

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
10 November 2005 (10.11.2005)

PCT

(10) International Publication Number  
**WO 2005/107283 A1**

(51) International Patent Classification<sup>7</sup>: **H04Q 7/20**,  
7/32, 7/38

Gerhard, D.; 510 Heatherhill Place, Waterloo, Ontario  
N2T 1H7 (CA). **WORMALD, Christopher, R.**; 215  
Hawkswood Drive, Kitchener, Ontario N2K 4J2 (CA).

(21) International Application Number:  
PCT/CA2005/000290

(74) Agents: **KINSMAN, Anne, L.** et al.; Borden Ladner Ger-  
vais LLP, World Exchange Plaza, 100 Queen Street, Suite  
1100, Ottawa, Ontario K1P 1J9 (CA).

(22) International Filing Date: 28 February 2005 (28.02.2005)

(25) Filing Language: English

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

(26) Publication Language: English

(30) Priority Data:  
60/567,598 3 May 2004 (03.05.2004) US

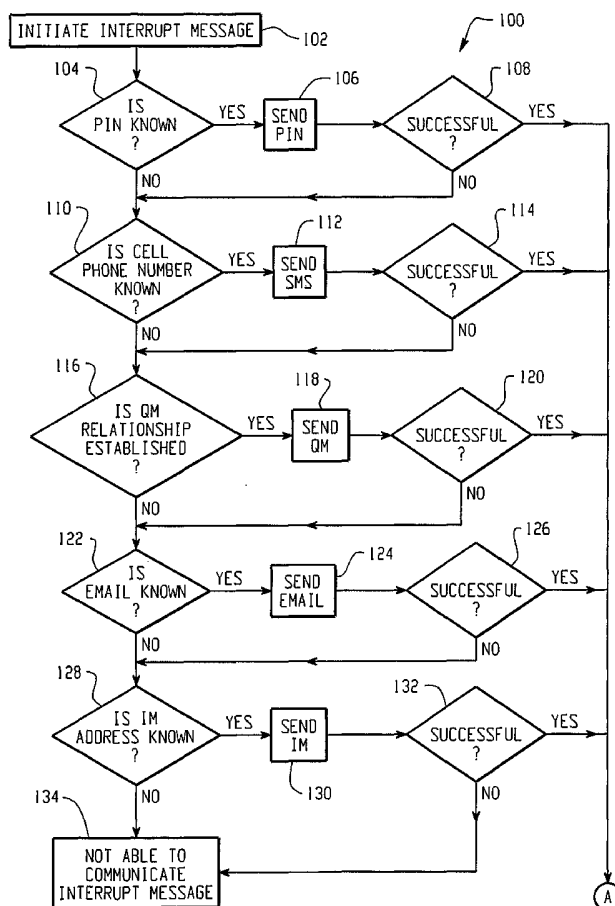
(71) Applicant (for all designated States except US): **RE-  
SEARCH IN MOTION LIMITED** [CA/CA]; 295 Philip  
Street, Waterloo, Ontario K2L 3W8 (CA).

(72) Inventors: **HARDY, Michael, Thomas**; 559 Paradise  
Crescent, Waterloo, Ontario N2T 2J8 (CA). **KLASSEN**,

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR INTERRUPT CONTROL ON A HANDHELD DEVICE



(57) Abstract: An interrupt message is sent over one of a plurality of transport mediums from a first mobile device to a second mobile device. The interrupt message may include a first mobile device identifier associated with a transport medium that is independent of the plurality of transport mediums. Upon receipt of the interrupt message at the second mobile device an interruption of any current mobile device operation may occur to notify a user of the interrupt message.



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

TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

**Declaration under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,

**Published:**

- with international search report  
— with amended claims

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## SYSTEM AND METHOD FOR INTERRUPT CONTROL ON A HANDHELD DEVICE

### FIELD OF THE INVENTION

5           This disclosure generally relates to mobile communication devices, and particularly relates to processing time sensitive messages.

### BACKGROUND

10           A communication may be routine, which may or may not invite a reply, or may be time sensitive, which may require a prompt reply. For example, a routine message may be an e-mail message that includes marketing materials to be approved within the next ten days. A time sensitive message may be a message conveying a last-minute change of the scheduled start time of a meeting. Messages of the latter type often request an immediate response from the recipient, as the sender often desires acknowledgement that the recipient  
15           has received the message.

          When such time sensitive messages are communicated by voice, e.g., a phone call or a "push-to-talk" cellular operation, the sender receives immediate acknowledgement from the recipient. However, when time sensitive messages are communicated via data transmission, e.g., e-mail, short messaging service (SMS) or other such transport mediums  
20           commonly supported by mobile communication devices, the sender may not receive acknowledgement from the recipient in a timely manner. Furthermore, the sender may not receive notification of receipt of a time sensitive message by the recipient's mobile communication device.

          Disclosed herein are systems and methods for facilitating an interrupt message  
25           between a plurality of mobile communication devices. The mobile devices may support a plurality of transport mediums. An interrupt message is sent over one of a plurality of transport mediums from a first mobile device to a second mobile device. The interrupt message may include a mobile device identifier associated with one of the plurality of transport mediums and independent of the transport medium over which the interrupt  
30           message is sent. Upon receipt of the interrupt message at the second mobile device, an interruption of any current mobile device operation may occur to notify a recipient user of the interrupt message.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an example structure block diagram of a system for providing an interrupt message between a plurality of mobile devices;

5 Figs. 2 and 3 provide an example process flow diagram for a method of providing an interrupt message between a plurality of mobile devices;

Fig. 4 is an illustration of an example program environment for creating an interrupt message;

Fig. 5 is an illustration of an example program environment in which a user of a mobile device is notified that an interrupt message has been received;

10 Fig. 6 is an illustration of an example program environment in which a user may reply to interrupt message;

Fig. 7 is an illustration of an example Quick Message environment for replying to an interrupt message;

15 Fig. 8 is a block diagram of an example system for redirecting electronic messages to and from a mobile communication device; and

Fig. 9 is a block diagram illustrating an example mobile communication device.

## DETAILED DESCRIPTION

Fig. 1 is an example structure block diagram of a system 10 for providing an interrupt message between a plurality of mobile communication devices 20 and 40. The first mobile device 20 may support a plurality of communications modes 22, 24 and 26 for communicating over one or more networks 30. Each communication mode 22, 24 and 26 may be associated with a particular transport medium, as indicated by the associated reference loop 28. For example, if the communication modes 22, 24, and 26 are e-mail, PIN and SMS, respectively, then the associated transport mediums may include an e-mail transport medium, a PIN transport medium, (e.g., a transport medium for communications addressed by a SIM PIN associated with a user of a mobile device or a unique identifier associated with a mobile device), and an SMS transport medium. Additional communication modes and corresponding transport mediums may also be supported, depending on the communication capabilities of the mobile device 20. The second mobile device 40 may likewise support a plurality of similar communication functions 22, 24 and 26 associated with transport mediums 28 over the networks 30.

An interrupt message 50 facilitates time critical communication between the mobile devices 20 and 40. The interrupt message 50 may comprise a message portion 52 and a first mobile device identifier 54 associated with one of the plurality of transport mediums 28. In the example of Fig. 1, the first mobile device identifier 54 comprises a  
5 mobile device PIN number D1 associated with a PIN transport medium.

At any given time, the mobile device 20 may not be presently operable to receive data over one or more of the transport mediums 28; likewise, the mobile device 40 may not be presently operable to receive data over one or more of the transport mediums 28. For example, the mobile device 20 may be out of data coverage for the transport medium  
10 associated with communication mode 22, but may be in data coverage for the transport medium associated with communication modes 24 and 26. Thus, the mobile device 20 may be presently operable to receive and send PIN and SMS communications, but not presently operable to receive e-mail communications.

In one embodiment, the mobile device 20 is operable to automatically select a  
15 transport medium 28 for an interrupt message 50. In this embodiment, the sender does not need to choose a particular transport medium; the mobile device 20 determines which transport mediums 28 are available and may select the fastest and/or most robust transport medium available.

The automatically-selected transport medium may be independent of the transport  
20 medium associated with the mobile device identifier 54, i.e., the automatically-selected transport medium need not necessarily be the transport medium associated with the mobile device identifier 54. Thus, selection of the transport medium for transmitting the interrupt message is independent of the mobile device identifier 54 that may be included in the interrupt message. For example, the mobile device identifier 54 may comprise a mobile  
25 device PIN D1, which is associated with a PIN transport medium, but the automatically-selected transport medium may be the SMS transport medium or the e-mail transport medium.

In this example embodiment, the mobile device identifier 54 is included so that the recipient may establish a quick messaging session with the sender. The quick messaging  
30 session may be independent of the communication mode and associated transport medium over which the interrupt message 50 was transmitted. For example, upon receiving an interrupt message by e-mail, the user of the mobile device 40 may establish a peer-to-peer communication with the mobile device 20 over the PIN transport medium.

Interrupt message indicia to identify the message 50 as an interrupt message type may be included in the message body 52, or may be included with the mobile device identifier 54. In one embodiment, the presence of the mobile device identifier 54 provides the indicia of an interrupt message.

5        Upon receiving a message over one of the transport mediums 28, the second mobile device 40 determines if the received message is an interrupt message 50. This determination may be made based on the interrupt message indicia. If the message is determined to be an interrupt message 50, then the second mobile device 40 may be operable to interrupt any current operation or operating mode. For example, if the user of  
10   the mobile device 40 is viewing an Internet web page or drafting a document on the mobile device 40, then the Internet session or editor program may be interrupted with a notification of receipt of an interrupt message 50.

      In one embodiment, a dialogue box in the user interface will appear, indicating an incoming interrupt message 50. The user of the mobile device 40 will have the choice of  
15   answering or ignoring the incoming interrupt message 50. In one embodiment, if the user answers the interrupt message 50, the user is presented with an option to send an automatic acceptance confirmation message back to the first mobile device 20, or to send a custom reply message back to the first mobile device 20. The custom reply message may comprise a similar interrupt message 60, which includes a message portion 62 and a  
20   device identifier 64. Alternatively, the custom reply may comprise a request to establish a peer-to-peer communication between the first and second mobile devices 20 and 40 so that both users may communicate in real time. Other custom reply messages may also be used.

      In another embodiment, the second mobile device 40 sends a delivery notification message back to the first mobile device 20 upon detecting that the received message from  
25   the first mobile device 20 is an interrupt message 50. The delivery notification message is sent independently of any user action, and thus the sender of the interrupt message 50 is notified of receipt of the interrupt message 50 independent of any action by the recipient user.

      In another embodiment, the interrupt message will be transmitted to the second  
30   mobile device 40 over an SMS transport if the second mobile device 40 is operating in a telephone communication mode. In this embodiment, the user of the second mobile device 40 will still be able to choose to accept the message and on such acceptance a delivery confirmation message is sent back to the first mobile device 20. The user of the

second mobile device 40, however, must terminate the telephone communication mode if the user desires to reply to the interrupt message 50.

Figs. 2 and 3 provide an example process flow diagram 100 for a method of providing an interrupt message between a plurality of mobile devices. In step 102, a user of a first mobile device initiates an interrupt message to be sent to a recipient associated with a second mobile device. The interrupt message may be initiated by a menu option, an address book option, or by some other initiation process.

In step 104, the first mobile device determines if the PIN of the second mobile device is known. If the PIN of the second mobile device is known, then in step 106 the interrupt message is transmitted over the PIN transport medium. Thereafter, step 108 determines if the interrupt message was successfully transmitted. This determination may be made, for example, by receipt of a delivery notification message automatically sent by the second mobile device within a specified time period, or by the receipt of an error message. If step 108 determines that the interrupt message was not successfully sent, then step 110 is executed.

In step 110, the first mobile device determines if the cellular number of the second mobile device is known. If the cellular number of the second mobile device is known, then in step 112 the interrupt message is transmitted over the SMS transport medium. Thereafter, step 114 determines if the interrupt message was successfully transmitted. This determination may be made, for example, by receipt of a delivery notification message automatically sent by the second mobile device within a specified time period, or by the receipt of an error message. If step 114 determines that the interrupt message was not successfully sent, then step 116 is executed.

In step 116, the first mobile device determines if a quick message relationship has been established between the first and second mobile devices. If a quick message relationship has been established, then in step 118 the interrupt message is transmitted via a quick message. Thereafter, step 120 determines if the interrupt message was successfully transmitted. This determination may be made, for example, by receipt of a delivery notification message automatically sent by the second mobile device within a specified time period, or by the receipt of an error message. If step 120 determines that the interrupt message was not successfully sent, then step 122 is executed.

In step 122, the first mobile device determines if the e-mail address of the second mobile device is known. If the e-mail address of the second mobile device is known, then

in step 124 the interrupt message is transmitted over the e-mail address transport medium. Thereafter, step 126 determines if the interrupt message was successfully transmitted. This determination may be made, for example, by receipt of a delivery notification message automatically sent by the second mobile device within a specified time period, or  
5 by the receipt of an error message. If step 126 determines that the interrupt message was not successfully sent, then step 128 is executed.

In step 128, the first mobile device determines if an instant message address of the second mobile device is known. If the instant message address of the second mobile device is known, then in step 130 the interrupt message is transmitted via an instant  
10 message. Thereafter, step 132 determines if the interrupt message was successfully transmitted. This determination may be made, for example, by receipt of a delivery notification message automatically sent by the second mobile device within a specified time period, or by the receipt of an error message. If step 132 determines that the interrupt message was not successfully sent, then step 134 issues an error message to notify the user  
15 of the first mobile device that the interrupt message could not be sent.

If any of steps 108, 114, 120, 126 or 132 determine the interrupt message was successfully sent, then processing of the interrupt message continues at the second mobile device, as illustrated in Fig. 3. Beginning at step 136, the second mobile device determines whether the recipient user accepts the interrupt message.

20 If the second mobile device determines that the user accepts the interrupt message, then step 138 displays the interrupt message, and step 140 sends a delivery notification message back to the first mobile device.

In one embodiment, the delivery notification may be sent over a transport medium that is independent of the transport medium over which the interrupt message was sent.  
25 For example, if the interrupt message was sent over a PIN transport medium, the delivery notification may be sent over an e-mail transport medium.

In another embodiment, the delivery notification may be sent over a transport medium that is associated with the sender's mobile device identifier included in the interrupt message. For example, if the interrupt message was sent over an SMS transport  
30 medium, the delivery notification may be sent over a PIN transport medium.

Step 142 determines whether the user of the second mobile device types a reply to the interrupt message. If the user does type a reply to the interrupt message, step 144 establishes a Quick Messaging relationship between the first and second mobile devices so

that the users may communicate in real time. Processing of the interrupt message is then complete, and the process ends.

Returning to step 136, if the second mobile device determines that the user does not accept the interrupt message, then step 146 transmits a "User Busy" reply message to  
5 the first mobile device, and the process ends.

In another embodiment, receiving an interrupt message at a mobile device automatically interrupts any current mobile device operation and displays the interrupt message. Thereafter, the user of the mobile device may be precluded from resuming normal mobile device operations until the user acknowledges the interrupt message.  
10 Accordingly, the sender of the interrupt message is assured that the recipient will have read the interrupt message.

Transport mediums may also be selected by other methods. For example, in another embodiment, transport mediums may be selected according to a session initiated protocol (SIP). SIP is a text-based signaling protocol, similar to HTTP and SMTP, for  
15 initiating interactive communication sessions between users.

Fig. 4 is an illustration of an example program environment 200 for creating an interrupt message. The program environment 200 may be generated after searching for contact information of an intended recipient. A first selection bar 202 indicates an intended message recipient, and a menu window 204 displays a plurality of  
20 communication options 206, 208, 210, 212 and 214 that may be used to communicate with the intended recipient. Additional functions 216, such as address book functions, may also be displayed in the menu window 204.

In this example, the mobile device has e-mail, PIN, telephone and SMS contact data associated with the intended recipient. Accordingly, a message may be sent to the  
25 intended recipient via an e-mail option 206, a PIN option 208, a telephone call option 210, or an SMS option 212.

A data call option 214 is used to invoke an interrupt message. Upon selecting a data call option 214, an interrupt message will be created. The user of the mobile device may then prepare the interrupt message, which may comprise a short text message, and the  
30 mobile device will then transmit the interrupt message to another mobile device associated with the intended recipient. As described with respect to Figs. 1-3 above, the interrupt message may be sent over one of a plurality of transport mediums in accordance with an automatic selection routine.

Fig. 5 is an illustration of an example program environment 220 in which a user of a mobile device is notified that an interrupt message has been received. The program environment may comprise a window 222 associated with an existing mobile device operation, e.g., composing a document, viewing web pages on the Internet, and the like.

5 Upon identifying a received interrupt message, a notification window 224 interrupts the current mobile device operation to notify the user of the mobile device that an interrupt message has been received. The notification window 224 may include interrupt message title 226, sender contact data 228, and user selectable options 230. The user options may include an answer option and an ignore option. If the recipient user selects one of the  
10 decline or ignore options, the mobile device of the recipient may automatically send a delivery notification message to the sender. The interrupt environment of Fig. 5 ensures that the user of the mobile device is aware that an interrupt message has been received.

If the recipient selects the answer option, then the user may have one or more reply options available. Fig. 6 is an illustration of an example program environment 240 in  
15 which a user may reply to an interrupt message after selecting an answer option. The program environment may comprise the window 222 associated with the existing mobile device operation, e.g., composing a document, viewing web pages on the Internet, and the like. An interrupt message reply window 244 may include default sender contact data 246, a message window 248, and selectable user options 250.

20 The selectable user options 250 may include a default acknowledgement command 252, a custom reply command 254, and a cancel command 256. Selecting the default acknowledgement command 252 will cause the recipient's mobile device to send a default acknowledgement message to the sender's mobile device, such as a simple "OK" message. In one embodiment, the default acknowledgement message is sent over the transport  
25 medium associated with the default sender contact data 246. In another embodiment, the default acknowledgement message is sent over the transport medium associated with the sender's mobile device identifier included in the interrupt message.

Selecting the custom reply command 254 will cause the recipient's mobile device to send a custom reply to the sender's mobile device. In one embodiment, the custom  
30 reply command 254 opens an e-mail editor so that the user may type a specific reply message to be sent to the sender's mobile device. In another embodiment, the custom reply command 254 establishes a peer-to-peer communication between the recipient's mobile device and the sender's mobile device. The peer-to-peer communication between

the mobile devices may be established in accordance with the sender's mobile device identifier included in the interrupt message. For example, if the sender's mobile device identifier included in the interrupt message is a mobile device PIN, then a quick message session may be established over the PIN transport medium. Other peer-to-peer sessions similar to a quick message session may also be used; for example, a peer-to-peer session based on unique identifiers associated with the mobile devices may be established. Each unique identifier may be an identifier other than a mobile device identifier; for example, each unique identifier may be associated with a user account that is, in turn, associated with a particular mobile device.

Fig. 7 is an illustration of an example quick message environment 260 for replying to an interrupt message. The quick message environment 260 may be invoked by selecting the custom reply command 254, and may comprise identifier data 262 that identifies a participant in the quick message and a message window 264. The message window 264 may comprise a first quick message 266 by which the recipient of the interrupt message responded to the sender, and a second quick message 268 issued by the sender in response to the first quick message 266.

Fig. 8 is a block diagram of an example system 2000 for redirecting electronic messages to and from a mobile communication device 2020. The example redirection system 2000 includes an enterprise server 2004, a mail server 2002, a storage medium 2006 for electronic messaging (e.g., e-mail) account data, and a wireless gateway 2016. Also illustrated are the mobile communication device 2020, a wireless network 2018, a wide area network (WAN) 2012, a firewall 2010, a desktop client 2008, and one or more other electronic messaging systems 2014.

The mail server 2002 may include electronic messaging software executing on a computer within a local area computer network (LAN). The mail server 2002 is coupled to local network devices 2004, 2006, 2008 via the LAN, and is coupled to remote network devices 2014, 2016 via the WAN 2012. The LAN and WAN 2012 may be separated by a firewall 2010.

The mail server 2002 maintains an electronic message account within the electronic message account database 2006 for each desktop client 2008 in the LAN. The electronic message account database 2006 may be one or more storage devices coupled to the mail server 2002, and may be included within the same network device as the mail server 2002 or in one or more separate devices within the LAN. The desktop client 2008

may be one of a plurality of computers (e.g., personal computers, terminals, laptop computers, or other processing devices) coupled to the mail server 2002 via the LAN that execute electronic messaging software to send and receive electronic messages via the mail server.

5           Electronic messages sent from the desktop client 2008 are stored by the mail server 2002 in an outgoing message storage location (an “outbox”) within a corresponding electronic message account 2006. If the outgoing message is addressed to an electronic message account within the LAN, then the mail server 2002 delivers the message to an incoming message storage location (an “inbox”) in the appropriate electronic message  
10           account 2006. If the outgoing message is addressed to an electronic message account in another electronic messaging system 2014, however, then the message is delivered via the WAN 2012. Similarly, incoming electronic message addressed to the electronic message account 2006 is received by the mail server 2002 and stored to the electronic message account database 2006 within the appropriate incoming message storage location  
15           (“inbox”). The incoming electronic message may then be retrieved from the electronic message account 2006 by the desktop client 2008, or may be automatically pushed to the desktop client 2008 by the mail server 2002.

          The enterprise server 2004 may include electronic message redirection software executing on a computer within the LAN. The enterprise server 2004 is operational to  
20           redirect electronic messages from the electronic message account 2006 to the mobile communication device 2020 and to place messages sent from the mobile communication device 2020 into the electronic message account 2006 for delivery by the mail server 2002. The enterprise server 2004 stores mobile device information, such as a wireless identification (e.g., a PIN), used to communicate with the mobile communication device  
25           2020. The enterprise server 2004 may, for example, communicate with the mobile communication device 2020 using a direct TCP/IP level connection with the wireless gateway 2016, which provides an interface between the WAN 2012 and the wireless network 2018.

          When an electronic message is received in the inbox of the electronic message  
30           account 2006, the electronic message is detected by the enterprise server 2004, and a copy of the message and any necessary mobile device information are sent over the WAN 2012 to the wireless gateway 2016. For example, the enterprise server 2004 may encapsulate a copy of the message into one or more data packets along with a wireless identification

(e.g., a PIN) for the mobile communication device 2020, and transmit the data packet(s) to the wireless gateway 2016 over a direct TCP/IP level connection. The wireless gateway 2016 may then use the wireless identification and/or other mobile device information to transmit the data packets(s) containing the electronic message over the wireless network 2018 to the mobile communication device 2020.

Electronic messages sent from the mobile communication device 2020 may be encapsulated into one or more data packets along with a network identification for the enterprise server 2004 and then transmitted over the wireless network 2018 to the wireless gateway 2016. The wireless gateway 2016 may use the network identification for the enterprise server 2004 to forward the data packet(s) over the WAN 2012 to the enterprise server 2004, preferably via a direct TCP/IP level connection. Upon receiving the data packet(s) from the wireless gateway 2016, the enterprise server 2004 places the enclosed electronic message into the outbox of the associated electronic message account 2006. The mail server 2002 then detects the electronic message in the outbox and delivers the message, as described above.

Security may be maintained outside of the firewall 2010 by encrypting all electronic messages sent between the enterprise server 2004 and the mobile communication device 2020. For instance, an electronic message to be redirected to the mobile communication device 2020 may be encrypted and compressed by the enterprise server 2004, and the encrypted message may then be encapsulated into one or more data packets for delivery to the mobile communication device 2020. To maintain security, the electronic message may remain encrypted over the entire communication path 2016, 2018, 2012 from the enterprise server 2004 to the mobile communication device 2020. Similarly, electronic messages sent from the mobile communication device 2020 may be encrypted and compressed by the mobile communication device 2020 before being packetized and transmitted to the enterprise server 2004, and may remain encrypted over the entire communication path 2016, 2018, 2012 from the mobile communication device 2020 to the enterprise server 2004.

In addition, the enterprise server 2004 may include a communication subsystem, a memory subsystem and a processing subsystem. The communication subsystem may be operable to communicate with the wireless gateway 2016 over the WAN 2012. The memory subsystem may be operable to store data and program information. The processing subsystem may be operable to store and retrieve data in the memory subsystem

and execute programs stored in the memory subsystem, and to cause the communication subsystem to transmit and receive information over the WAN 2012.

Fig. 9 is a block diagram illustrating an example mobile communication device 2100. The mobile device 2100 includes a processing subsystem 2138, a communications subsystem 2111, a short-range communications subsystem 2140, a memory subsystem 2124, 2126, and various other device subsystems and/or software modules 2142. The mobile device 2100 also includes a user interface, which may include a display 2122, a serial port 2130, keyboard 2132, a speaker 2134, a microphone 2136, one or more auxiliary input/output devices 2128, and/or other user interface devices.

The processing subsystem 2138 controls the overall operation of the mobile device 2100. Operating system software executed by the processing subsystem 2138 may be stored in a persistent store, such as a flash memory 2124, but may also be stored in other types of memory devices in the memory subsystem, such as a read only memory (ROM) or similar storage element. In addition, system software, specific device applications, or parts thereof, may be temporarily loaded into a volatile store, such as a random access memory (RAM) 2126. Communication signals received by the mobile device 2100 may also be stored to RAM 2126.

The processing subsystem 2138, in addition to its operating system functions, enables execution of software applications 2124 on the device 2100. A predetermined set of applications that control basic device operations, such as data and voice communications, may be installed on the device 2100 during manufacture. In addition, a personal information manager (PIM) application, including an electronic messaging application, may be installed on the device. The PIM may, for example, be operable to organize and manage data items, such as e-mail, calendar events, voice mails, appointments, and task items. The PIM application may also be operable to send and receive data items via the wireless network 2119.

Communication functions, including data and voice communications, are performed through the communication subsystem 2111, and possibly through the short-range communications subsystem 2140. The communication subsystem 2111 includes a receiver 2112, a transmitter 2114 and one or more antennas 2116, 2118. In addition, the communication subsystem 2111 also includes a processing module, such as a digital signal processor (DSP) 2120 or other processing device(s), and local oscillators (LOs) 2113. The specific design and implementation of the communication subsystem 2111 is dependent

upon the communication network in which the mobile device 2100 is intended to operate. For example, a mobile device 2100 may include a communication subsystem 2111 designed to operate within the Mobitex™ mobile communication system, the DataTAC™ mobile communication system, a GSM network, a GPRS network, a UMTS network, and/or an EDGE network.

Network access requirements vary depending upon the type of communication system. For example, in the Mobitex™ and DataTAC™ networks, mobile devices are registered on the network using a unique personal identification number or PIN associated with each device. In UMTS and GSM/GPRS networks, however, network access is associated with a subscriber or user of a device. A GPRS device therefore requires a subscriber identity module, commonly referred to as a SIM card, in order to operate on a GSM/GPRS network.

When required network registration or activation procedures have been completed, the mobile device 2100 may send and receive communication signals over the communication network 2119. Signals received by the antenna 2116 from the communication network 2119 are routed to the receiver 2112, which provides signal amplification, frequency down conversion, filtering, channel selection, etc., and may also provide analog to digital conversion. Analog-to-digital conversion of the received signal allows the DSP to perform more complex communication functions, such as demodulation and decoding. In a similar manner, signals to be transmitted to the network 2119 are processed (e.g., modulated and encoded) by the DSP 2120 and are then provided to the transmitter 2114 for digital to analog conversion, frequency up conversion, filtering, amplification and transmission to the communication network 2119 (or networks) via the antenna 2118.

In addition to processing communication signals, the DSP 2120 provides for receiver 2112 and transmitter 2114 control. For example, gains applied to communication signals in the receiver 2112 and transmitter 2114 may be adaptively controlled through automatic gain control algorithms implemented in the DSP 2120.

In a data communication mode, a received signal, such as a text message or web page download, is processed by the communication subsystem 2111 and input to the processing device 2138. The received signal is then further processed by the processing device 2138 for output to a display 2122, or alternatively to some other auxiliary I/O device 2128. A device user may also compose data items, such as e-mail messages, using

a keyboard 2138 and/or some other auxiliary I/O device 2128, such as a touchpad, a rocker switch, a thumb-wheel, or some other type of input device. The composed data items may then be transmitted over the communication network 2119 via the communication subsystem 2111.

5           In a voice communication mode, overall operation of the device is substantially similar to the data communication mode, except that received signals are output to a speaker 2134, and signals for transmission are generated by a microphone 2136. Alternative voice or audio I/O subsystems, such as a voice message recording subsystem, may also be implemented on the device 2100. In addition, the display 2122 may also be  
10 utilized in voice communication mode, for example, to display the identity of a calling party, the duration of a voice call, or other voice call related information.

          The short-range communications subsystem 2140 enables communication between the mobile device 2100 and other proximate systems or devices, which need not necessarily be similar devices. For example, the short-range communications subsystem  
15 2140 may include an infrared device and associated circuits and components, or a Bluetooth™ communication module to provide for communication with similarly-enabled systems and devices.

          The apparatus, methods, flow diagrams, and structure block diagrams described in this patent document may be implemented in the mobile devices described herein by  
20 mobile device program code comprising program instructions that are executable by the mobile device processing subsystem. Other implementations may also be used, however, such as firmware or even appropriately designed hardware configured to carry out the methods and flow diagrams described in this patent document. Additionally, the flow diagrams and structure block diagrams described herein, which describe particular  
25 methods and/or corresponding acts in support of steps and corresponding functions in support of disclosed structural means, may also be utilized to implement corresponding software structures and algorithms, and equivalents thereof.

          The systems and methods herein have been described in the context of a single message recipient. In another embodiment, a sender of an interrupt message may send the  
30 interrupt message to a plurality of recipients. For example, if a meeting is to be cancelled or moved to another location, a sender may send an interrupt message to all meeting attendees to notify the recipients of the change. The interrupt message may be separately processed for each interrupt message recipient as described above.

Although the systems and methods described herein are implemented in mobile devices, other communication devices may also be used to implement these systems and methods. For example, e-mail clients and/or e-mail servers may include software configured to facilitate the methods described herein. Accordingly, in separate  
5 embodiment, a desktop computer may be configured facilitate processing of interrupt messages so that it may send interrupt messages to or receive interrupt messages from other communication devices, such as another desktop computer or mobile device.

This written description sets forth the best mode of the claimed invention, and describes the claimed invention to enable a person of ordinary skill in the art to make and  
10 use it, by presenting examples of the elements recited in the claims. The patentable scope of the invention is defined by the claims themselves, and may include other examples that occur to those skilled in the art. Such other examples, which may be available either before or after the application filing date, are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or  
15 if they include equivalent structural elements with insubstantial differences from the literal language of the claims.

**CLAIMS:**

1. A method of providing an interrupt message between a plurality of mobile devices, comprising:

5 at a first mobile device:

selecting a message recipient to receive a first message;

determining if the first message is an interrupt message;

if the first message is determined to be an interrupt message, automatically selecting one of a plurality of transport mediums over which to send the interrupt message;

10 and

if the first message is determined to be an interrupt message, including a first mobile device identifier associated with one of the plurality of transport mediums, wherein the first mobile device identifier is independent of the automatically selected transport medium.

15

2. The method of claim 1, wherein the first mobile device identifier is a PIN identifier.

3. The method of claim 1, further comprising at the first mobile device:

20 receiving a second message over one of the plurality of transport mediums;

determining if the second message is a reply message to the interrupt message; and

if the second message is a reply message to the interrupt message, associating the reply message to the interrupt message;

25 wherein the transport medium over which the reply message is received is independent of the transport medium over which the interrupt message is sent.

4. The method of claim 3, wherein the reply message comprises an acknowledge message.

30 5. The method of claim 3, wherein the reply message comprises an automatic delivery notification message.

6. The method of claim 3, wherein the reply message is delivered over the transport medium associated with the first mobile device identifier.

7. The method of claim 6, wherein the reply message comprises a peer-to-peer communication established over the transport medium associated with the first mobile device identifier.

8. The method of claim 1, further comprising:  
at a second mobile device:

10 receiving the interrupt message over the automatically selected transport medium;

determining if the message is an interrupt message;

if the message is determined to be an interrupt message, interrupting any current second mobile device operation to notify a user of the second mobile device of the interrupt message.

9. A method of providing an interrupt message between a plurality of mobile devices, comprising:

at a first mobile device:

20 receiving a message sent by a second mobile device over one of a plurality of transport mediums;

determining if the message is an interrupt message; and

if the message is determined to be an interrupt message, interrupting any current first mobile device operation to notify a user of the first mobile device of the interrupt message;

25 wherein the interrupt message includes a second mobile device identifier associated with one of the plurality of transport mediums, the second mobile device identifier independent of the transport medium over which the interrupt message was received.

30

10. The method of claim 9, further comprising at the first mobile device:

if the message is determined to be an interrupt message, precluding resumption of the any current first mobile device operation until the user causes the first mobile device to send a reply message to the interrupt message.

5

11. The method of claim 9, further comprising at the first mobile device:

automatically sending a delivery notification message indicating delivery of the interrupt message to the second mobile device.

10 12. The method of claim 11, wherein the automatically sending a delivery notification message indicating delivery of the interrupt message to the second mobile device comprises automatically sending the delivery notification message over a transport medium independent of the transport medium over which the interrupt message was received.

15

13. The method of claim 12, wherein the delivery notification message is sent over the transport medium associated with the second mobile device identifier.

14. The method of claim 9, wherein interrupting any current first mobile device  
20 operation to notify a user of the interrupt message comprises:

presenting the user of the first mobile device an option to establish a reply communication with the second mobile device over a transport medium associated with the second mobile device identifier.

25 15. The method of claim 14, wherein the reply communication comprises a peer-to-peer communication.

16. Mobile device program instructions for providing an interrupt message between a plurality of mobile devices, the program instructions stored in a processor-readable  
30 medium and comprising instructions that upon execution cause a first mobile device to:

select a message recipient to receive a first message;  
determine if the first message is an interrupt message;

if the first message is determined to be an interrupt message, automatically select one of a plurality of transport mediums over which to send the interrupt message; and

if the first message is determined to be an interrupt message, include a first mobile device identifier associated with one of the plurality of transport mediums, wherein the first mobile device identifier is independent of the automatically selected transport medium.

17. The mobile device program instructions stored in a processor-readable medium of claim 16, further comprising instructions that upon execution cause the first mobile device to:

receive a second message over one of the plurality of transport mediums;

determine if the second message is a reply message to the interrupt message; and

if the second message is determined to be a reply message to the interrupt message, associate the reply message to the interrupt message;

wherein the transport medium over which the reply message is received is independent of the transport medium over which the interrupt message is sent.

18. Mobile device program instructions for providing an interrupt message between a plurality of mobile devices, the program instructions stored in a processor-readable medium and comprising instructions that upon execution cause a first mobile device to:

receive a message sent by a second mobile device over one of a plurality of transport mediums;

determine if the message is an interrupt message; and

if the message is determined to be an interrupt message, interrupt any current first mobile device operation to notify a user of the interrupt message.

19. The mobile device program instructions stored in a processor-readable medium of claim 18, wherein the interrupt message includes a second mobile device identifier associated with one of the plurality of transport mediums, the second mobile device identifier independent of the transport medium over which the interrupt message was received.

20. The mobile device program instructions stored in a processor-readable medium of claim 18, further comprising instructions that upon execution cause the first mobile device to preclude resumption of the any current first mobile device operation until the user causes the second mobile device to send a reply message to the interrupt message if the message is determined to be an interrupt message.

21. The mobile device program instructions stored in a processor-readable medium of claim 18, further comprising instructions that upon execution cause the first mobile device to automatically send a delivery notification message to the second mobile device indicating delivery of the interrupt message.

22. The mobile device program instructions stored in a processor-readable medium of claim 19, further comprising instructions that upon execution cause the first mobile device to establish a reply communication with the second mobile device over a transport medium associated with the second mobile device identifier.

23. A mobile communication device operable to communicate over a plurality of transport mediums, comprising

a processing subsystem, a memory subsystem, a display subsystem, a communication subsystem, and an input/output subsystem, the processing subsystem coupled to the memory subsystem, display subsystem, input/output subsystem and communication subsystem, and operable to store and retrieve data in the memory subsystem, to execute instructions stored in the memory subsystem, receive input data from the input/output subsystem, and to cause the communication subsystem to transmit and receive data over the plurality of transport mediums; and

mobile communication device program code comprising program instructions executable by the processing subsystem and stored in the memory subsystem and upon execution cause the mobile communication device to:

designate a message to be transmitted to a message recipient an interrupt message; automatically select one of a plurality of transport mediums over which to transmit the interrupt message; and

including a mobile communication device identifier associated with one of the plurality of transport mediums, wherein the first mobile communication device identifier is independent of the automatically selected transport medium.

- 5     24.     The mobile communication device of claim 23, wherein the mobile communication device program code further comprises program instructions executable by the processing subsystem and stored in the memory subsystem and upon execution cause the mobile communication device to:

10         receive a message over one of the plurality of transport mediums, the one of the plurality of transport mediums over which the message is received independent of the one of the plurality of transport mediums over which the interrupt message was transmitted;

       determine if the received message is a reply message to the interrupt message; and  
       if the received message is determined to be a reply message to the interrupt message, associate the reply message to the interrupt message.

15

25.     The mobile communication device of claim 23, wherein the mobile communication device program code further comprises program instructions executable by the processing subsystem and stored in the memory subsystem and upon execution cause the mobile communication device to:

20         receive a message over one of a plurality of transport mediums;

       determine if the received message is an interrupt message; and  
       if the received message is determined to be an interrupt message, interrupt any current first mobile device operation to notify a user of the interrupt message by displaying an interrupt environment on the display subsystem.

**AMENDED CLAIMS**

received by the International Bureau on 02 September 2005 (02.09.2005): original claims 1-25 have been replaced by amended claims 1-24.

1. A method of providing an interrupt message between a plurality of mobile devices, comprising:

at a first mobile device:

selecting a message recipient to receive a first message;

determining if the first message is an interrupt message;

if the first message is determined to be an interrupt message, automatically selecting one of a plurality of transport mediums over which to send the interrupt message; and

if the first message is determined to be an interrupt message, including a first mobile device identifier associated with one of the plurality of transport mediums, wherein the automatically selected transport medium is selected independent of the first mobile device identifier.

2. The method of claim 1, wherein the first mobile device identifier is a Personal Identification Number (PIN) identifier.

3. The method of claim 1, further comprising at the first mobile device:  
receiving a second message over one of the plurality of transport mediums;  
determining if the second message is a reply message to the interrupt message; and  
if the second message is a reply message to the interrupt message, associating the reply message to the interrupt message;

wherein the transport medium over which the reply message is received is independent of the transport medium over which the interrupt message is sent.

4. The method of claim 3, wherein the reply message comprises an acknowledge message.

5. The method of claim 3, wherein the reply message comprises an automatic delivery notification message.

6. The method of claim 3, wherein the reply message is delivered over the transport medium associated with the first mobile device identifier.
7. The method of claim 6, wherein the reply message comprises a peer-to-peer communication established over the transport medium associated with the first mobile device identifier.
8. The method of claim 1, further comprising:
  - at a second mobile device:
    - receiving the interrupt message over the automatically selected transport medium;
    - determining if the message is an interrupt message;
    - if the message is determined to be an interrupt message, interrupting any current second mobile device operation to notify a user of the second mobile device of the interrupt message.
9. A method of providing an interrupt message between a plurality of mobile devices, comprising:
  - at a first mobile device:
    - receiving a message sent by a second mobile device over one of a plurality of transport mediums;
    - determining if the message is an interrupt message; and
    - if the message is determined to be an interrupt message, interrupting any current first mobile device operation to notify a user of the first mobile device of the interrupt message;
    - wherein the interrupt message includes a second mobile device identifier associated with one of the plurality of transport mediums, and the transport medium over which the interrupt message was received is selected independent of the second mobile device identifier.
10. The method of claim 9, further comprising at the first mobile device:

if the message is determined to be an interrupt message, precluding resumption of the any current first mobile device operation until the user causes the first mobile device to send a reply message to the interrupt message.

11. The method of claim 9, further comprising at the first mobile device:  
automatically sending a delivery notification message to a second mobile device indicating delivery of the interrupt message to the first mobile device .
12. The method of claim 11, wherein the automatically sending a delivery notification message to a second mobile device indicating delivery of the interrupt message to the first mobile device comprises automatically sending the delivery notification message over a transport medium that is independent of the transport medium over which the interrupt message was received.
13. The method of claim 12, wherein the delivery notification message is sent over the transport medium associated with the second mobile device identifier.
14. The method of claim 9, wherein interrupting any current first mobile device operation to notify a user of the interrupt message comprises:  
presenting the user of the first mobile device an option to establish a reply communication with the second mobile device over a transport medium associated with the second mobile device identifier.
15. The method of claim 14, wherein the reply communication comprises a peer-to-peer communication.
16. Mobile device program instructions for providing an interrupt message between a plurality of mobile devices, the program instructions stored in a processor-readable medium and comprising instructions that upon execution cause a first mobile device to:  
select a message recipient to receive a first message;  
determine if the first message is an interrupt message;  
if the first message is determined to be an interrupt message, automatically select one of a plurality of transport mediums over which to send the interrupt message; and

if the first message is determined to be an interrupt message, include a first mobile device identifier associated with one of the plurality of transport mediums, wherein the automatically selected transport medium is selected independent of the first mobile device identifier.

17. The mobile device program instructions stored in a processor-readable medium of claim 16, further comprising instructions that upon execution cause the first mobile device to:

- receive a second message over one of the plurality of transport mediums;
- determine if the second message is a reply message to the interrupt message; and
- if the second message is determined to be a reply message to the interrupt message, associate the reply message to the interrupt message;

wherein the transport medium over which the reply message is received is independent of the transport medium over which the interrupt message is sent.

18. Mobile device program instructions for providing an interrupt message between a plurality of mobile devices, the program instructions stored in a processor-readable medium and comprising instructions that upon execution cause a first mobile device to:

- receive a message sent by a second mobile device over one of a plurality of transport mediums;
- determine if the message is an interrupt message; and
- if the message is determined to be an interrupt message, interrupt any current first mobile device operation to notify a user of the interrupt message;

wherein the interrupt message includes a second mobile device identifier associated with one of the plurality of transport mediums, the second mobile device identifier selected independent of the transport medium over which the interrupt message was received.

19. The mobile device program instructions stored in a processor-readable medium of claim 18, further comprising instructions that upon execution cause the first mobile device to preclude resumption of the any current first mobile device operation until the user causes the second mobile device to send a reply message to the interrupt message if the message is determined to be an interrupt message.

20. The mobile device program instructions stored in a processor-readable medium of claim 18, further comprising instructions that upon execution cause the first mobile device to automatically send a delivery notification message to the second mobile device indicating delivery of the interrupt message.

21. The mobile device program instructions stored in a processor-readable medium of claim 18, further comprising instructions that upon execution cause the first mobile device to establish a reply communication with the second mobile device over a transport medium associated with the second mobile device identifier.

22. A mobile communication device operable to communicate over a plurality of transport mediums, comprising

a processing subsystem, a memory subsystem, a display subsystem, a communication subsystem, and an input/output subsystem, the processing subsystem coupled to the memory subsystem, the display subsystem, the input/output subsystem and the communication subsystem, and operable to store and retrieve data in the memory subsystem, to execute instructions stored in the memory subsystem, receive input data from the input/output subsystem, and to cause the communication subsystem to transmit and receive data over the plurality of transport mediums; and

mobile communication device program code comprising program instructions executable by the processing subsystem and stored in the memory subsystem and upon execution cause the mobile communication device to:

designate a message to be transmitted to a message recipient an interrupt message; automatically select one of a plurality of transport mediums over which to transmit the interrupt message; and

including a mobile communication device identifier associated with one of the plurality of transport mediums, wherein the automatically selected transport medium is selected independent of the first mobile communication device identifier.

23. The mobile communication device of claim 22, wherein the mobile communication device program code further comprises program instructions executable by the processing

subsystem and stored in the memory subsystem and upon execution cause the mobile communication device to:

- receive a message over one of the plurality of transport mediums, the one of the plurality of transport mediums over which the message is received independent of the one of the plurality of transport mediums over which the interrupt message was transmitted;

- determine if the received message is a reply message to the interrupt message; and

- if the received message is determined to be a reply message to the interrupt message, associate the reply message to the interrupt message.

24. The mobile communication device of claim 22, wherein the mobile communication device program code further comprises program instructions executable by the processing subsystem and stored in the memory subsystem and upon execution cause the mobile communication device to:

- receive a message over one of a plurality of transport mediums;

- determine if the received message is an interrupt message; and

- if the received message is determined to be an interrupt message, interrupt any current first mobile device operation to notify a user of the interrupt message by displaying an interrupt environment on the display subsystem.

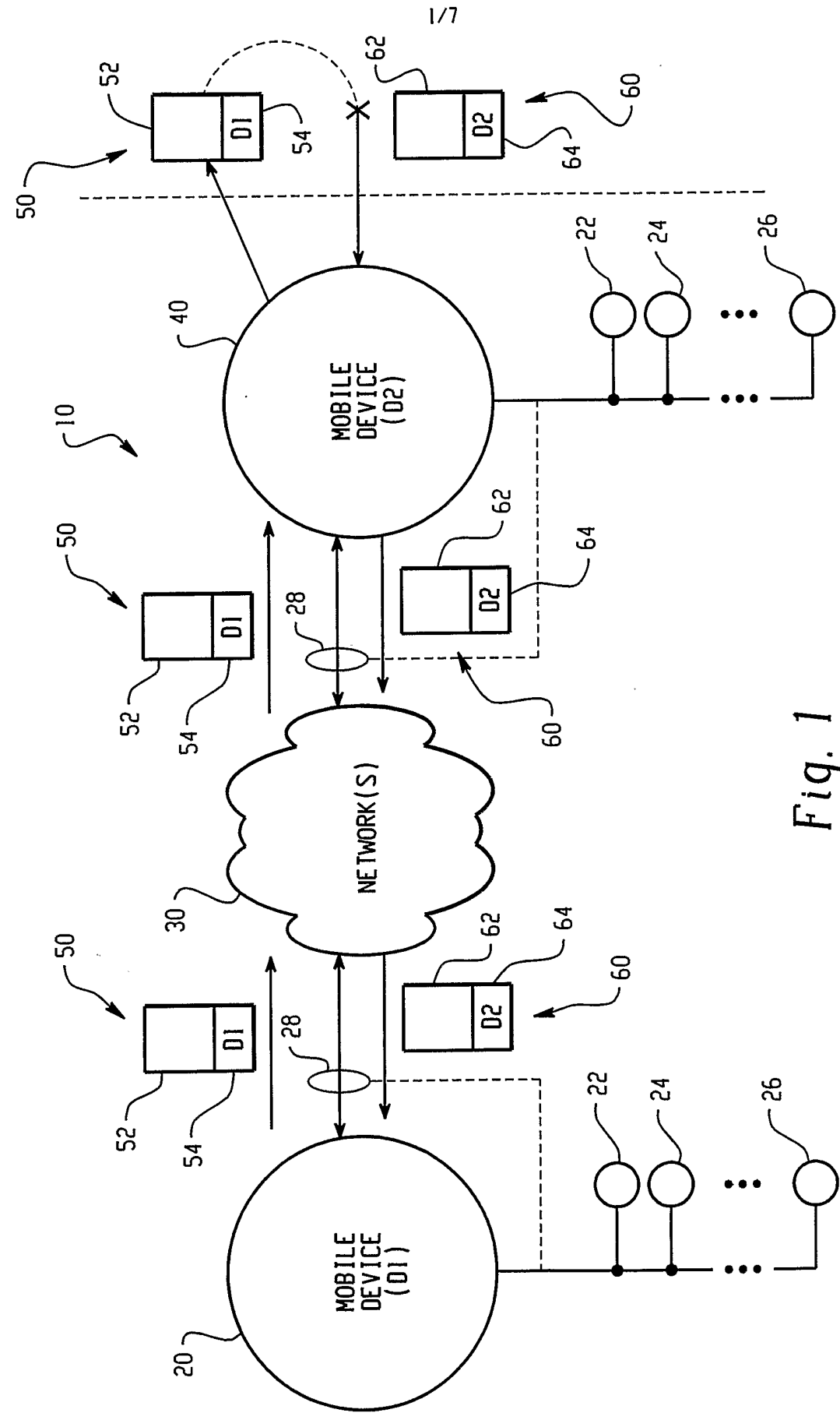


Fig. 1

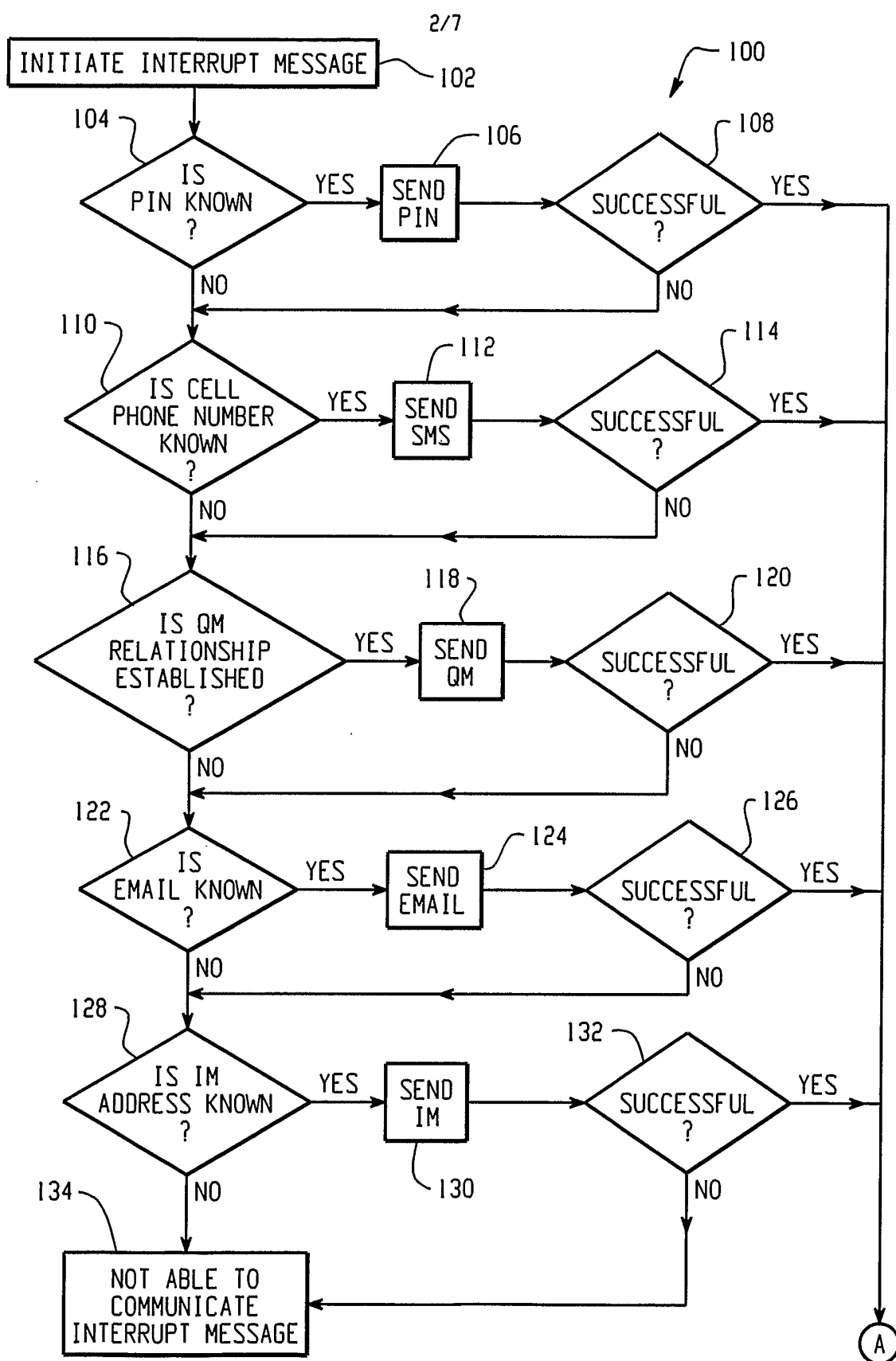


Fig. 2

3/7

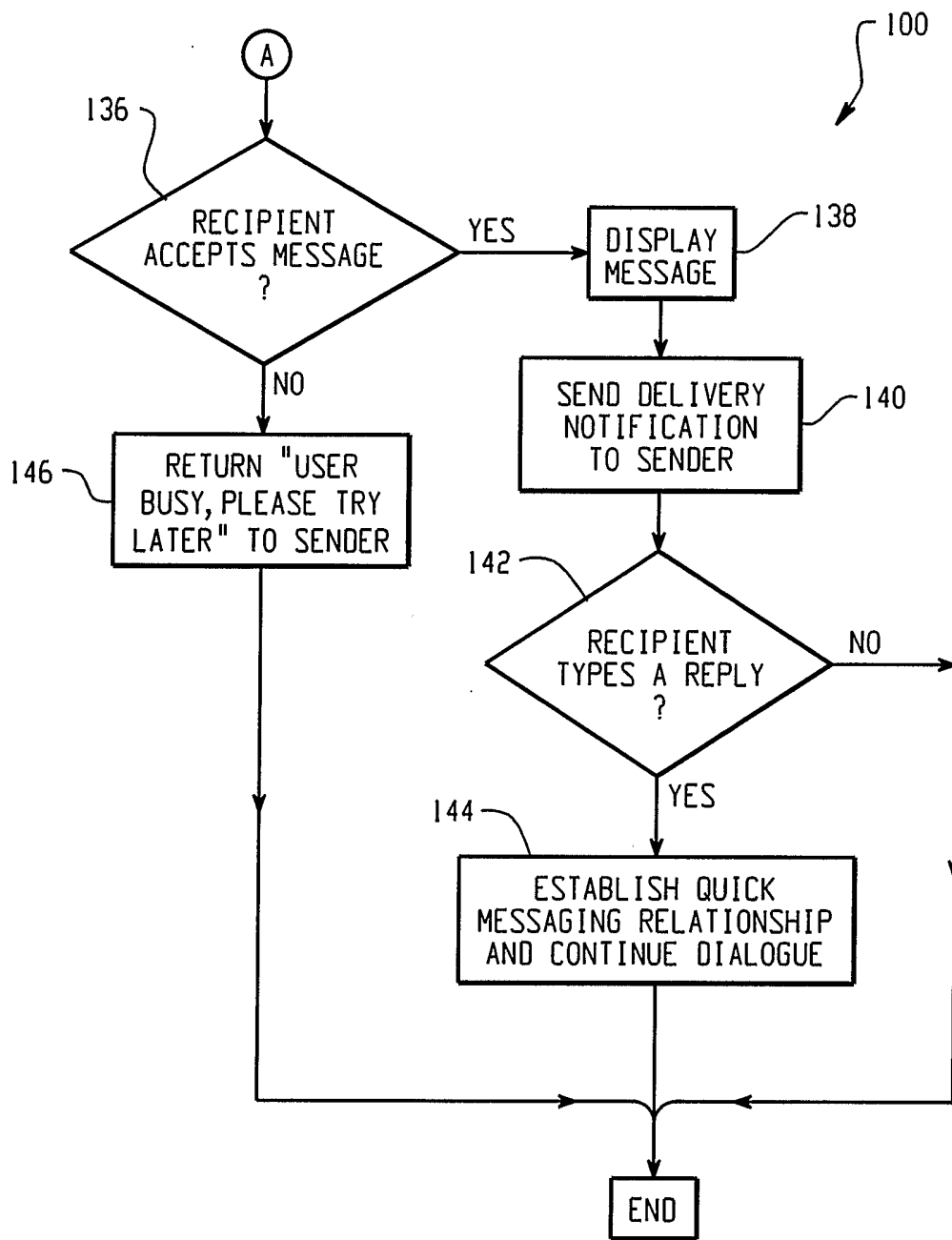


Fig. 3

4/7

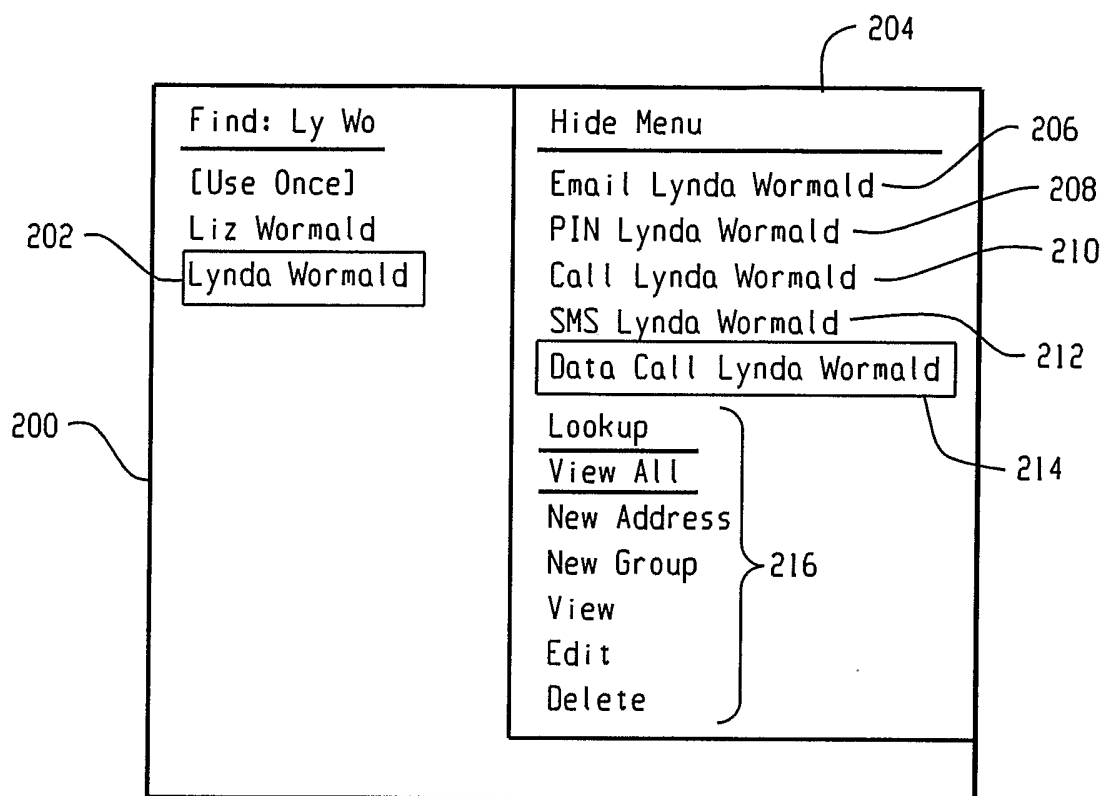


Fig. 4

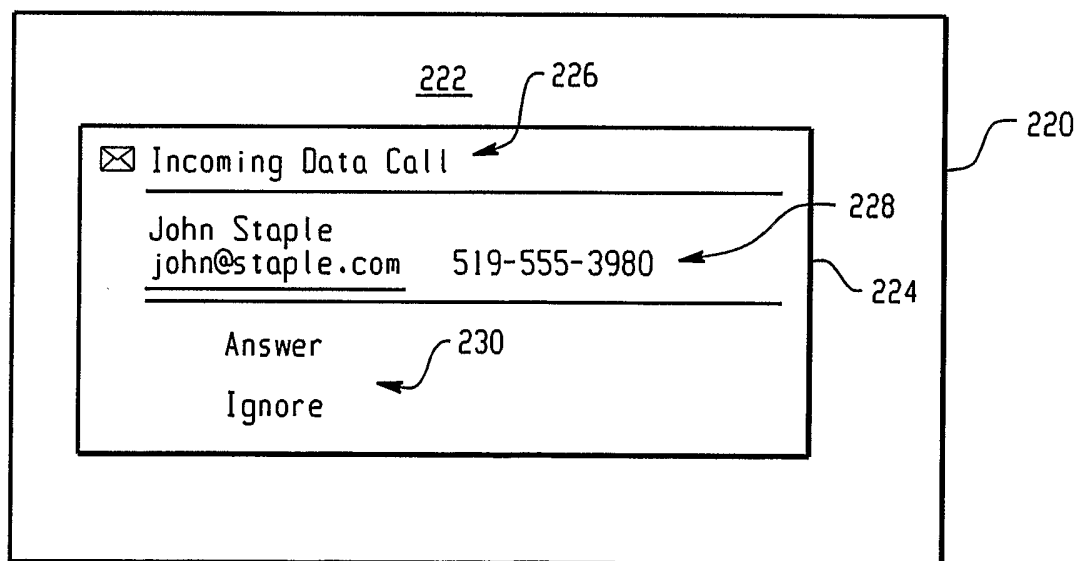
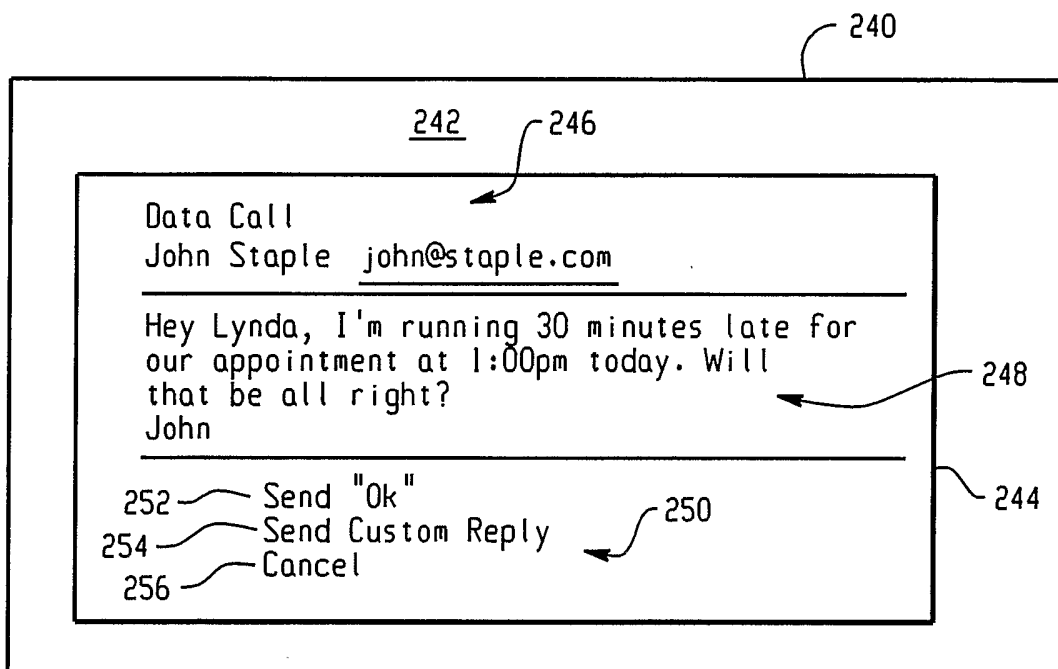
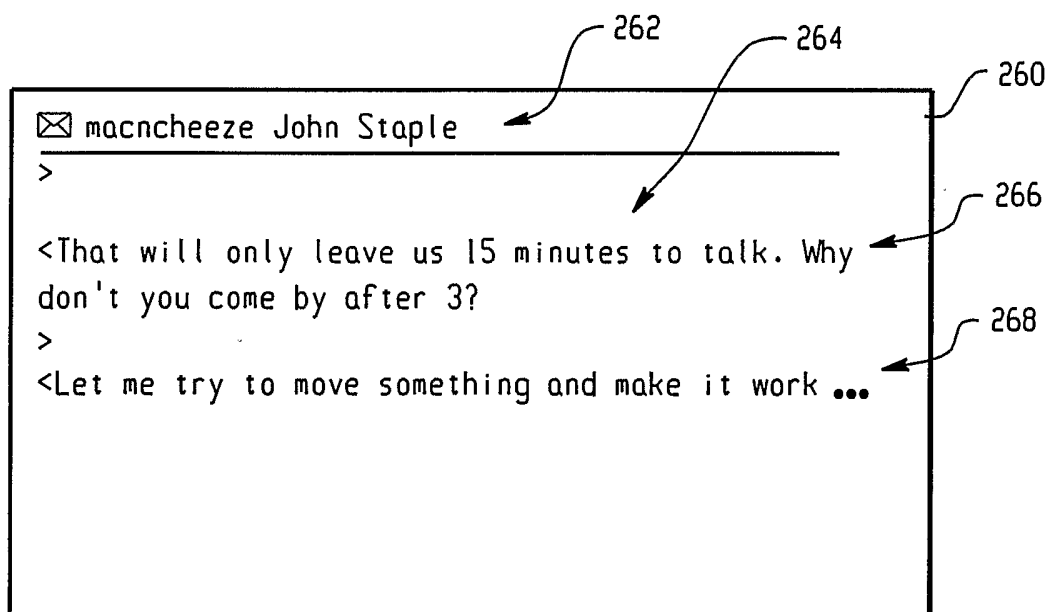


Fig. 5

5/7

*Fig. 6**Fig. 7*

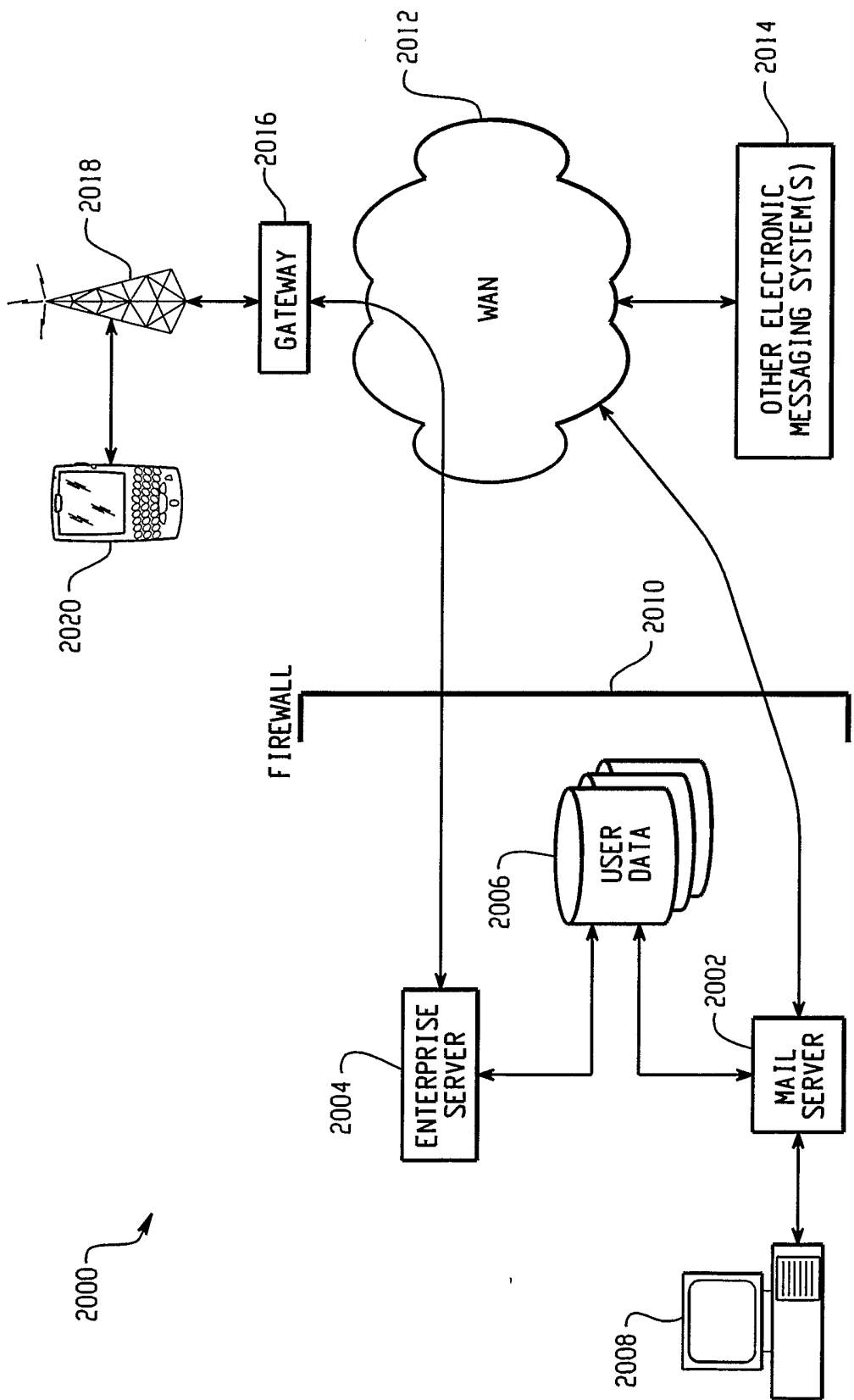


Fig. 8

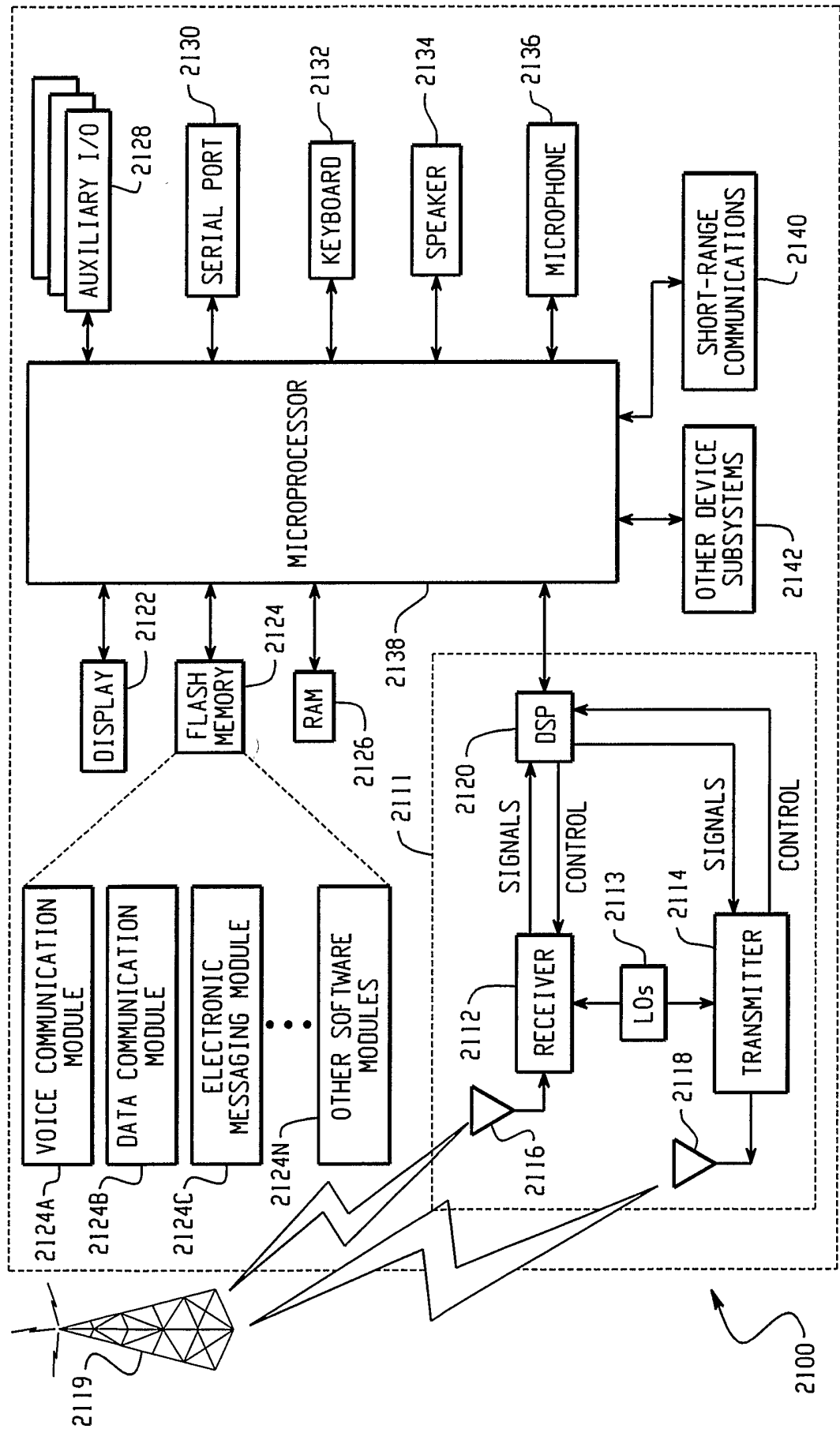


Fig. 9

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2005/000290

A. CLASSIFICATION OF SUBJECT MATTER  
IPC(7): H04Q 7/20, H04Q 7/32, H04Q 7/38

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

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC(7): H04Q 7/20, H04Q 7/32, H04Q 7/38 (keyword search)

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

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)  
Delphion, EPO, Canadian Patent Database, WEST. Keywords: interrupt, disrupt, mobile, cellular, select, medium, identifier, SMS, email

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/0199009 (WILLNER et al.), 26 Dec 2002 (26.12.2002) abstract.	18, 20, 21
A	WO 03/069924 A2 (WOOD), 21 Aug 2003 (21.08.2003) abstract, page 3 (lines 23-33), page 4 (lines 8-14, 23-30), page 5 (lines 4-9).	1, 9, 16, 18, 23
A	WO 03/009616 A1 (KRANSMO et al.), 30 Jan 2003 (30.01.2003) abstract, page 6 (line 20) to page 7 (line 8), page 8 (lines 1-6), page 9 (lines 21-24), page 9 (line 27) to page 10 (line 2).	1, 9, 16, 18, 23
A, P	US 6,745,021 (STEVENS), 01 June 2004 (01.06.2004) abstract, claims 2-4.	
A	US 6,038,438 (BEESON et al.), 14 March 2000 (14.03.2000) abstract, col. 6 (lines 1-12, 22-25, 30-34, 38-40, 44-46).	

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

☒ See patent family annex.

* Special categories of cited documents :	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

17 May 2005 (17-05-2005)

Date of mailing of the international search report

28 June 2005 (28-06-2005)

Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
Place du Portage I, C114 - 1st Floor, Box PCT  
50 Victoria Street  
Gatineau, Quebec K1A 0C9  
Facsimile No.: 001(819)953-2476

Authorized officer

Paul Sabharwal (819) 997-2881

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.  
PCT/CA2005/000290

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US2002199009	26-12-2002	US2002199009 A1	26-12-2002
WO03069924	21-08-2003	AU2003205901 A1 EP1402744 A2 EP1477034 A2 GB0115493D D0 GB0122943D D0 GB0203795D D0 GB0203796D D0 GB0210243D D0 GB0313738D D0 GB0313740D D0 GB0313747D D0 GB0411547D D0 GB0411549D D0 GB0411550D D0 GB0411551D D0 GB0416118D D0 GB0417465D D0 GB0417466D D0 GB0417467D D0 GB0417468D D0 TW582178 B US2004259531 A1 US2005078660 A1 WO03001819 A2 WO03027872 A2 WO03069924 A2	04-09-2003 31-03-2004 17-11-2004 15-08-2001 14-11-2001 03-04-2002 03-04-2002 12-06-2002 16-07-2003 16-07-2003 16-07-2003 23-06-2004 23-06-2004 23-06-2004 23-06-2004 18-08-2004 08-09-2004 08-09-2004 08-09-2004 08-09-2004 01-04-2004 23-12-2004 14-04-2005 03-01-2003 03-04-2003 21-08-2003
WO03009616	30-01-2003	CN1555659 A US2003016639 A1 WO03009616 A1	15-12-2004 23-01-2003 30-01-2003
US6745021	01-06-2004	EP1209886 A2 US6745021 B1	29-05-2002 01-06-2004
US6038438	14-03-2000	AU1947699 A US6038438 A WO9934629 A1	19-07-1999 14-03-2000 08-07-1999