invitee, a new question is sent to both the sender and the invitee and the game continues.

**[0077]** An example of the interactive multi-player game method combined with the interactive learning method is shown in figure 13. In this example, Jordan sends an invitation to Laura Cox to an activity, SAT® Vocab 1, on their wireless devices. When Laura is ready to play, the game relating to learning vocabulary is initiated on each of their wireless devices.

**[0078]** Each user must fill out a registration form and profile settings to participate in an interactive messaging session. Figure 14 illustrates an example of a user registration form 352 and profile settings 354. In the user registration, the user can enter information such as their wireless phone number, password, security question, answer to security question, email address, birthday, name, address, wireless phone carrier, etc. In the profile settings, the user can add a photo of themselves, sounds, conference call number, conference code, a list of blocked users, a list of VIP users, etc.

**[0079]** Finally, turning to figure 15, an example a turn based interactive game utilizing the interactive messaging system of the present invention is

illustrated. An invitation can be composed to initiate a turn based interactive game 356. The sender enters the phone number, the type of game and the desired number of players required to play the game by accessing a template on his wireless device. Once this information has been filled in, the sender selects an invite button 357 and the invitation is sent to the invitee or player as a WAP Push message.

**[0080]** After selecting the invite button 357, the invitation is sent to a web application server 358 which immediately sends the message to a mobile access gateway 360. The mobile access gateway verifies that the invitee's wireless device has a WAP browser 362 and pushes the invitation to the invitee's wireless device. Once sent to the invitee's wireless device, a browser session is initiated by the Session Initiation Application (SIA) and displays a screen showing the invitation 364. The invitee has the option of selecting a play button 359 or a snooze button 361. If the invitee selects the play button 359, a message is sent to the sender indicating that the invitee is ready to play. If the invitee does not want to play at the present moment, or does not want to play the turn based interactive game at any time, the sender selects the snooze button 361.

**[0081]** Upon selecting the snooze button 361, a display screen 366 with several pre-assigned response keys and a dismiss button 363 are displayed on the invitee's wireless device. Selecting the dismiss button 363 closes the interactive session and the invitee will not receive the invitation again. The pre-assigned response keys correspond to the length of snooze or delay before the invitation is resent to the invitee. Selecting one of the pre-assigned response keys will terminate or pause the interactive session for a period of time that the invitee selected. When a invitee selects the snooze button 361 and selects the length of pause, a status screen 368 is sent to the sender indicating that the player has selected the snooze button 361 and the length of pause that the invitee has selected. Upon receiving this screen, the sender can select a dismiss key 365 and close the interactive session or

select and OK button 367 accepting the invitee's delay and the pause selected by the invitee occurs 369.

**[0082]** After the length of pause selected by the invitee, a display screen showing the invitation 370 is pushed to the invitee's wireless device. The invitee now has the option of selecting a ready button 371 or another snooze button 373. If the invitee still does not want to play the turn based interactive game at the present moment, the invitee selects the snooze button 373 and the process as described with reference to screen 366 is repeated. If the invitee selects the ready button 371, a display screen 372 is sent or pushed to the sender advising the sender that the invitee is available to play. Upon receiving this screen 372, the sender can select a snooze key 377 and the process as described with reference to screen 366 is repeated or select a play button 375 and the turn based interactive game is initiated. Upon initiating the turn based interactive game, the turn based interactive game is pushed to the wireless device of the sender 379. Although chess is illustrated as the turn based interactive game in figure 15, any other type of turned based game such as checkers can be utilized.

**[0083]** Upon receiving the turn based interactive game, the sender has the option of again selecting a snooze key 381. If the sender selects the snooze key 381, the process as described with reference to screen 364 is repeated. If the sender opts to play the turn based interactive game, the sender selects a turn or location to move the chess piece by using a rocker switch on the sender's wireless device. Once the rocker switch positions a cursor on the location that the chess piece is to be moved to, the sender selects the OK button 379 and the senders move is sent to the invitee. Sending the move causes the turn based interactive game to initiate 376 on the invitee's wireless device and illustrate the sender's move. After receiving the sender's first move, the invitee has the option of again selecting a snooze key 385. If the invitee selects the snooze key 385, the process as described with reference to screen 366 is repeated. If the invitee opts to play the turn

based interactive game, the invitee selects a move or location to move the chess piece by using a rocker switch and sends his move to the sender by selecting the OK button 383. Upon selecting the OK button 383, the invitee's move appears on the wireless device 378 of the sender. As described previously, the sender again has the option of selecting a snooze button 389 or continuing to play the turn based interactive game and selecting an OK button 387 after deciding upon his move. If the OK button 387 is selected by the sender, the sender's move appears on a screen 380 on the invitee's wireless device. The invitee again has the option of selecting a snooze button 393 or continuing to play the turn based interactive game and selecting an OK button 391 after deciding upon his next move. This process continues until the completion of the game. Playing a turn based interactive game utilizing the present invention allows player to play at their leisure and respond with their next move at their convenience.

**[0084]** Although an exemplary embodiment of the invention has been described above by way of example only, it will be understood by those skilled in the field that modifications may be made to the disclosed embodiment without departing from the scope of the invention, which is defined by the appended claims.

**I CLAIM:**

## CLAIMS

1. A method for exchanging interactive messages with wireless devices comprising the steps of:

composing an interactive message by filling in a template and transmitting the interactive message to an application server, the message having at least one pre-assigned response key;

sending the message from the application server to a mobile access gateway for transforming the message into a format capable of being pushed to a at least one wireless device;

pushing the message to the at least one wireless device of at least one recipient, the at least one recipient communication with a sender of the message via the at least one wireless device and a sender's wireless device;

communicating a response through the application server to the sender, the response triggered by the at least one recipient selecting the at least one pre-assigned response key; and

the application server managing an interactive workflow and collaboration between the at least one recipient and the sender of the interactive message.

2. The method of claim 1, further comprising the step of determining if the at least one wireless device of the at least one recipient is capable of receiving the transformed message.

3. The method of claim 1, further comprising the steps of:

selecting predefined choices from drop down menus located on the template;

entering the name or phone number of the at least one recipient in the template; and

entering a mode for delivery of the response to the sender or others of the message in the template.

4. The method of claim 3, wherein the predefined choices are selected from a group comprising a type of template, the at least one recipient of the message and a priority of the message

5. The method of claim 3, further comprising the steps of entering responses in the template; and

corresponding the responses to the at least one pre-assigned response key.

6. The method of claim 3, further comprising the step of entering a time and date to send the message in the template.

7. The method of claim 3, wherein the mode is selected from a group consisting of electronic data exchange, e-mail, instant messaging, on-line response and WAP Push.

8. The method of claim 6, wherein the application server sends the message at the date and time indicated.

9. The method of claim 1, wherein responses to the message correspond to the at least one pre-assigned response key.

10. The method of claim 1, wherein the application server provides an open architecture for third party applications to access core services available in the application server for sending and managing an interactive message process.

11. The method of claim 1, further comprising the step of selecting a mode of delivery of a status and the response from the at least one recipient to the sender.

12. The method of claim 11, wherein the status and the response is delivered to the sender by email.

13. The method of claim 11, wherein the status and the response is delivered to the sender by WAP Push.

14. The method of claim 11, wherein the status and the response is delivered to the sender by instant messaging.

15. The method of claim 11, wherein the status and the response is delivered to the sender by on-line response.

16. The method of claim 1, wherein the at least one recipient maintains an access control list on the application server, the access control list contains a list of senders that are to be blocked from sending messages to the at least one recipient.

17. The method of claim 1, wherein the at least one recipient maintains a priority list on the application server, the priority list contains a level of intrusion of the message by the sender.

18. The method of claim 1, wherein the message is an invitation to participate in a telephone call and wherein if the at least one recipient is available, the at least one recipient automatically calls the sender by selecting the pre-assigned response key corresponding to a call button.

19. The method of claim 1, wherein the message is sent to the at least one recipient for participating in an event; and

wherein each of the at least one recipient responds with the availability of participating in the event by selecting a ready key if available and selecting a snooze key if unavailable.

20. The method of claim 19, wherein selecting the snooze key communicates to the application server to resend the message after a predetermined period of time indicated by the snooze key.

21. The method of claim 19, wherein the message server resend the message to the at least one recipient after a predetermined period of time to check availability of each of the at least one recipient.

22. The method of claim 21, wherein the application server summarizes responses from the each of the at least one recipient and sends the responses to the sender in the form of a summary list.

23. The method of claim 1, wherein the interactive message is an invitation to participate in a turn based interactive game.

24. The method of claim 23, wherein the sender and the at least one recipient initiate the start of the turn based interactive game.

25. The method of claim 24, wherein the pre-assigned response key is a move by the at least one recipient to the turn based interactive game is pushed to the sender.

26. The method of claim 24, wherein the pre-assigned response key is a move by sender to the turn based interactive game is pushed to the at least one recipient.

27. The method of claim 24, wherein the pre-assigned response key is a next move by the sender is pushed to the at least one recipient.

28. The method of claim 24, wherein the pre-assigned response key is a next move by the at least one recipient is pushed to the sender.

29. The method of claim 1, wherein the template is for entering learning curriculum.

30. The method of claim 29, wherein the learning curriculum is selected from a group consisting of trivia, foreign language, vocabulary, history, science, math and social science.

31. The method of claim 30, wherein the learning curriculum is entered in the form of a question.

32. The method of claim 31, wherein the at least one pre-assigned response key corresponds to possible answers to the learning curriculum.

33. The method of claim 1, wherein the template can include text, sound, graphics, WML, MIME, video or a turn based interactive game

34. The method of claim 1, wherein the message is sent to the at least one recipient using any enabling push technology.

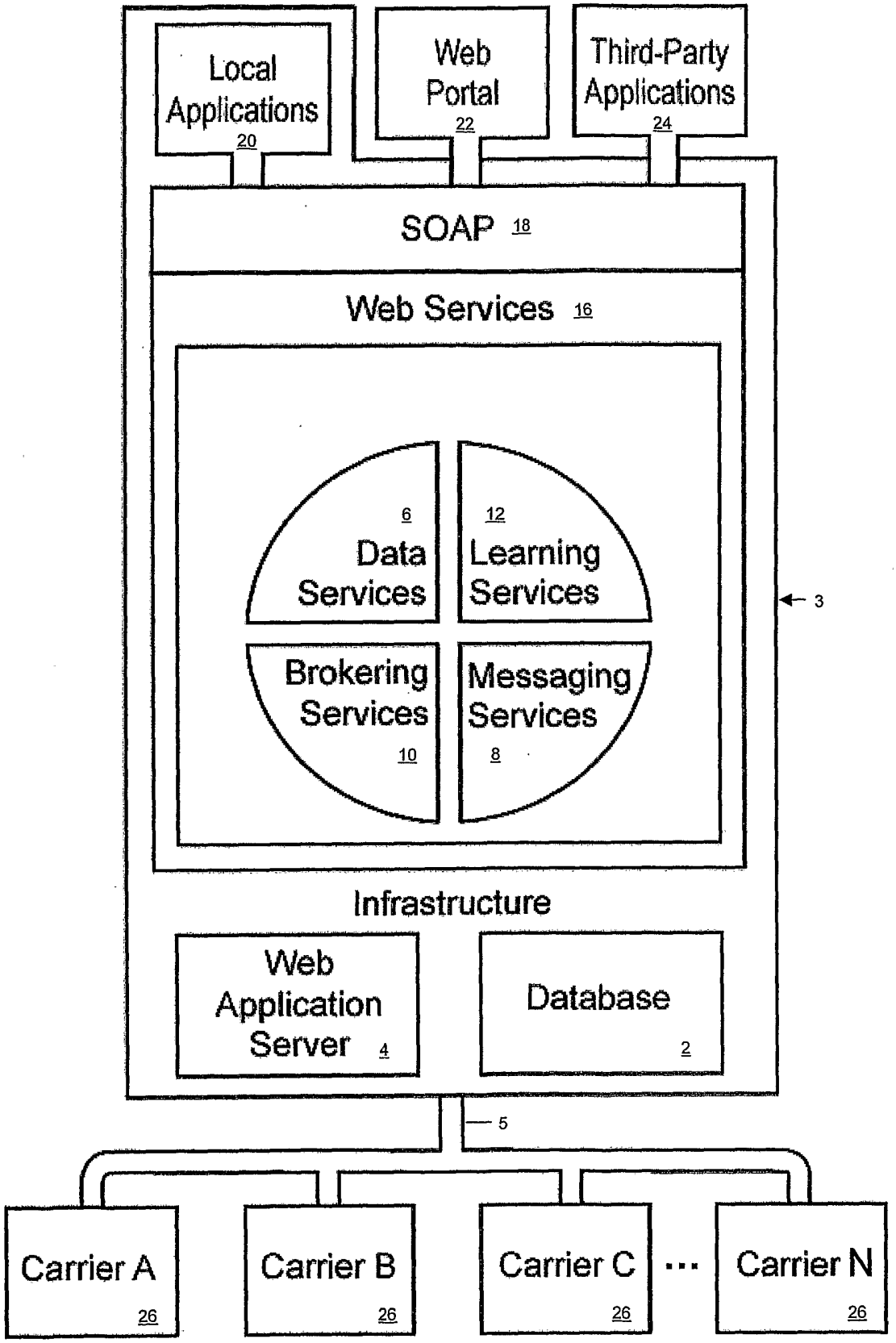
Local Applications 20
Web Portal 22
Third-Party Applications 24
SOAP 18
Web Services 16
6 Data Services
12 Learning Services
Brokering Services 10
Messaging Services 8
3
Infrastructure
Web Application Server 4
Database 2
5
Carrier A 26
Carrier B 26
Carrier C 26
Carrier N 26

FIG. 1

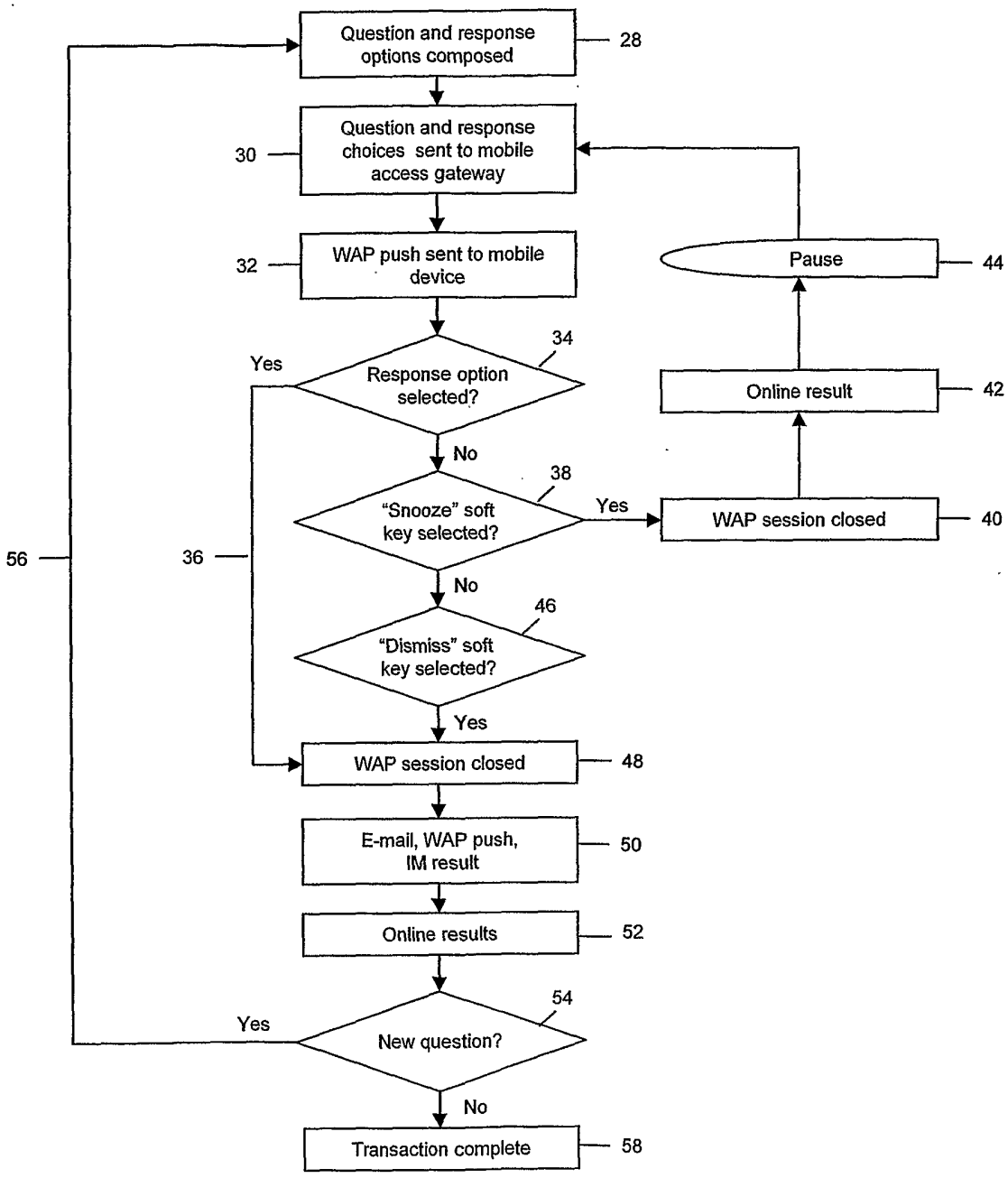
Question and response options composed
28
Question and response choices sent to mobile access gateway
30
WAP push sent to mobile device
32
Response option selected?
34
Yes
No
"Snooze" soft key selected?
38
Yes
WAP session closed
40
Online result
42
Pause
44
56
36
"Dismiss" soft key selected?
46
Yes
WAP session closed
48
E-mail, WAP push, IM result
50
Online results
52
New question?
54
Yes
No
Transaction complete
58

FIG. 2

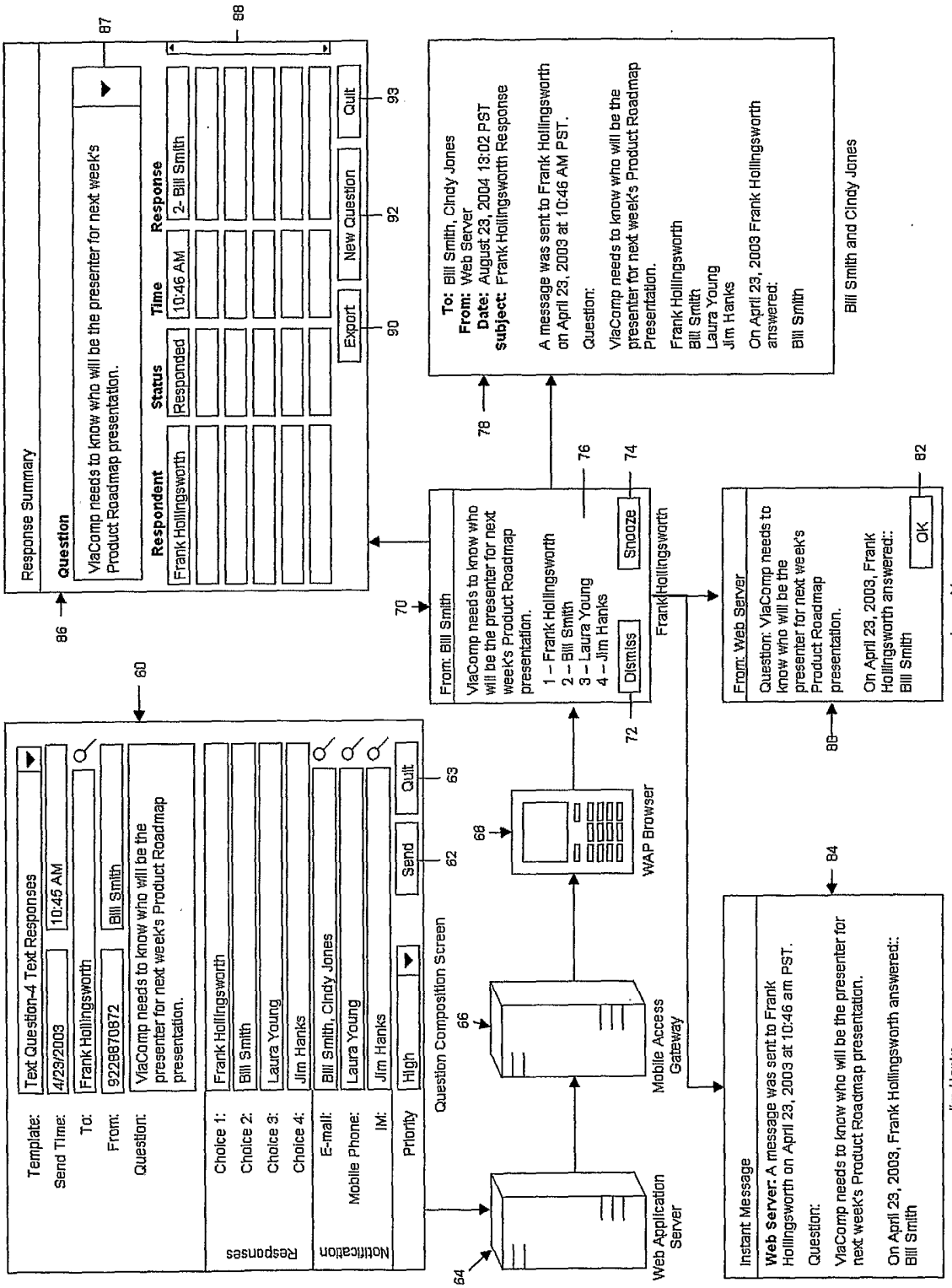
Response Summary
Question
ViaComp needs to know who will be the presenter for next week's Product Roadmap presentation.
Respondent
Status
Time
Response
Frank Hollingsworth
Responded
10:46 AM
2- Bill Smith
Export
New Question
Quit
Template:
Text Question-4 Text Responses
Send Time:
4/29/2003
10:45 AM
To:
Frank Hollingsworth
From:
9229870872
Bill Smith
Question:
ViaComp needs to know who will be the presenter for next week's Product Roadmap presentation.
Responses
Choice 1:
Frank Hollingsworth
Choice 2:
Bill Smith
Choice 3:
Laura Young
Choice 4:
Jim Hanks
Notification
E-mail:
Bill Smith, Cindy Jones
Mobile Phone:
Laura Young
IM:
Jim Hanks
Priority
High
Send
Quit
Question Composition Screen
Web Application Server
Mobile Access Gateway
WAP Browser
From: Bill Smith
ViaComp needs to know who will be the presenter for next week's Product Roadmap presentation.
1 – Frank Hollingsworth
2 – Bill Smith
3 – Laura Young
4 – Jim Hanks
Dismiss
Snooze
Frank Hollingsworth
To: Bill Smith, Cindy Jones
From: Web Server
Date: August 23, 2004 13:02 PST
Subject: Frank Hollingsworth Response
A message was sent to Frank Hollingsworth on April 23, 2003 at 10:46 AM PST.
Question:
ViaComp needs to know who will be the presenter for next week's Product Roadmap Presentation.
Frank Hollingsworth
Bill Smith
Laura Young
Jim Hanks
On April 23, 2003 Frank Hollingsworth answered:
Bill Smith
Bill Smith and Cindy Jones
From: Web Server
Question: ViaComp needs to know who will be the presenter for next week's Product Roadmap presentation.
On April 23, 2003, Frank Hollingsworth answered:
Bill Smith
OK
Laura Young
Instant Message
Web Server: A message was sent to Frank Hollingsworth on April 23, 2003 at 10:46 am PST.
Question:
ViaComp needs to know who will be the presenter for next week's Product Roadmap presentation.
On April 23, 2003, Frank Hollingsworth answered::
Bill Smith
Jim Hanks
60
62
63
64
66
68
70
72
74
76
78
80
82
84
86
87
88
90
92
93

FIG. 3

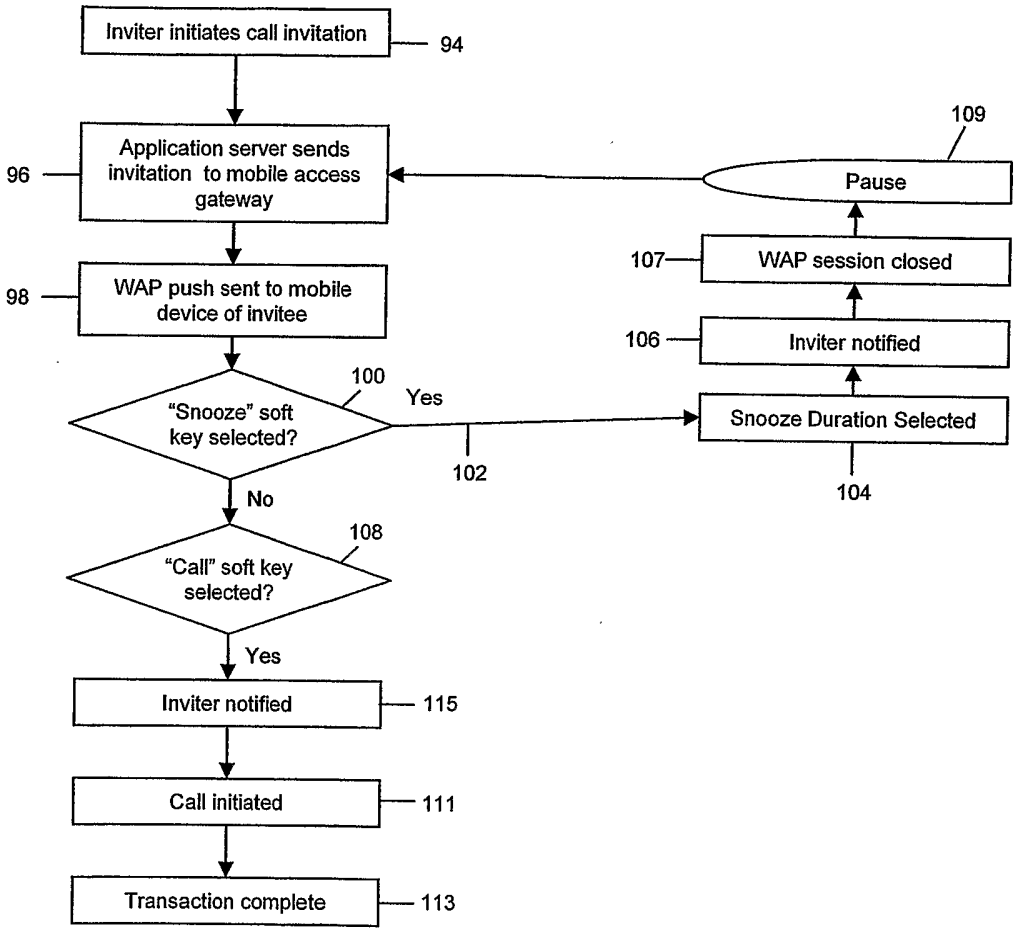
Inviter initiates call invitation
94
Application server sends invitation to mobile access gateway
96
WAP push sent to mobile device of invitee
98
"Snooze" soft key selected?
100
Yes
102
No
"Call" soft key selected?
108
Yes
Inviter notified
115
Call initiated
111
Transaction complete
113
Snooze Duration Selected
104
Inviter notified
106
WAP session closed
107
Pause
109

FIG. 4

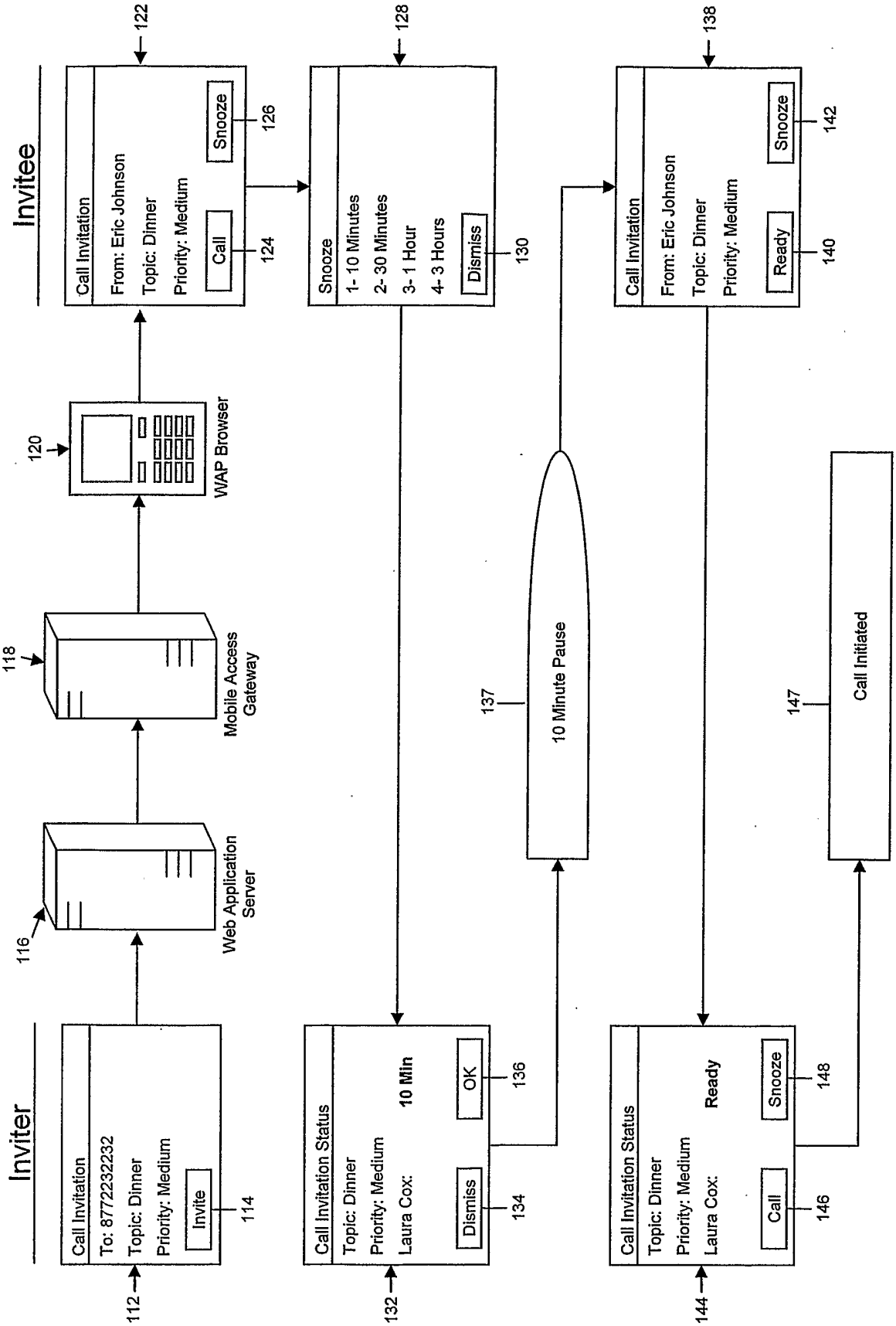
Inviter
Call Invitation
To: 8772232232
Topic: Dinner
Priority: Medium
Invite
114
112
116
Web Application Server
118
Mobile Access Gateway
120
WAP Browser
Invitee
Call Invitation
From: Eric Johnson
Topic: Dinner
Priority: Medium
Call
124
Snooze
126
122
Snooze
1- 10 Minutes
2- 30 Minutes
3- 1 Hour
4- 3 Hours
Dismiss
130
128
Call Invitation Status
Topic: Dinner
Priority: Medium
Laura Cox:
10 Min
Dismiss
134
OK
136
132
137
10 Minute Pause
Call Invitation
From: Eric Johnson
Topic: Dinner
Priority: Medium
Ready
140
Snooze
142
138
Call Invitation Status
Topic: Dinner
Priority: Medium
Laura Cox:
Ready
Call
146
Snooze
148
144
147
Call Initiated

FIG. 5

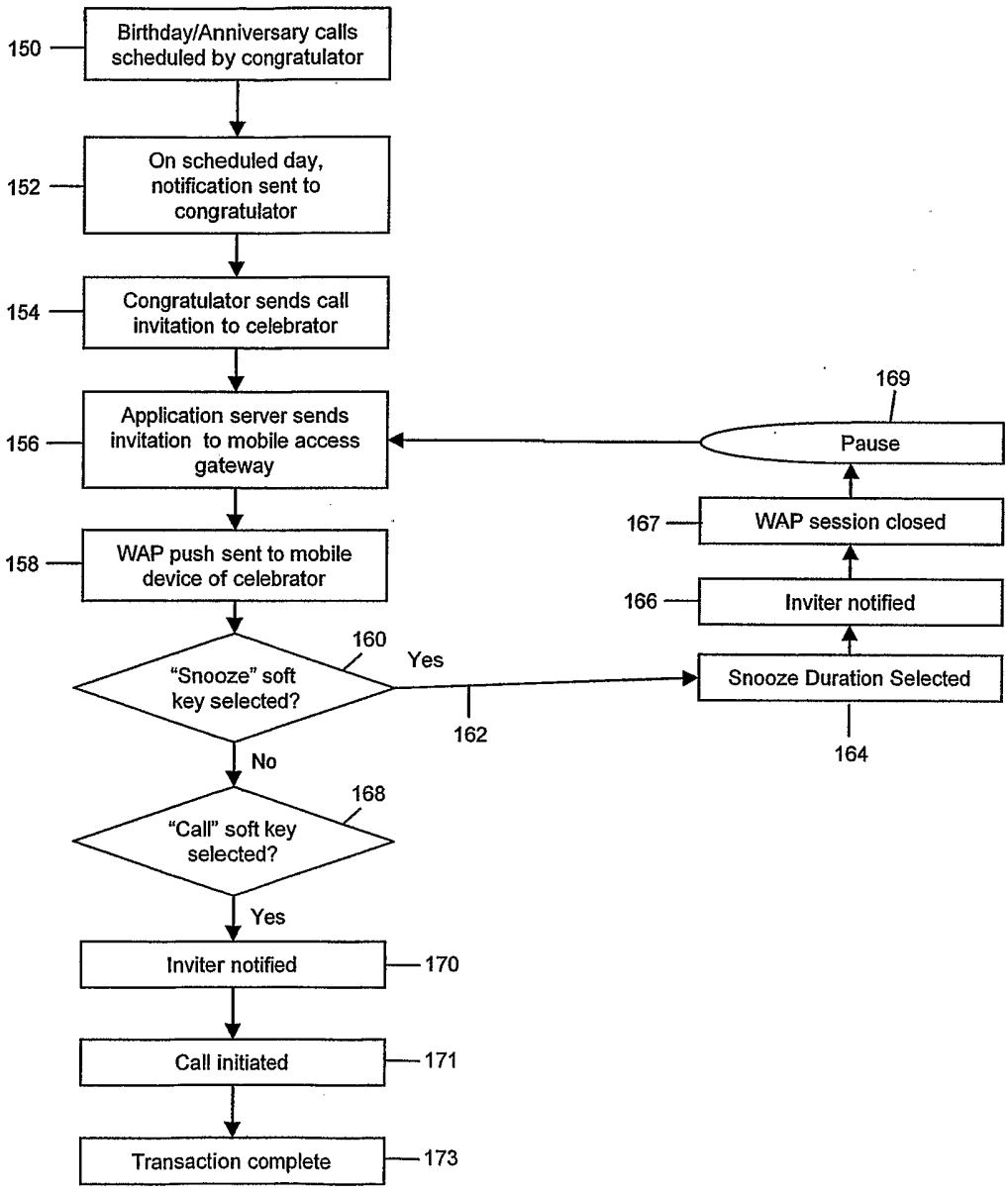
150
Birthday/Anniversary calls scheduled by congratulator
152
On scheduled day, notification sent to congratulator
154
Congratulator sends call invitation to celebrator
156
Application server sends invitation to mobile access gateway
158
WAP push sent to mobile device of celebrator
160
"Snooze" soft key selected?
Yes
162
No
168
"Call" soft key selected?
Yes
Inviter notified
170
Call initiated
171
Transaction complete
173
169
Pause
167
WAP session closed
166
Inviter notified
Snooze Duration Selected
164

FIG. 6

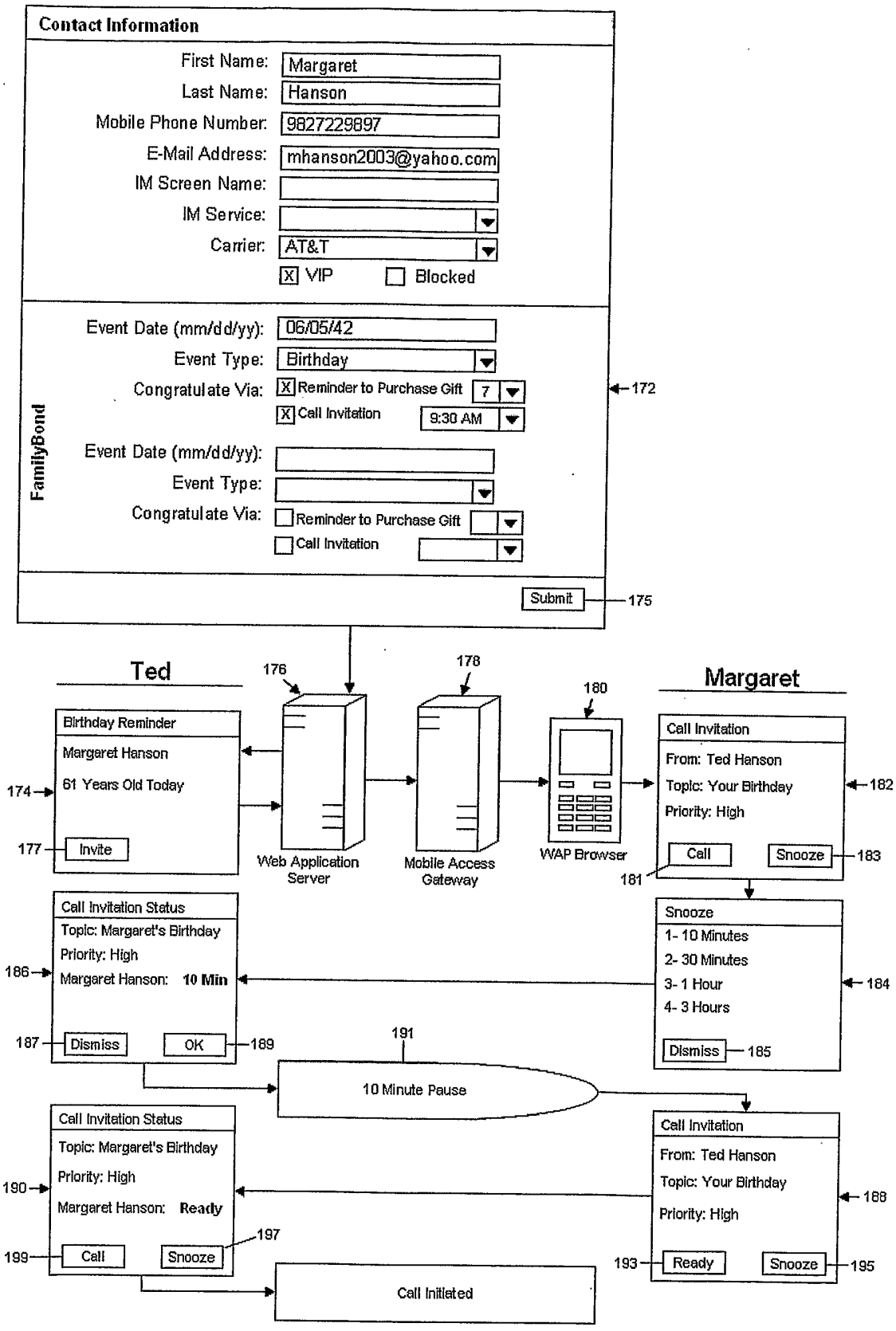
Contact Information
First Name: Margaret
Last Name: Hanson
Mobile Phone Number: 9827229897
E-Mail Address: mhanson2003@yahoo.com
IM Screen Name:
IM Service:
Carrier: AT&T
X VIP
Blocked
FamilyBond
Event Date (mm/dd/yy): 06/05/42
Event Type: Birthday
Congratulate Via: X Reminder to Purchase Gift 7
X Call Invitation 9:30 AM
Event Date (mm/dd/yy):
Event Type:
Congratulate Via: Reminder to Purchase Gift
Call Invitation
Submit
172
175
Ted
Margaret
176
178
180
Birthday Reminder
Margaret Hanson
61 Years Old Today
174
177
Invite
Web Application Server
Mobile Access Gateway
WAP Browser
Call Invitation
From: Ted Hanson
Topic: Your Birthday
Priority: High
Call
Snooze
182
183
181
Call Invitation Status
Topic: Margaret's Birthday
Priority: High
Margaret Hanson: 10 Min
186
187
Dismiss
OK
189
Snooze
1- 10 Minutes
2- 30 Minutes
3- 1 Hour
4- 3 Hours
184
Dismiss
185
191
10 Minute Pause
Call Invitation Status
Topic: Margaret's Birthday
Priority: High
Margaret Hanson: Ready
190
199
Call
Snooze
197
Call Invitation
From: Ted Hanson
Topic: Your Birthday
Priority: High
188
193
Ready
Snooze
195
Call Initiated

FIG. 7

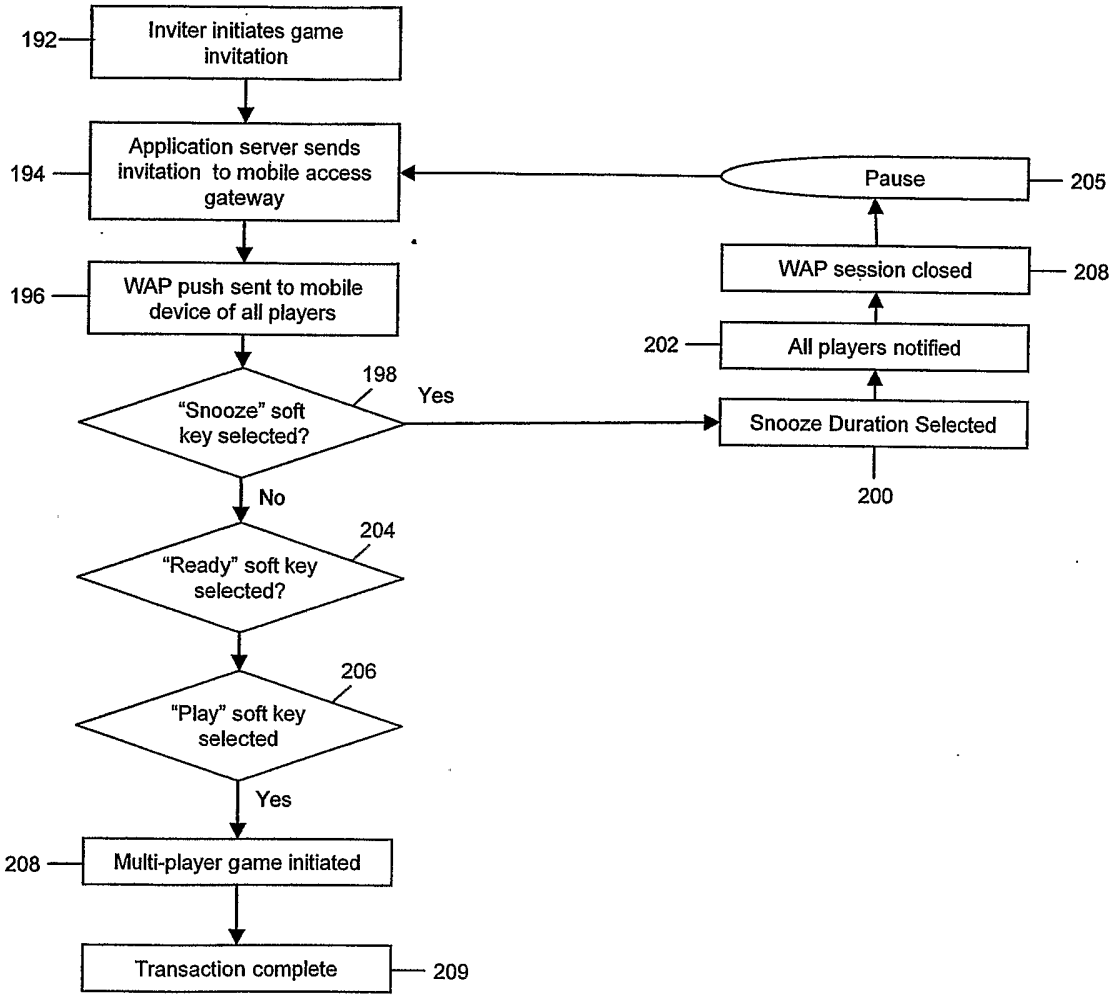
192
Inviter initiates game invitation
194
Application server sends invitation to mobile access gateway
196
WAP push sent to mobile device of all players
198
"Snooze" soft key selected?
Yes
No
204
"Ready" soft key selected?
206
"Play" soft key selected
Yes
208
Multi-player game initiated
Transaction complete
209
Pause
205
WAP session closed
208
202
All players notified
Snooze Duration Selected
200

FIG. 8

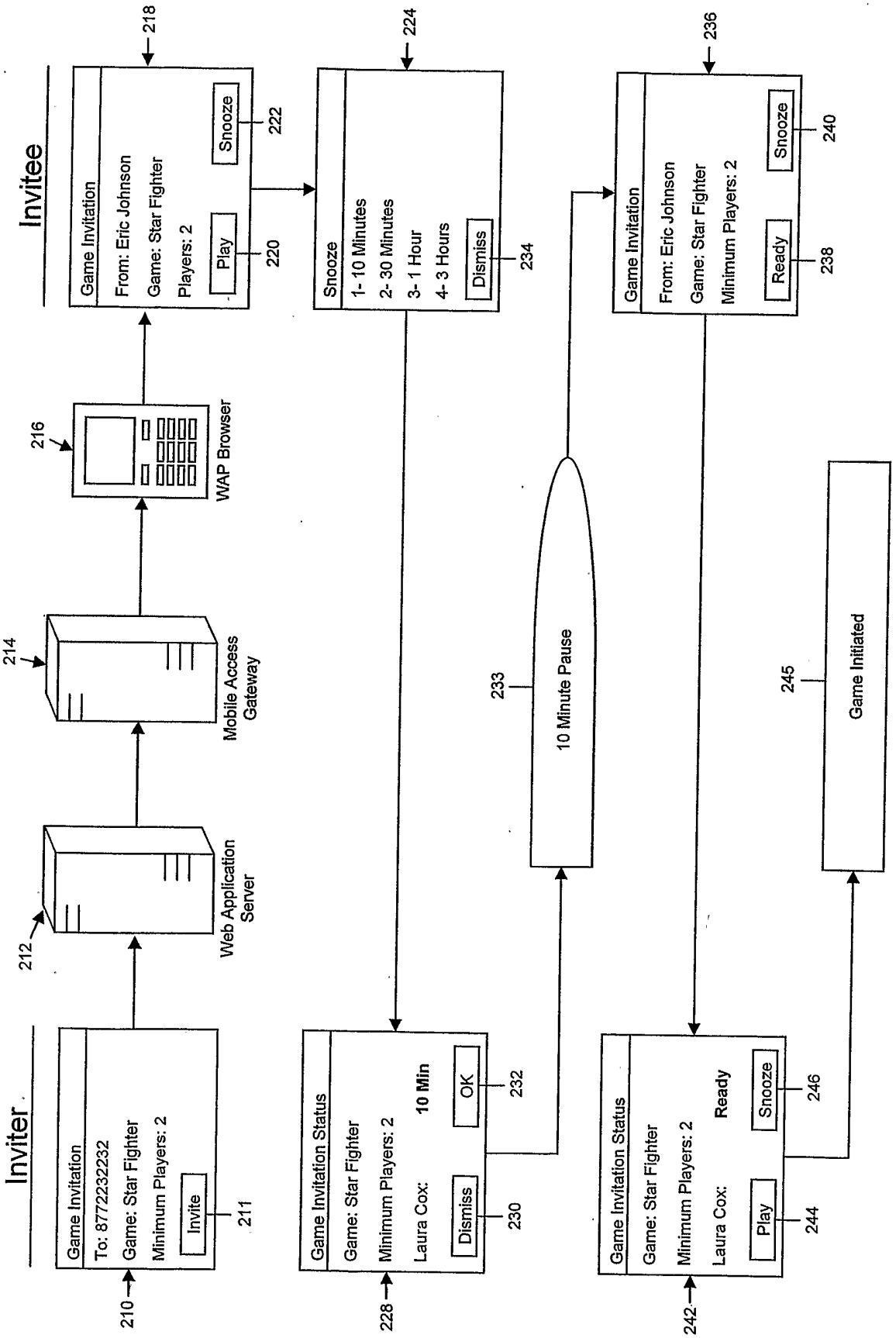
Inviter
Game Invitation
To: 8772232232
Game: Star Fighter
Minimum Players: 2
Invite
211
210
212
Web Application Server
214
Mobile Access Gateway
216
WAP Browser
Invitee
Game Invitation
From: Eric Johnson
Game: Star Fighter
Players: 2
Play
Snooze
220
222
218
Snooze
1- 10 Minutes
2- 30 Minutes
3- 1 Hour
4- 3 Hours
Dismiss
234
224
Game Invitation Status
Game: Star Fighter
Minimum Players: 2
Laura Cox: 10 Min
Dismiss
OK
230
232
228
233
10 Minute Pause
Game Invitation
From: Eric Johnson
Game: Star Fighter
Minimum Players: 2
Ready
Snooze
238
240
236
Game Invitation Status
Game: Star Fighter
Minimum Players: 2
Laura Cox: Ready
Play
Snooze
244
246
242
245
Game Initiated

FIG. 9

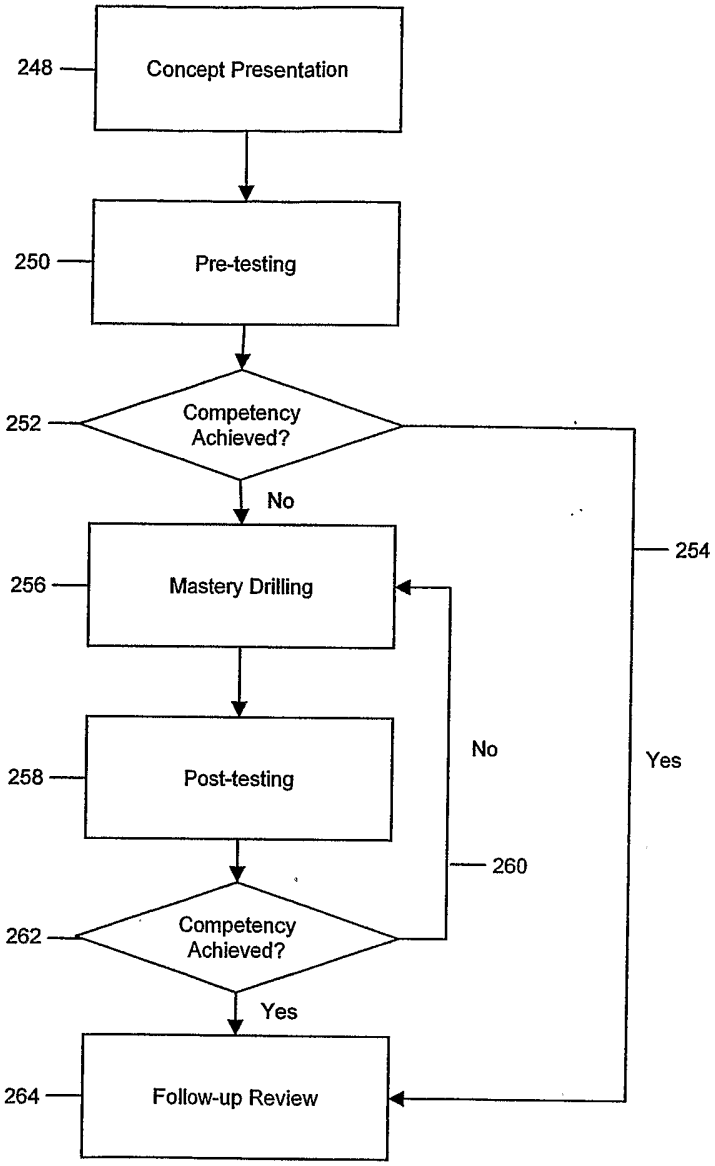
248
Concept Presentation
250
Pre-testing
252
Competency Achieved?
No
254
256
Mastery Drilling
258
Post-testing
No
Yes
260
262
Competency Achieved?
Yes
264
Follow-up Review

FIG. 10

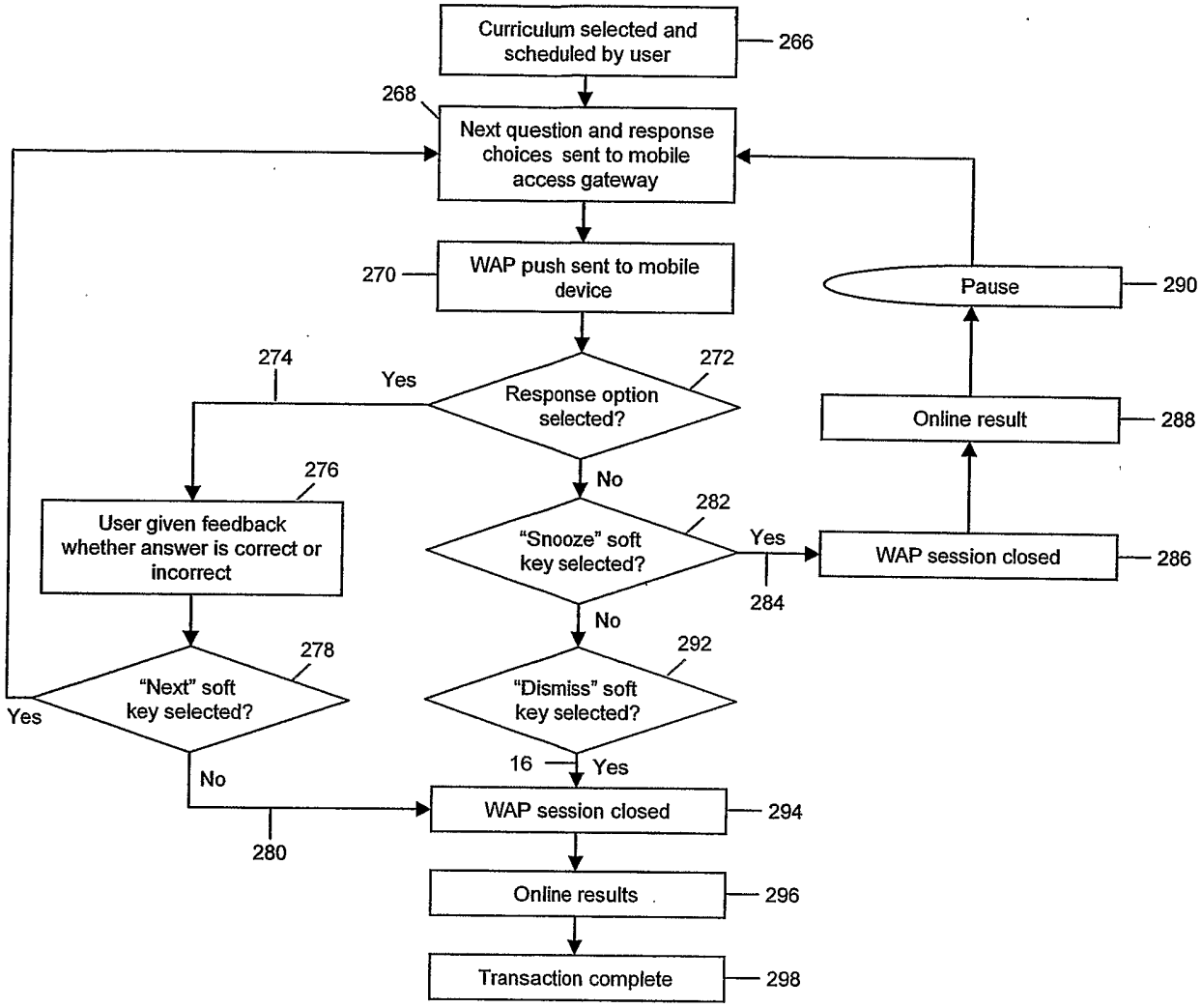
Curriculum selected and scheduled by user
266
268
Next question and response choices sent to mobile access gateway
WAP push sent to mobile device
270
Pause
290
274
Yes
272
Response option selected?
Online result
288
No
276
282
User given feedback whether answer is correct or incorrect
"Snooze" soft key selected?
Yes
WAP session closed
286
284
No
278
292
"Next" soft key selected?
"Dismiss" soft key selected?
Yes
16
Yes
No
WAP session closed
294
280
Online results
296
Transaction complete
298

FIG. 11

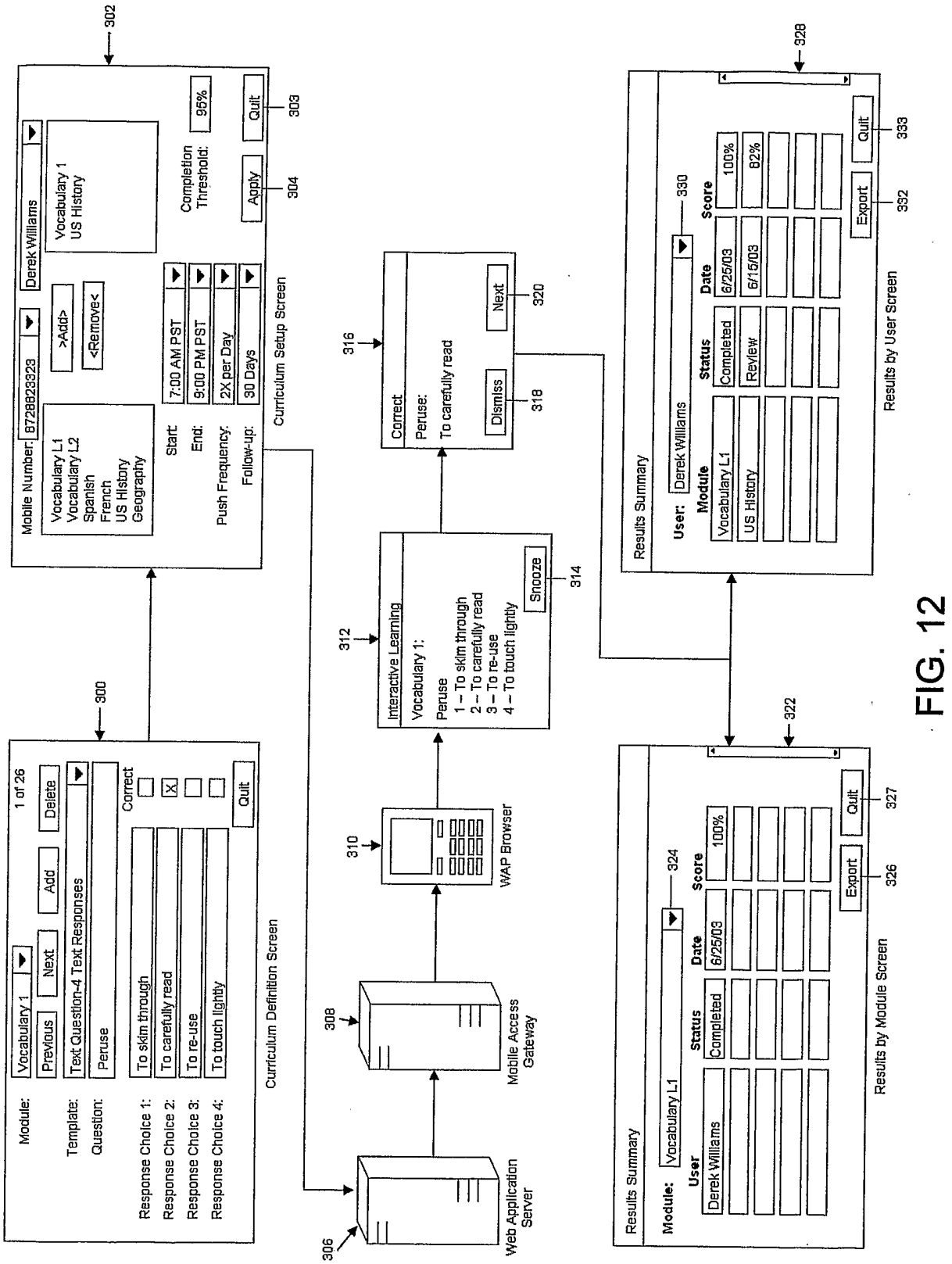
302
Mobile Number: 8728823328
Derek Williams
Vocabulary L1
Vocabulary L2
Spanish
French
US History
Geography
>Add>
<Remove<
Vocabulary 1
US History
Start:
End:
Push Frequency:
Follow-up:
7:00 AM PST
9:00 PM PST
2X per Day
90 Days
Completion Threshold:
95%
Apply
Quit
304
309
Curriculum Setup Screen
300
Module:
Vocabulary 1
1 of 26
Previous
Next
Add
Delete
Template:
Text Question-4 Text Responses
Question:
Peruse
Correct
Response Choice 1:
To skim through
Response Choice 2:
To carefully read
Response Choice 3:
To re-use
Response Choice 4:
To touch lightly
Quit
Curriculum Definition Screen
306
Web Application Server
308
Mobile Access Gateway
310
WAP Browser
312
Interactive Learning
Vocabulary 1:
Peruse
1 – To skim through
2 – To carefully read
3 – To re-use
4 – To touch lightly
Snooze
314
316
Correct
Peruse:
To carefully read
Dismiss
Next
318
320
322
Results Summary
Module:
Vocabulary L1
User
Derek Williams
Status
Completed
Date
6/25/03
Score
100%
Export
Quit
324
326
327
Results by Module Screen
328
Results Summary
User:
Derek Williams
330
Module
Vocabulary L1
US History
Status
Completed
Review
Date
6/25/03
6/15/03
Score
100%
82%
Export
Quit
332
333
Results by User Screen

FIG. 12

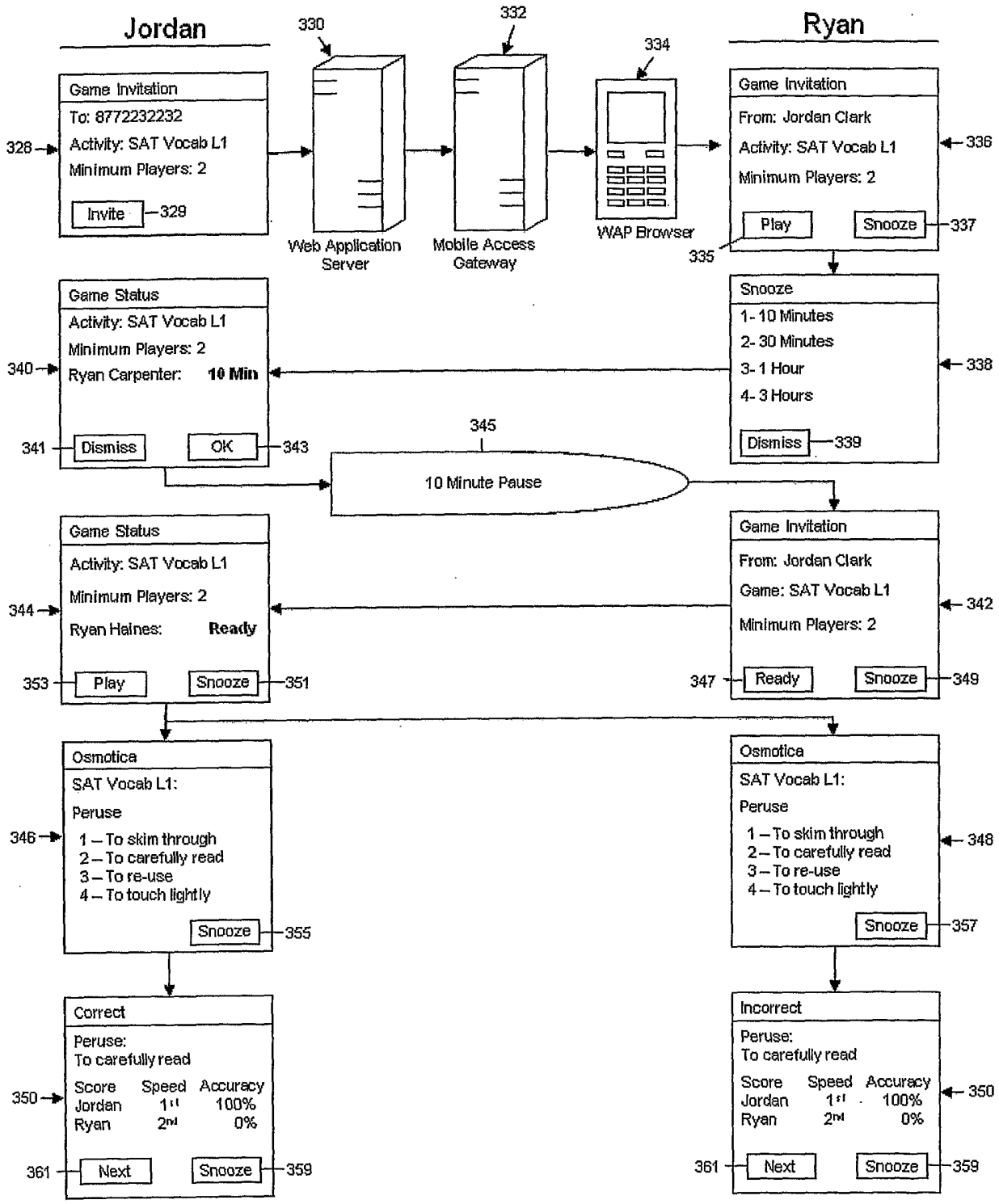
Jordan
Ryan
330
332
334
Game Invitation
To: 8772232232
Activity: SAT Vocab L1
Minimum Players: 2
Invite
329
328
Web Application Server
Mobile Access Gateway
WAP Browser
Game Invitation
From: Jordan Clark
Activity: SAT Vocab L1
Minimum Players: 2
Play
Snooze
337
336
335
Snooze
1- 10 Minutes
2- 30 Minutes
3- 1 Hour
4- 3 Hours
Dismiss
339
338
Game Status
Activity: SAT Vocab L1
Minimum Players: 2
Ryan Carpenter: 10 Min
340
341
Dismiss
OK
343
345
10 Minute Pause
Game Status
Activity: SAT Vocab L1
Minimum Players: 2
Ryan Haines: Ready
344
353
Play
Snooze
351
Game Invitation
From: Jordan Clark
Game: SAT Vocab L1
Minimum Players: 2
342
347
Ready
Snooze
349
Osmotica
SAT Vocab L1:
Peruse
1 – To skim through
2 – To carefully read
3 – To re-use
4 – To touch lightly
346
Snooze
355
Osmotica
SAT Vocab L1:
Peruse
1 – To skim through
2 – To carefully read
3 – To re-use
4 – To touch lightly
348
Snooze
357
Correct
Peruse:
To carefully read
Score Speed Accuracy
Jordan 1st 100%
Ryan 2nd 0%
350
361
Next
Snooze
359
Incorrect
Peruse:
To carefully read
Score Speed Accuracy
Jordan 1st 100%
Ryan 2nd 0%
350
361
Next
Snooze
359

FIG. 13

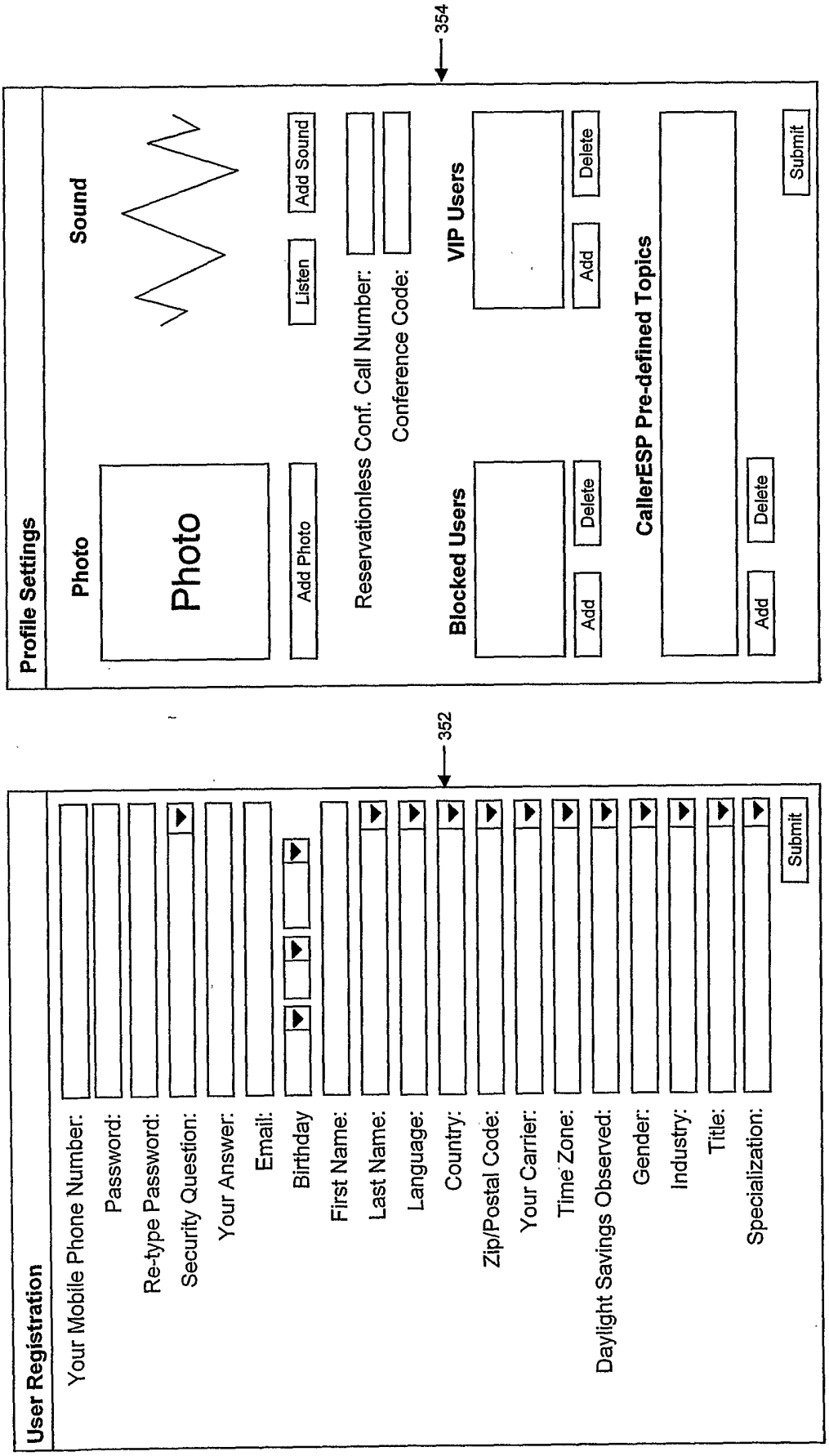
User Registration
Your Mobile Phone Number:
Password:
Re-type Password:
Security Question:
Your Answer:
Email:
Birthday
First Name:
Last Name:
Language:
Country:
Zip/Postal Code:
Your Carrier:
Time Zone:
Daylight Savings Observed:
Gender:
Industry:
Title:
Specialization:
Submit
352
Profile Settings
Photo
Photo
Add Photo
Sound
Listen
Add Sound
Reservationless Conf. Call Number:
Conference Code:
Blocked Users
Add
Delete
VIP Users
Add
Delete
CallerESP Pre-defined Topics
Add
Delete
Submit
354

FIG. 14

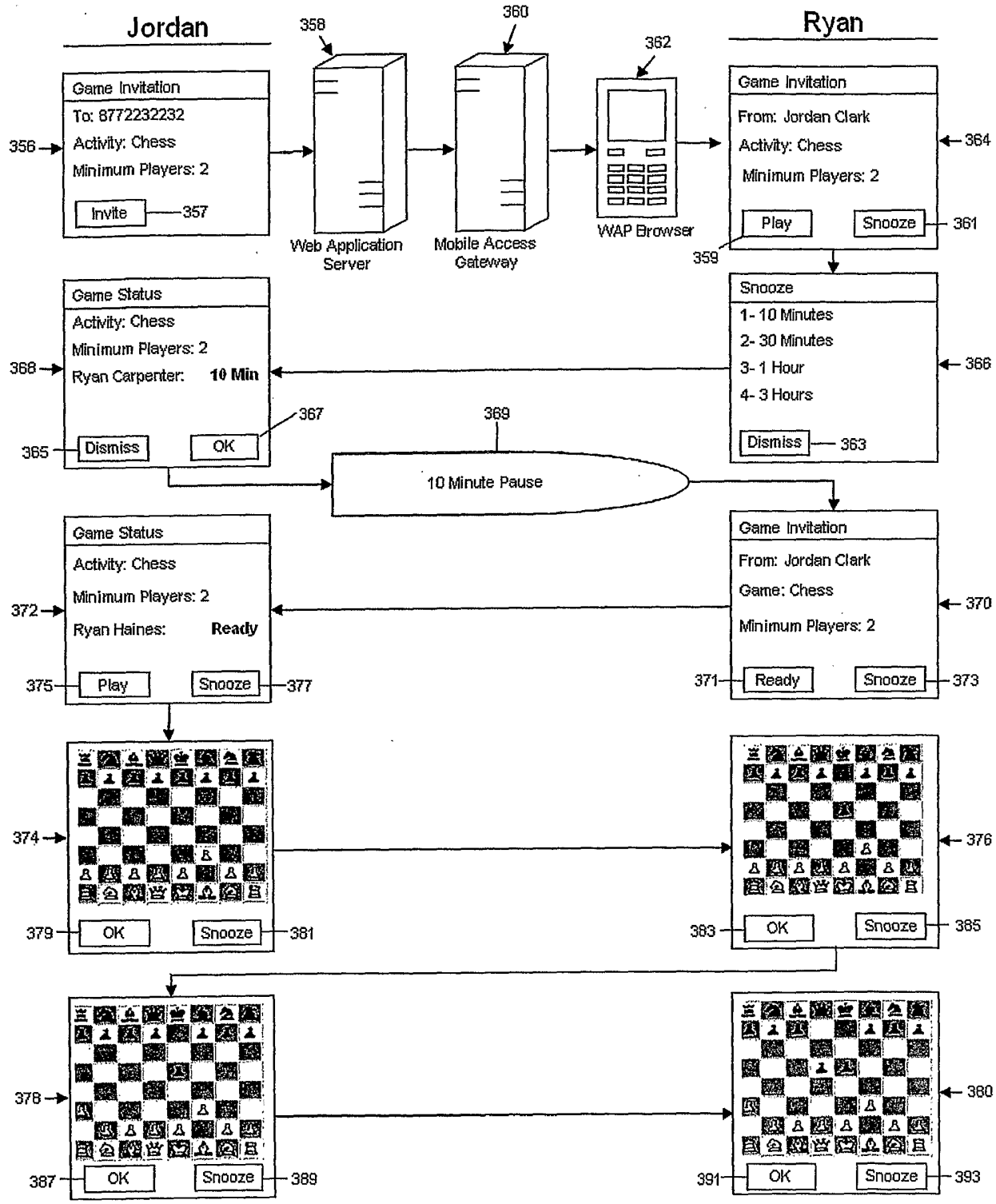
Jordan
Ryan
358
360
362
Game Invitation
To: 8772232232
Activity: Chess
Minimum Players: 2
Invite
357
356
Web Application Server
Mobile Access Gateway
WAP Browser
Game Invitation
From: Jordan Clark
Activity: Chess
Minimum Players: 2
Play
Snooze
361
364
359
Game Status
Activity: Chess
Minimum Players: 2
Ryan Carpenter: 10 Min
Dismiss
OK
367
365
368
Snooze
1- 10 Minutes
2- 30 Minutes
3- 1 Hour
4- 3 Hours
Dismiss
363
366
369
10 Minute Pause
Game Status
Activity: Chess
Minimum Players: 2
Ryan Haines: Ready
Play
Snooze
375
377
372
Game Invitation
From: Jordan Clark
Game: Chess
Minimum Players: 2
Ready
Snooze
371
373
370
374
379
OK
Snooze
381
383
OK
Snooze
385
376
378
387
OK
Snooze
389
391
OK
Snooze
393
380

FIG. 15