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12/968,498 15 December 2010 (15.12.2010) US(71) Applicant (for all designated States except US): **MOTOROLA MOBILITY, INC.** [US/US]; 600 North US Highway 45, Libertyville, Illinois 60048 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LEMKE, Mark R.** [US/US]; 252 North Southport Road, Mundelein, Illinois 60060 (US). **BINZEL, Charles P.** [US/US]; 17001 60th Street, Bristol, Wisconsin 53104 (US). **VOGEDES, Jerome** [US/US]; 200 South Water Street, Milwaukee, Wisconsin 53204 (US).(74) Agents: **WATANABE, Hisashi David** et al.; 600 North US Highway 45, Libertyville, Illinois 60048 (US).

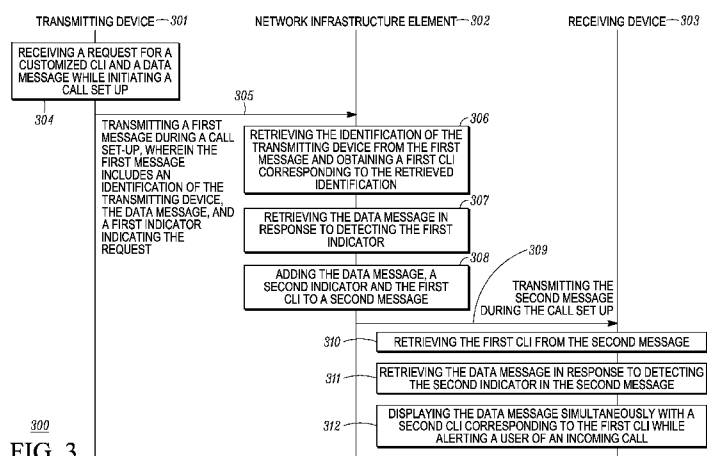
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(54) Title: METHOD AND APPARATUS FOR DISPLAYING A CUSTOMIZED CALLER LINE IDENTIFICATION



(57) Abstract: A method and apparatus for a customized CLI comprise receiving, by a network element, a first message from a transmitting device during a call set up. The network element then retrieves an identification of the transmitting device from the first message and obtains a first Caller Line Identification (CLI) of the transmitting device corresponding to the retrieved identification. Further, the network element determines whether the first message includes a first indicator and retrieves a data message from the first message when the first message includes a first indicator. The network element then adds the data message, the first CLI, and a second indicator to a second message and transmits the second message to a receiving device during the same call set up, for displaying a customized CLI on the receiving device, thereby alerting a user of the receiving device of an incoming call.

METHOD AND APPARATUS FOR DISPLAYING
A CUSTOMIZED CALLER LINE IDENTIFICATION

FIELD OF THE DISCLOSURE

[0001] The present disclosure relates generally to communication systems where an identification of an originator of a call is transmitted to a recipient of the call for display during a call set up, and is more particularly directed towards a method for customizing the display of the identification of the call originator as desired by the call originator.

BACKGROUND

[0002] Most existing communication systems provision displaying an identification of a call originator to a call recipient. The feature is more popularly known as Caller Line Identification (CLI). In a typical CLI display, a telephone number of the call originator is displayed on a display of a communication device of a call recipient. Lately, the technological advancements have also enabled a display of a name or a picture associated with the call originator to the call recipient. However, the name or picture of the call recipient, i.e. the CLI, thus displayed is either pre-stored in a communication device of the call recipient or pre-stored at a network element that facilitates the call between the call originator and the call recipient. Therefore, the display of the CLI is either controlled by the network element or by the call recipient or by a combination of both. The call originator has, hitherto, been devoid of any control on how the CLI would be displayed to a call recipient.

[0003] However, in certain situations, it may be desired by an originator of a call, i.e., the calling party, to customize the way an identification of the calling party would be displayed to a call recipient, i.e., the called party. Accordingly, there is a need for a method and apparatus for displaying a customized CLI where the way the CLI is displayed to a called party is privileged for customization by the calling party.

BRIEF DESCRIPTION OF THE FIGURES

[0004] The accompanying figures, where like reference numerals refer to identical or functionally similar elements throughout the separate views, together with the detailed description below, are incorporated in and form part of the specification, and serve to further illustrate embodiments of concepts that include the claimed invention, and explain various principles and advantages of those embodiments.

[0005] FIG. 1 is a network diagram of a communication system in accordance with some embodiments of the invention.

[0006] FIG. 2 is a block diagram of a communication device in accordance with some embodiments of the invention.

[0007] FIG. 3 is a signal flow diagram of a method for customizing Caller Line Identification (CLI) in accordance with some embodiments of the invention.

[0008] FIG. 4 is a flowchart of a method for displaying customized CLI, from the perspective of a calling party, in accordance with some embodiments of the invention.

[0009] FIG. 5 is a flowchart of a method for displaying a customized CLI, from the perspective of a network element, in accordance with some embodiments of the invention.

[0010] FIG. 6 is a flowchart of a method of displaying a customized CLI, from the perspective of a called party, in accordance with some embodiments of the invention.

[0011] FIG. 7 is an exemplary view of a customized CLI as displayed on a communication device of a call recipient in accordance with some embodiments of the invention.

[0012] FIG. 8 is another exemplary view of a customized CLI as displayed on a communication device of a call recipient in accordance with some embodiments of the invention.

[0013] Skilled artisans will appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to

other elements to help to improve understanding of embodiments of the present invention.

[0014] The apparatus and method components have been represented where appropriate by conventional symbols in the drawings, showing only those specific details that are pertinent to understanding the embodiments of the present invention so as not to obscure the disclosure with details that will be readily apparent to those of ordinary skill in the art having the benefit of the description herein.

DETAILED DESCRIPTION

[0015] Embodiments of the present invention described herein provide a method for providing a customized Caller Line Identification (CLI). The method includes receiving, by a network element, a first message from a call originator, i.e., a transmitting device, during a call set up. The network element then retrieves a data message and an identification of the transmitting device from the first message, when the first message includes a first indicator. Further, the network element obtains a first Caller Line Identification (CLI) of the transmitting device corresponding to the retrieved identification. The network element then adds the data message, the first CLI, and a second indicator to a second message and transmits the second message to a call recipient, i.e., a receiving device during the same call set up, for displaying the customized CLI on a display of the receiving device, thereby alerting a user of the receiving device of an incoming call from the transmitting device.

[0016] FIG. 1 is a perspective view of a communication system 100 in accordance with some embodiments of the invention. The communication system includes first communication device 105 and a second communication device 115, a base station 110, a first communication channel 145, a second communication channel 150, and a network 120. The network 120 is further coupled to a landline telephone 125 via a Public Switched Telephone Network (PSTN) 130. The network 120 is also coupled to a set top box 135 via a network interface 140.

[0017] The base station 110 may be a conventional base station transceiver or base station controller comprising conventional radio transceiver. The base station 110 typically consists of transmitters, receivers, and wireless routers coupled to a processor. Further, the network 120 routes the calls between the base station 110 and the second communication device 115. The network 120 of FIG. 1 may be any of a wired or a wireless network, or a combination thereof. The network 120 may comprise various network infrastructure elements including one or more of MSCs (mobile switching centre), a router, a gateway etc. The base station 110 in conjunction with the network 120 is used for processing various requests including requests for call set up from various communication devices such as the first communication device 105 and the second communication device 115, in their respective areas of coverage.

[0018] Further, the first communication device 105 and the second communication device 115 may be wireless devices or wired devices or any other electronic devices. In the example of FIG. 1, the first communication device 105 is a wireless device. In another example, the first communication device may be a set top box. In the example of FIG. 1, the second communication device 115 is a wireless communication device. In another example, the second communication device 115 is a set top box 135. In yet another example, the second communication device is a landline communication device 125.

[0019] Further, the first communication device communicates with the base station 110 and the network 120 via the first communication channel 145. The first communication channel 145 may be any of a wired or a wireless communication channel. In one example, the first communication channel 145 is one of an RF (radio frequency) channel, a short range wireless channel, a dedicated physical channel and the like. Similarly, the second communication device 115 communicates with the network 120 via the second communication channel 150, which may be any of a wired or a wireless communication channel such as one of an RF (radio frequency) channel, a short range wireless channel, a dedicated physical channel and the like.

[0020] The first communication device 105 and the second communication device 115 are now described in more detail with respect to FIG. 2.

[0021] FIG. 2 is a block diagram of a communication device 200 in accordance with some embodiments of the present invention. The communication device 200 includes various components including a microphone 210, a display 220, a keypad 230, a memory 240, a transceiver 250, a processor 260, and a speaker 270. The various components are coupled to each other via an address and data bus 290.

[0022] The display 220 displays various visuals to a user of the communication device 200. The display 220 may also display a touch keypad (not shown) for use by the user of the communication device 200. The keypad 230 includes keys for accepting or declining an incoming call, a delete or cancel key, navigation keys, and alphanumeric keys etc. The speaker 270 converts incoming electrical signals into audio signals for reception by the users of the communication device 200. The display 220, the speaker 270, and the keypad 230 are also commonly called as user interfaces, as they allow the user of the communication device 200 to interface with the communication device 200. The user interface may additionally include components such as a microphone 210 used for inputting information into the communication device 200, and other external interfaces (not shown) which may be used to connect to a peripheral device.

[0023] FIG. 2 further shows a memory 240 which is used for storage of information. The memory 240 may be a volatile memory or/and a non-volatile memory. A volatile memory is used for storing temporary data that is erased every time the communication device 200 is powered off. A non-volatile memory is used for storing permanent type of data. Further, the processor 260 shown in FIG. 2 is the primary element that performs various operations of the communication device 200. The processor 260 is a conventional processor that processes the information that has to be transmitted or that has been received by the communication device 200 and further directs other elements within the first communication device to perform various operations.

[0024] The transceiver 250 shown in FIG. 2 is used for transmitting and receiving information, by the communication device 200. The transceiver 250 is used for transmitting information to or receiving information from various communication devices in the vicinity of the communication device 200. With reference to FIG. 1, the transceiver 250 may be associated with the first communication device 105 and may send and receive any requests for call set up from the base station 110, when the communication device 105 is present in the coverage area of base station 110.

[0025] The communication system 100 of FIG. 1 is now described in more detail with reference to FIGs. 3-8 in accordance with some embodiments of the present invention.

[0026] FIG. 3 shows a schematic signal flow diagram 300 in accordance with some embodiments of the invention. The signal flow 300 shown in FIG. 3 starts with a transmitting device 301 receiving a request 304 for a call set up from a user of the transmitting device 301. The transmitting device 301 may be any one of a wired or wireless communication device such as a communication device, a laptop, a PDA (personal digital assistant), a set-top box etc. In one example, the transmitting device is the wireless communication device 105 shown in FIG. 1 comprising the keypad 230, the transceiver 250 and the processor 260 (shown in FIG. 2). Further, receiving the request for call set up, via a user interface including the keypad 230 (shown in FIG. 2), includes receiving a request for a customized CLI and receiving a data message. The data message corresponds to any personalized message sent by a user of the transmitting device 301, which the user desires to be shown as customized CLI on a receiving device's display. However, in case of cellular communication, there may be a limit on the number of bytes that may be included as the data message.

[0027] Now, a processor 260 (shown in FIG. 2) corresponding to the transmitting device 301 forms a first message. The first message includes an identification of the transmitting device 301, an identification of the receiving device 303, the data message input by the user of the transmitting device, and an indicator indicating the user request for a customized CLI. Now, the transmitting device 301 transmits 305, using the transceiver 250 (shown in FIG. 2) the first message, during a call set up, to a network infrastructure element 302.

[0028] The network infrastructure element 302 may be any network element present in a communication environment that facilitates and controls end-end to calls between communication devices. In one example, the network infrastructure element may be any one or more of a base station, a mobile switching centre, a router, a gateway etc. that controls and governs the establishment of calls between communication devices. In another example, the network infrastructure element is one or more of the base station 110 and the network 120 shown in FIG. 1. The network infrastructure element 302 further includes a processor and a transceiver including a transmitter and a receiver (not shown), hereon termed as a first processor, a first transmitter, and a first receiver.

[0029] The first transmitter at the network infrastructure element 302 receives the first message transmitted by a transmitter corresponding to the transceiver 250 (shown in FIG. 2) of the transmitting device 301, hereon termed as a second transmitter at the transmitting device 301. The first message is the same message that was formed by the processor 260 of the transmitting device 301, hereon termed as a second processor of the transmitting device 301. When the first message is received by a first receiver at the network infrastructure element 302, the network infrastructure element 302 retrieves 306 the identification of the transmitting device 301 from the first message. The first processor at the network infrastructure element 302 may additionally compare the retrieved identification of the transmitting device 301 to a database in a memory of the network infrastructure element 302 to determine if any information associated with the retrieved identification is stored in the memory. The database is pre-programmed into the memory of the network infrastructure element 302 by a network administrator of the network infrastructure element 302. The database may be periodically updated and maintained. The database may include a matrix correlating identifications of various communication devices and the information associated with these identifications. The information may be one or more of a name, a work place, an alternate email, an alias of the name or the like. of the user of the communication device. In case, a match is found, i.e., the retrieved identification of the transmitting device, maps to an entry in the database the network infrastructure element 302 retrieves the information corresponding to the entry and selects this

information as a first CLI of the transmitting device 301. In case, no match is found during the mapping, the network infrastructure element selects the identification of the transmitting device as retrieved from the first message as the first CLI.

[0030] After the first processor at the network infrastructure element 302 determines a first CLI associated with the transmitting device 301, it determines 307 whether the first message contains a unique indicator indicating the request for a customized CLI. In case, the network infrastructure element 302 determines that there is no indicator in the first message, the first processor at the network infrastructure element 302 forwards the first CLI of the transmitting device 301 to a receiving device 303 for alerting the receiving device 303 of an incoming call, as a conventional process.

[0031] However when the network infrastructure element 302 determines that the first message comprises the unique indicator, the first processor at the network infrastructure element 302 retrieves a data message contained in the first message. The first processor at the network infrastructure element 302 then adds 308 the first CLI, the retrieved data message, and another indicator in a second message for call set up. The second indicator is used to indicate a request for a customized CLI to the receiving device 303. In one example, the second indicator is the same as the first indicator. In another example, the second indicator is a unique combination of bits in a particular field of the second message for call set up.

[0032] The network infrastructure element 302 now transmits 309 the second message to a receiving device 303 via the first transmitter at the network infrastructure element 302. The receiving device 303 may be any communication device such as a laptop, a personal computer, a PDA, a set top box etc. In one example, the receiving device is the wireless communication device 115 of FIG. 1.

[0033] The receiving device 303 now receives the second message from the network infrastructure element 302 via a receiver corresponding to the transceiver 250 (shown in FIG. 2), herein termed as a second receiver, and retrieves the first CLI of the transmitting device 301 from the second message. In one embodiment, after a processor 260 (shown in FIG. 2), of the receiving device 303, hereon a third processor, retrieves 310 the first CLI from the second message, the third processor of the

receiving device 303 may additionally map the retrieved first CLI to a look-up table, such as a phonebook, in a database of the receiving device 303. The look-up table comprises an association between CLIs of various communication devices and related information such as names of the owners of various communication devices, addresses of these owners, their places of work, email addresses, alternate telephone numbers etc. In case, while mapping the retrieved CLI of the transmitting device 301 to such a look-up table in the receiving device 303, a match is found, the third processor of the receiving device 303 may select one or more of a name of the owner, address of the owner, place of work etc. In this example, this selected information is the second CLI of the transmitting device 301.

[0034] However, when no match is found during the mapping, the second CLI is the same as the first CLI. In another case, any additional information thus found may only be appended to the first CLI to obtain the second CLI. In yet another case, the first CLI may supersede or overwrite any match thus found, and therefore, the second CLI is again the first CLI.

[0035] In an alternate embodiment, after retrieving the first CLI from the second message, the third processor of the receiving device 303 may determine whether the retrieved first CLI is a telephone number of the transmitting device 301 or any other information associated with the transmitting device 301, as provided by the network infrastructure element 302. In case, it is determined that the retrieved CLI is a telephone number of the transmitting device 301, the receiving device 303 maps the retrieved CLI to the look-up table, as explained above. Otherwise, the receiving device 303 skips the step of mapping and selects the retrieved first CLI as the second CLI.

[0036] After determining a second CLI corresponding to the first CLI that was retrieved from the second message for the call set up, the third processor of the receiving device 303 now determines a presence of a unique indicator in the second message. In case, the receiving device 303 determines the presence of the unique indicator in the second message, the third processor of the receiving device 303 retrieves 311 a data message comprised in the second message.

[0037] Further, in response to retrieving the data message comprised in the second message, the third processor of the receiving device 303 directs a display, such as a display 220 (shown in FIG. 2), coupled to the third processor, to display the second CLI of the transmitting device 301 simultaneously with the data message, while alerting a user of the receiving device 303 of an incoming call from the transmitting device 301. Thus, the receiving device 303 displays a customized CLI on a display, such as the display 220 (shown in FIG. 2), of the receiving device 303.

[0038] It is to be understood by one of ordinary skill in the art that the functions of the first processor, the second processor, and the third processor may be performed by a single processor or component, or by two or more separate processors or components, without departing from the spirit and scope of the present invention. Similarly, the functions of the first transmitter, the second transmitter, the first receiver and/or the second receiver may be performed by a single element or component, or by two or more separate processors or components, without departing from the spirit and scope of the present invention. The invention is now described in more detail with respect to the functioning of each of the transmitting device 301, the network infrastructure element 302, and the receiving device 303, in FIGs. 4, 5, and 6 respectively.

[0039] FIG. 4 shows a flowchart, from a perspective of a transmitting device, in accordance with some embodiments of the invention. The transmitting device, also termed as a calling party, corresponds to the transmitting device 301 shown in FIG. 3 and the first communication device 105 shown in FIG. 1. The transmitting device is basically a communication device originating a request for a call set up. In one example, the transmitting device is any of a personal computer, a laptop, a PDA, a pager, a set top box, a landline telephone etc. The list is only exemplary and not limiting by any means.

[0040] The method 400 of FIG. 4 starts with a transmitting device receiving 410 a first request for a call set up from a user of the transmitting device via a user interface comprising a keypad 230 and/or a touchpad on a display 220, as shown in FIG. 2. The user may initiate the request by inputting an identification number of a receiving

device and additionally pressing a dedicated key. In one example, the identification number is a telephone number of the receiving device. In another example, the user may initiate the request by selecting a recipient from a list of stored recipients in a phonebook stored in a memory of the transmitting device, such as memory 240 shown in FIG. 2. The phonebook is a database that stores information related to various users, their contact numbers, email addresses, work places, anniversaries, etc. The phonebook may be maintained and updated by the user of the transmitting device. In another example, the user may initiate the request by selecting a recipient from a repertory of dialed calls, missed calls, received calls, and the like. Such lists of dialed calls, missed calls, received calls etc. are automatically maintained by the transmitting device based on the communications carried out by the transmitting device. In yet another example, the user may initiate the request by selecting a recipient from various groups stored in the memory of the transmitting device. In one example, these groups may be friends, colleagues, family etc. A user may use his or her discretion to categorize the entries in the phonebook under any of the said groups. Later, the user may select a recipient by browsing through one of these groups.

[0041] In one embodiment, after the user has selected a recipient for call initiation, the user may press a dedicated key on the keypad (such as the keypad 230 shown in FIG. 2) to request a customized CLI for the call. In this embodiment, a determination that the dedicated key has been pressed is considered as a second request for a customized CLI by the receiving device.

[0042] In another embodiment, after the user has selected a recipient for call initiation, the transmitting device may now prompt the user to confirm whether the user desires to transmit a customized CLI. In this example, the transmitting device displays a pop-up on a display, such as display 220 shown in FIG. 2, of the transmitting device, asking the user to input an affirmative or negative response, on whether a customized CLI is to be transmitted. In case, the user inputs a negative response, the transmitting device transmits the identification of the transmitting device and an identification of a receiving device to a network element (such as a network infrastructure element 302 shown in FIG. 3) for a conventional call set up. However, in case, the user inputs an

affirmative response, it is considered as receiving 420 a second request for a customized CLI.

[0043] After receiving the second request for the customized CLI, the transmitting device displays another pop-up on the display of the transmitting device, asking a user to input his or her message for the customized CLI, which is regarded as receiving a data message by the transmitting device. The user may input 430 any personalized message taking into considering a character or word limit, if any.

[0044] In another example, when the user inputs an affirmative response to the query on whether the user desires a customized CLI, the transmitting device may display a list of pre-stored signatures associated with the selected recipient. These pre-stored signatures may be fed into the memory of the transmitting device by a user or a manufacturer of the transmitting device. In one example, a user creates a database that links various phonebook entries to various signatures. Later, the transmitting device maps a recipient selected by a user, from a phonebook, to the database, to retrieve an associated list of signatures.

[0045] In another example, a user may create a database in the memory that associates various groups stored in the transmitting device to a number of signatures. In this case, each group is linked to a particular list of signatures. For example, the user may associate one list of signatures with a group “friends” and another list of signatures with a group “family.” When the transmitting device detects that a recipient has been selected by a user, the transmitting device compares the selected recipient with each entry in the plurality of groups to determine a group to which the recipient belongs. Once the transmitting device has determined a group to which a selected recipient belongs, the transmitting device displays an associated list of signatures related to the determined group, in response to determining that a user has inputted a request for a customized CLI.

[0046] In yet another example, the user may create a database that links various automatic logs of calls to a respective plurality of signatures. In this case, each log of call is associated with a respective list of signatures. For example, the log of “missed calls” is associated with a first list of signatures comprising “free now”, “busy later”,

“apologies”, “meeting” whereas a log of “received calls” is associated with a second list of signatures comprising “missing you”, “emergency”, “call me”. In this example, as soon as the user inputs a request for a customized CLI, the transmitting device compares a selected call recipient with the entries in the logs of call, and determines a log based on the most recent entry in time. The transmitting device then displays a list of signatures associated with the determined log.

[0047] When the transmitting device displays the lists of signatures, as above, a user may select a desired signature from the displayed list. The selected signature is regarded as receiving a data message by the transmitting device. In one example, the transmitting device additionally prompts the user to update the selected signature. The user may select to update the selected signature, or send the selected signature as such without any changes. In another case, the user may update the selected signature and store the updated signature either by replacing the original selected signature or as a new entry in the associated signature list. In this case, the updated signature is regarded as receiving a data message by the transmitting device.

[0048] After a user has either manually entered the data message either by entering a personalized message and/or selecting a signature from a list of displayed signatures, the transmitting device transmits 440 a message to a network infrastructure element for call set up. In one example, this message is transmitted via a transceiver 250 shown in FIG. 2. This message comprises an identification of the transmitting device, an identification of the receiving device, a data message comprising the personalized message entered by the user or/and a signature selected by the user, and an indicator indicating a request for the customized CLI during the call set up.

[0049] FIG. 5 shows a flowchart, from a perspective of a network element, in accordance with some embodiments of the invention. The network element may be any element in the network of a communication system that facilitates and controls the establishment of end to end calls between the communication devices. In one example, the network element may be any one of a base station controller, a mobile switching center, a router, a gateway etc. In another example, the network element is the base station 110, as shown in FIG. 1.

[0050] The method 500 starts when the network element receives 510 a first message from a transmitting device, such as the first communication device 105 shown in FIG. 1, requesting a call set up. The first message received by the network comprises an identification of a transmitting device, an identification of a receiving device, an indicator indicating a request for customized CLI, and a data message. The first message is similar to the message transmitted by the transmitting device, as explained above with respect to FIG. 4. The network element retrieves 520 the identification of the transmitting device included in the first message on receiving the first message. Further, the network element determines 530 a first CLI corresponding to the retrieved identification of the transmitting device. In one example, the first CLI is determined based on comparing the retrieved identification with a look-up table stored in a memory of the transmitting device. The look-up table comprises various entries that contain an association between the identifications of various communication devices and other related information such as names of the owners of the communication devices, alternate contact numbers, email addresses associated with these owners etc. The network element compares the retrieved identification of the transmitting device with the various entries in the look-up table to find a match. In one example, when an entry match is found, the network element may select the first CLI to be a name of an owner corresponding to the match. In another example, when a match is found, the network element may select a name of the organization of the owner of the communication device that is found to be associated with the retrieved identification. In yet another example, when no match is found, the network element may select the retrieved identification as the first CLI.

[0051] After the network element has determined the first CLI of the transmitting device corresponding to the retrieved identification information, the network element determines 540 whether the first message includes a first indicator. In one example, the network element checks a particular field in the first message for the presence of a unique combination of bits. In case, it is determined that the first indicator is not present in the first message, the network element may perform conventional operations on the first CLI, such as transmitting 550 the first CLI to a receiving device,

where the address of the receiving device is determined by the network element from the first message.

[0052] In case it is determined that the first message comprises the first indicator, the network element retrieves 560 a data message comprised in the first message. The data message is a personalized message or a default signature sent from the transmitting party to be displayed with the first CLI, as a customized CLI, to the receiving party.

[0053] After the network element has retrieved the data message from the first message, the network element now generates a second message to be transmitted to the receiving party during call set up for establishing the call. For generating the said second message, the network element adds 570 the first CLI, the retrieved data message, and a unique indicator to a new message, which forms the second message. In one example, the unique indicator may be any specific combination of bits in any particular field of the second message. In another example, the unique indicator included in the second message is the same as the unique indicator determined in the first message by the network element.

[0054] After generating the second message, the network element transmits 580 the second message to the receiving device during the call set up for establishing the call between the transmitting device and the receiving device. The network elements transmits the second message such that when the receiving device receives the second message, it displays a customized CLI comprising the data message on a display of the receiving device, while alerting a user of the receiving device of an incoming call.

[0055] FIG. 6 shows a flowchart, from a perspective of a receiving device in accordance with some embodiments of the invention. The receiving device, also termed as a called party, corresponds to the receiving device 303 shown in FIG. 3 and the communication device 115 shown in FIG. 1. In one example, the receiving device is any of a personal computer, a laptop, a PDA, a pager, a set top box, a landline telephone etc. The list is only exemplary and not limiting by any means.

[0056] The method 600 starts at the receiving device when the receiving device receives 610 a message from a network element for a call-set up, say via a transceiver 250, as shown in FIG. 2. The message received at the receiving device comprises a first CLI of the transmitting device, an identification of the receiving device, an indicator indicating a request for customized CLI, and a data message. The message, thus received, corresponds to the message transmitted by the network element described in FIG. 5. A processor of the receiving device, such as the processor 260 shown in FIG. 2, retrieves 620 a first CLI from the message upon the receipt of the message from the network element. The first CLI may either be a telephone number of a transmitting device that originated the call or any one of a name or work organization or any other identification of a user of the transmitting device that originated the call, as mapped by the network element described in FIG. 5.

[0057] After receiving the first CLI, the receiving device may choose to map the first CLI to its own database in a memory, such as a memory 240 shown in FIG. 2, to determine a second CLI. The database may be maintained and updated by a user of the receiving device. The database of the receiving device may be a matrix comprising various entries that correlate identification numbers (such as a telephone number) of various communication devices with their associated information such as a first name of an owner of the telephone number, a second name of the owner of the telephone number, a nick-name or a pet-name of the owner, a place of work of the owner, etc.

[0058] For example, when the first CLI is a telephone number of the transmitting device, the receiving device maps the received first CLI with the entries in the database. In case, the receiving device finds a match during the mapping, the receiving device may select any of the information, corresponding to the match found, as a second CLI of the transmitting device. In case, no match is found by the receiving device while mapping the first CLI with the said database, the receiving device may choose to select the first CLI as the second CLI of the transmitting device.

[0059] In another example, when the first CLI is information mapped by the network element, the receiving device skips the mapping of the first CLI with the database in the first CLI and chooses to select the first CLI as the second CLI.

[0060] After determining the second CLI of the transmitting device, the receiving device determines 630 whether the received message comprises an indicator indicating a request for a customized CLI. In case the receiving device determines that a first message does not comprise any indicator indicating a request for a customized CLI, the receiving device may display 640 the second CLI of the transmitting device using conventional operations.

[0061] However, if the receiving device determines the presence of an indicator indicating a request for a customized CLI, the receiving device retrieves 650 a data message included in the message received from the network element. As previously explained, the data message may be a message sent by the user of the transmitting device that is to be displayed as the customized CLI.

[0062] After retrieving the data message from the received message, the receiving device displays 660 the data message simultaneously with the second CLI corresponding to the first CLI, as a customized CLI, to alert a user of the receiving device of a new incoming call. In one example, after retrieving the data message, the receiving device announces the data message simultaneously with the second CLI corresponding to the first CLI, as a customized CLI announcement, to alert the user of the incoming call.

[0063] The invention is now described with respect to the example displays of customized CLIs as shown in FIGs. 7 and 8. FIG. 7 is an exemplary view of the customized CLI as displayed on a communication device of a call recipient. In this example, a company employee “John” has lost his own communication device while commuting to office one morning. In order to inform his wife “Sarah”, John requests a colleague to allow him to make a call. John uses the colleague’s phone to initiate a call set up request, along with a request for a customized CLI. The call set up request further comprises an identification of Sarah’s telephone number. The data message for

the customized CLI, as entered by John into the colleague's device, reads "Lost Phone – John."

[0064] As explained earlier, a network element receives this request for call set up which includes the identification of the colleague's device, i.e., the telephone number of the colleague's device in this example, the data message "Lost-Phone John", and a first indicator indicating a request for customized CLI. Further, the network element maps the received telephone number to a plurality of entries of a database in the network element. The database comprises an association of various telephone numbers and respective names of owners of these telephone numbers. The network element detects that the telephone number does not map to any entry in the database. So, the network element transmits a second set up request comprising the telephone number, the data message, and an indicator for customized CLI, as a set-up message, during the call set up, to Sarah's number.

[0065] Upon receiving the call, Sarah's communication device detects that the telephone number of the transmitting device does not map to any of its own stored records that associate names of people with their contact numbers. Sarah's communication device also detects the presence of the indicator for a customized CLI, and retrieves the data message. Therefore, while alerting Sarah of the incoming call, Sarah's device displays the telephone number of John's colleague, and the data message from John, simultaneously, on a display of the device, as a customized CLI, as shown on the display 710 in FIG. 7.

[0066] In another instance, John is running late for an important meeting and wants to inform his clients of the delay. For doing this, John initiates a call to his secretary "Mia" along with a request for a customized CLI. The data message sent by John for the customized CLI reads "5 min late."

[0067] Again the network element receives the request for call set up including the identification number of John's communication device, in this case, John's telephone number, the data message, and an indicator indicating a request for a customized CLI. The network element maps John's contact number to the database, and fails to find a match. The network element transmits a new set up message comprising John's

number, data message, and an indicator indicating the request for customized CLI and transmits it to Mia's number which was extracted from the received request for call set up.

[0068] On receiving the set up message, Mia's communication device retrieves John's number from the set up message and considers the retrieved number as the first CLI. Mia's device now maps John's number to a phonebook database that relates various telephone numbers to their owners. Mia's communication device finds a match "Jonathan Doe" associated to John's number. And Mia's communication device associates "Jonathan Doe" as well as John's number as the second CLI. Mia's device also detects the presence of the indicator indicating the request for a customized CLI and accordingly retrieves the data message "5 min late" from the received set up message. Mia's device displays the second CLI, i.e., "Jonathan Doe 800-555-1234" and the data message, i.e., "5 min late" simultaneously on the display, while ringing the device, as a customized CLI, in order to alert Mia of the incoming call from John, as shown on the display 810 in FIG. 8.

[0069] In another example, Mia's device may select only "Jonathan Doe" as the second CLI and displays it simultaneously with the data message "i.e. 5 min late" as the customized CLI, to alert Mia of the incoming call.

[0070] The above invention may be of critical use in situations where the calling party wants to ensure that the receiving party receives the call immediately. In specific situations, when the calling party has insufficient battery charge available in the communication device to complete a call, the calling party may choose to send the information across by using the above disclosed customized CLI. The customized CLI also helps to ensure that the calling party is aware of a status-quo of the called party and therefore, acts accordingly. Further, it is helpful in scenarios where the calling party has insufficient credit balance available for completing a call, and wants to send a piece of urgent information across. In this case, the calling party may send the customized CLI, and the called party may choose to decline a call based on the customized CLI, thereby saving the called party any expenses, and still managing to receive the urgent message. Thus, the invention may be of crucial use to the end users.

The invention may additionally benefit the network operators, who may charge minimally for the use of customized CLI. Overall, the invention provides a hitherto unexplored advantage to the calling party with regard to displaying its identification, as desired, to the called party.

[0071] In the foregoing specification, specific embodiments have been described. However, one of ordinary skill in the art appreciates that various modifications and changes may be made without departing from the scope of the invention as set forth in the claims below. Accordingly, the specification and figures are to be regarded in an illustrative rather than a restrictive sense, and all such modifications are intended to be included within the scope of present teachings.

[0072] The benefits, advantages, solutions to problems, and any element(s) that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as a critical, required, or essential features or elements of any or all the claims. The invention is defined solely by the appended claims including any amendments made during the pendency of this application and all equivalents of those claims as issued.

[0073] Moreover in this document, relational terms such as first and second, top and bottom, and the like may be used solely to distinguish one entity or action from another entity or action without necessarily requiring or implying any actual such relationship or order between such entities or actions. The terms "comprises," "comprising," "has", "having," "includes", "including," "contains", "containing" or any other variation thereof, are intended to cover a non-exclusive inclusion, such that a process, method, article, or apparatus that comprises, has, includes, contains a list of elements does not include only those elements but may include other elements not expressly listed or inherent to such process, method, article, or apparatus. An element preceded by "comprises ...a", "has ...a", "includes ...a", "contains ...a" does not, without more constraints, preclude the existence of additional identical elements in the process, method, article, or apparatus that comprises, has, includes, contains the element. The terms "a" and "an" are defined as one or more unless explicitly stated otherwise herein. The terms "substantially", "essentially", "approximately", "about"

or any other version thereof, are defined as being close to as understood by one of ordinary skill in the art, and in one non-limiting embodiment the term is defined to be within 10%, in another embodiment within 5%, in another embodiment within 1% and in another embodiment within 0.5%. The term “coupled” as used herein is defined as connected, although not necessarily directly and not necessarily mechanically. A device or structure that is “configured” in a certain way is configured in at least that way, but may also be configured in ways that are not listed.

[0074] It will be appreciated that some embodiments may be comprised of one or more generic or specialized processors (or “processing devices”) such as microprocessors, digital signal processors, customized processors and field programmable gate arrays (FPGAs) and unique stored program instructions (including both software and firmware) that control the one or more processors to implement, in conjunction with certain non-processor circuits, some, most, or all of the functions of the method and/or apparatus described herein. Alternatively, some or all functions could be implemented by a state machine that has no stored program instructions, or in one or more application specific integrated circuits (ASICs), in which each function or some combinations of certain of the functions are implemented as custom logic. Of course, a combination of the two approaches could be used.

[0075] Moreover, an embodiment may be implemented as a computer-readable storage medium having computer readable code stored thereon for programming a computer (e.g., comprising a processor) to perform a method as described and claimed herein. Examples of such computer-readable storage mediums include, but are not limited to, a hard disk, a CD-ROM, an optical storage device, a magnetic storage device, a ROM (Read Only Memory), a PROM (Programmable Read Only Memory), an EPROM (Erasable Programmable Read Only Memory), an EEPROM (Electrically Erasable Programmable Read Only Memory) and a Flash memory. Further, it is expected that one of ordinary skill, notwithstanding possibly significant effort and many design choices motivated by, for example, available time, current technology, and economic considerations, when guided by the concepts and principles

disclosed herein will be readily capable of generating such software instructions and programs and ICs with minimal experimentation.

[0076] The Abstract of the Disclosure is provided to allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it may be seen that various features are grouped together in various embodiments for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separately claimed subject matter.

What is claimed is:

1. A method for providing a customized Caller Line Identification (CLI), the method comprising:
 - 5 receiving, by a network element, a first message from a transmitting device during a call set up;
 - retrieving, by the network element, a data message and an identification of the transmitting device from the first message when the first message includes a first indicator;
 - 10 obtaining, by the network element, a first CLI of the transmitting device corresponding to the retrieved identification;
 - adding, by the network element, the data message, the first CLI, and a second indicator to a second message; and
 - transmitting, by the network element, the second message to a receiving
 - 15 device during the call set up for displaying the customized CLI on a display of the receiving device, thereby alerting a user of the receiving device of an incoming call from the transmitting device.
2. The method of claim 1, wherein the customized CLI includes the data message and a second CLI corresponding to the first CLI.
- 20 3. The method of claim 2, wherein the identification of the transmitting device is a telephone number of the transmitting device.
4. The method of claim 3, wherein the first CLI is at least one of the telephone number or an entry corresponding to the telephone number as stored at the network element.
- 25 5. The method of claim 4, wherein the second CLI is at least one of the telephone number, the entry corresponding to the telephone number as stored at the network element, or an entry corresponding to the telephone number as stored at the receiving device.

6. The method of claim 1, wherein the first indicator indicates a request for the customized CLI.
7. The method of claim 1 further comprising:
receiving, by the transmitting device, a first request for the call set up and a
5 second request for the customized CLI;
receiving, by the transmitting device, the data message; and
transmitting, by the transmitting device, the first message to the network
element, during the call set up, wherein the first message includes the data message,
the identification of the transmitting device, and the first indicator indicating the
10 second request for a customized CLI.
8. The method of claim 7, wherein the data message is at least one of a location
information, an emergency information, or an information about a user of the
transmitting device.
9. The method of claim 7, wherein the receiving the data message further
15 comprises:
prompting the user of the transmitting device to enter a signature, wherein the
data message includes the signature.
10. The method of claim 7, wherein the receiving the data message further
comprises:
20 determining a recipient from the first request, in response to detecting the
second request; retrieving a plurality of signatures corresponding to the recipient; and
prompting the user of the transmitting device to select a signature from the
plurality of signatures, wherein the data message is the selected signature.

11. The method of claim 1, further comprising:
receiving, by the receiving device, the second message from the network
element during the call set up;
retrieving, by the receiving device, the data message and the first CLI of the
5 transmitting device from the second message, in response to determining the second
indicator in the second message; and
playing, by the receiving device, the data message simultaneously with a
second CLI during the call set up, thereby alerting the user of the receiving device
about the incoming call from the transmitting device, wherein the second CLI
10 corresponds to the first CLI.
12. The method of claim 11 further comprising:
comparing the first CLI to a plurality of entries in a database of the receiving
device prior to the displaying, wherein the second CLI is the first CLI in case no
match is found during the comparing, further wherein the second CLI is an entry
15 corresponding to the first CLI in case a match is found during the comparing.

13. A system for providing customized Caller Line Identification (CLI), the system comprising:

a network element, wherein the network element further comprises:

5 a first receiver, wherein the first receiver receives a first message from a transmitting device during a call set up;

a first processor, coupled to the first receiver, wherein the processor retrieves a data message and an identification of the transmitting device from the first message when the first message includes a first indicator, obtains a first CLI of the transmitting device corresponding to the retrieved identification, and forms a second
10 message comprising the data message, the first CLI, and a second indicator; and

a first transmitter, coupled to the first processor, wherein the first transmitter transmits the second message to a receiving device during the call set up for displaying the customized CLI.

14. The system of claim 13, wherein the customized CLI includes the data
15 message and a second CLI corresponding to the first CLI.

15. The system of claim 13, wherein the identification of the transmitting device is a telephone number of the transmitting device.

16. The system of claim 15, wherein the first CLI is at least one of the telephone number or an entry corresponding to the telephone number as stored at the network
20 element.

17. The system of claim 16, wherein the second CLI is at least one of the telephone number, the entry corresponding to the telephone number as stored at the network element, or an entry corresponding to the telephone number as stored at the receiving device.

18. The system of claim 13, wherein the transmitting device further comprises:
a user interface , wherein the user interface receives a first request for the call
set up, a second request for the customized Caller Line Identification (CLI), and the
data message;

5 a second processor, coupled to the user interface, wherein the second
processor forms the first message comprising the identification of the transmitting
device, the data message, and the first indicator indicating the second request for the
customized CLI; and

a second transmitter, coupled to the second processor, wherein the second
10 transmitter transmits the first message to the network element during the call set up.

19. The system of claim 18, wherein the user interface receives the data message
by prompting a user to enter a signature in response to detecting the second request,
wherein the data message is the entered signature.

20. The system of claim 18 further comprising:

15 a memory, coupled to the second processor, wherein the memory stores a
plurality of signatures corresponding to a recipient included in the first request.

21. The system of claim 13, wherein the receiving device further comprises:
a second receiver, wherein the second receiver receives the second message
from the network element during the call set up;

20 a third processor, coupled to the second receiver, wherein the third processor
retrieves the data message and the first CLI of the transmitting device from the
received message in response to determining the first indicator in the second message
and further determines a second CLI of the transmitting device corresponding to the
first CLI; and

25 a display, coupled to the third processor, wherein the display displays the data
message simultaneously with the second CLI during the call set up, thereby alerting a
user of an incoming call from the transmitting device.

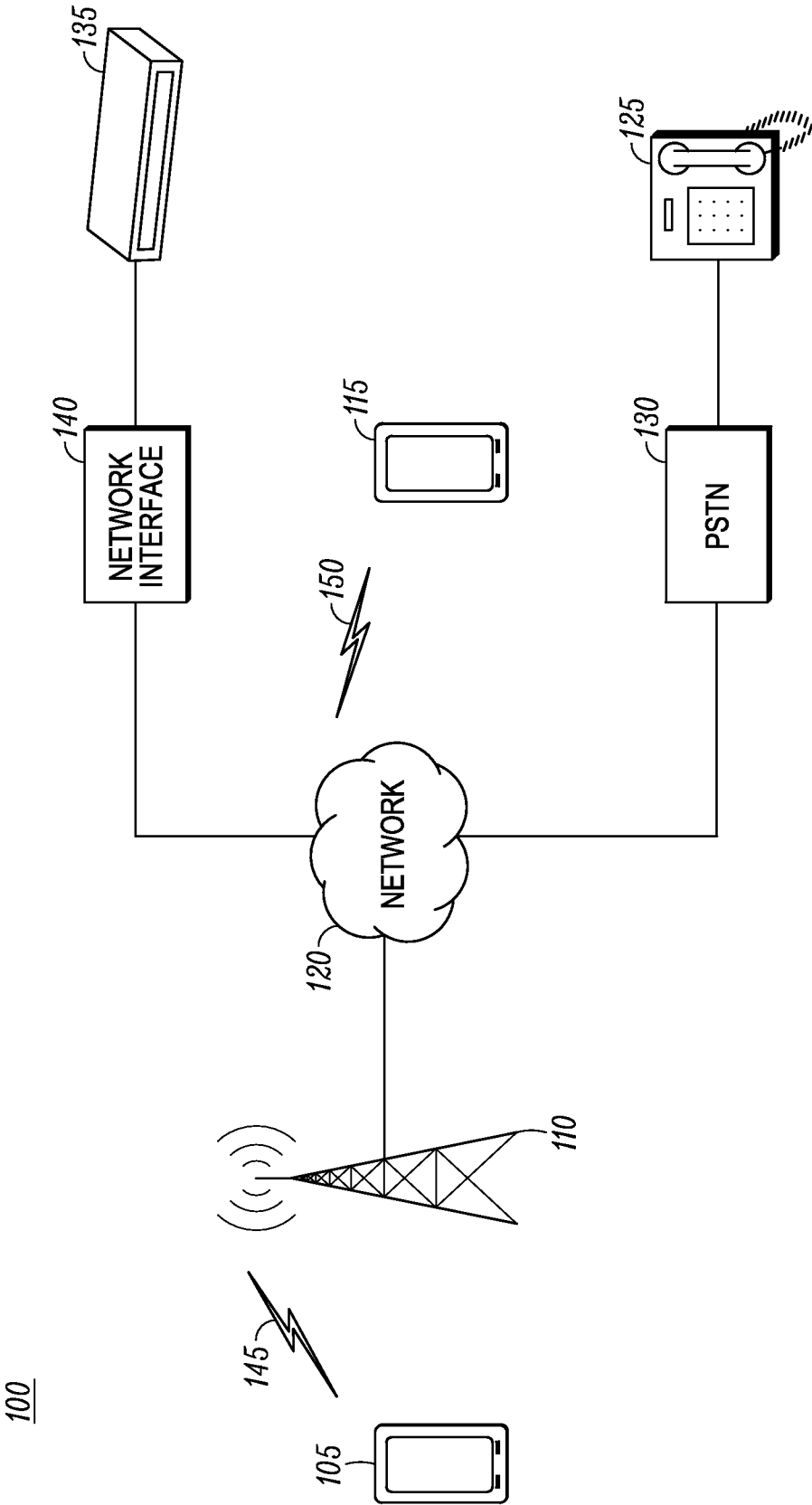


FIG. 1

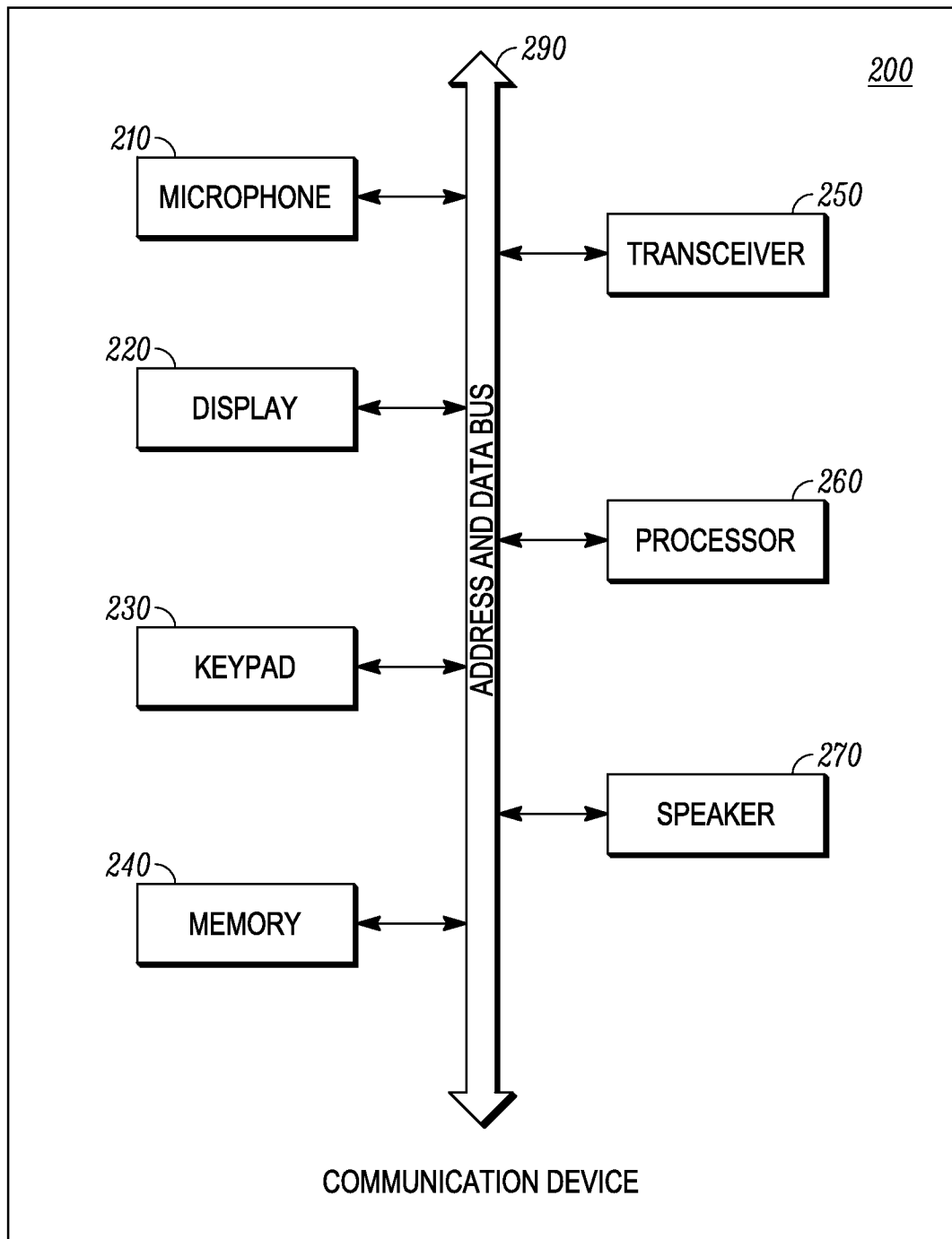
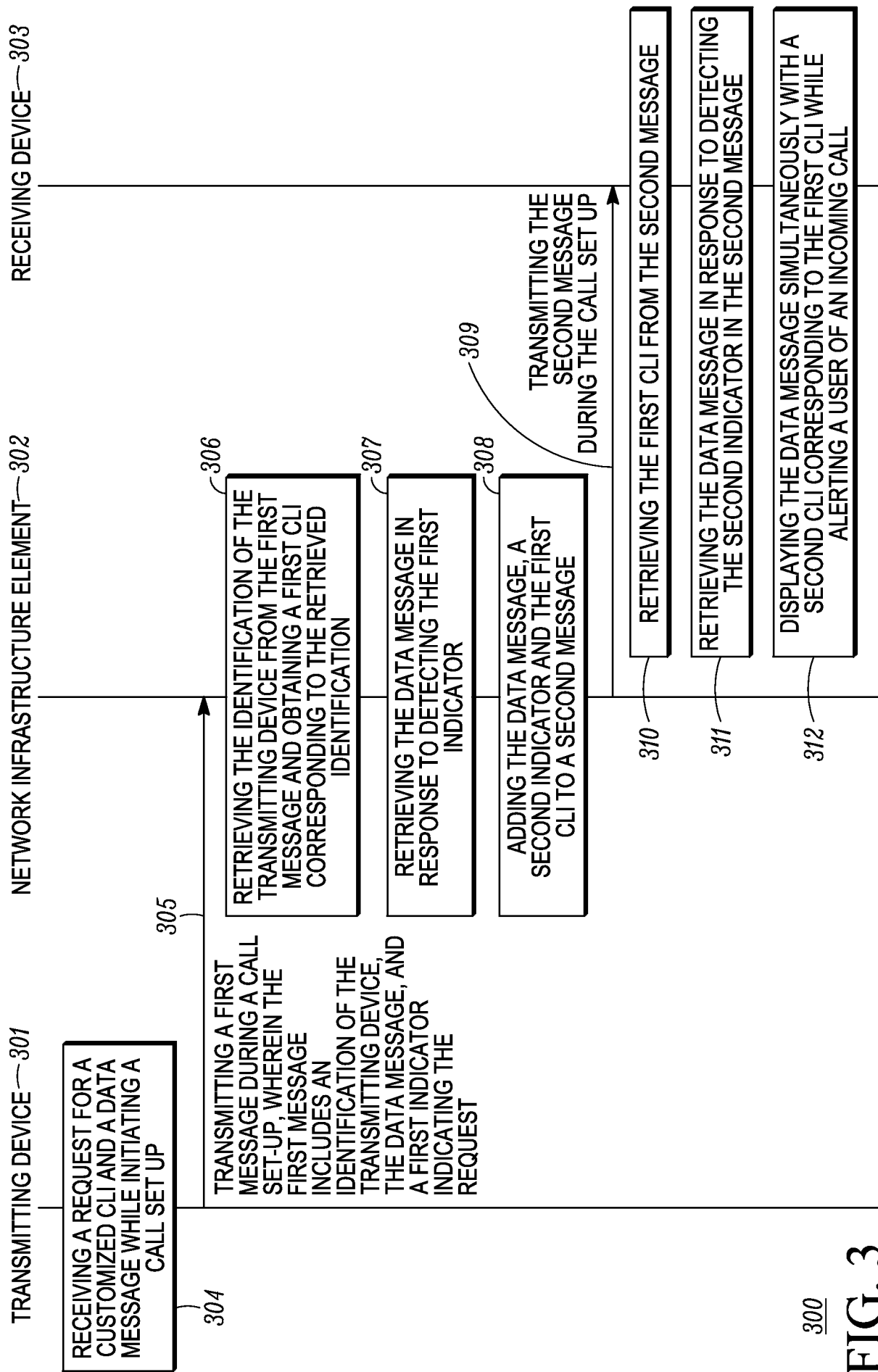


FIG. 2



300

FIG. 3

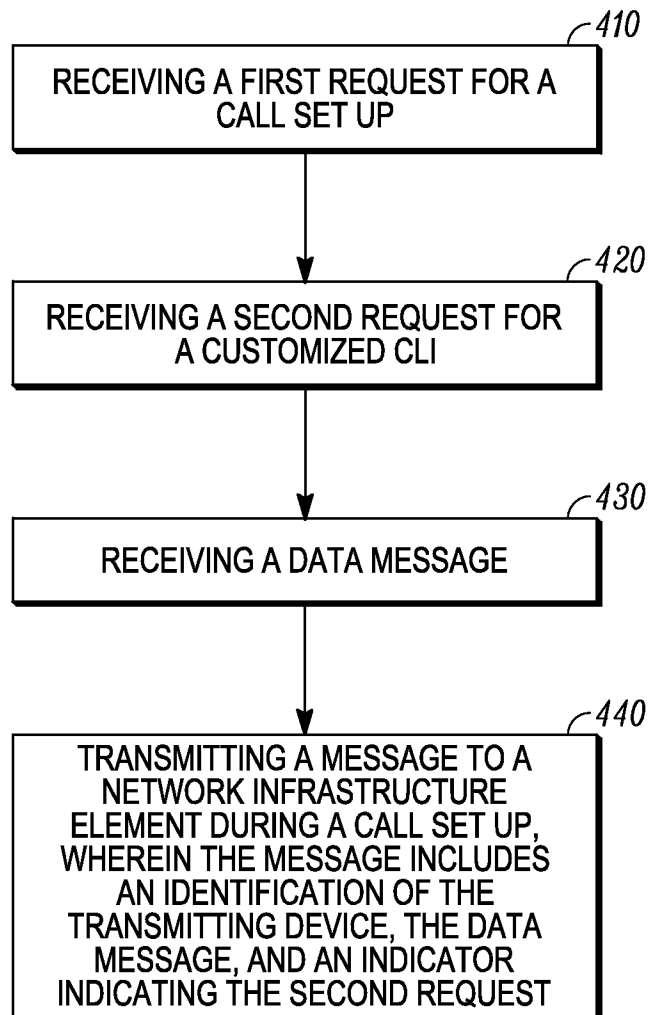
400

FIG. 4

500

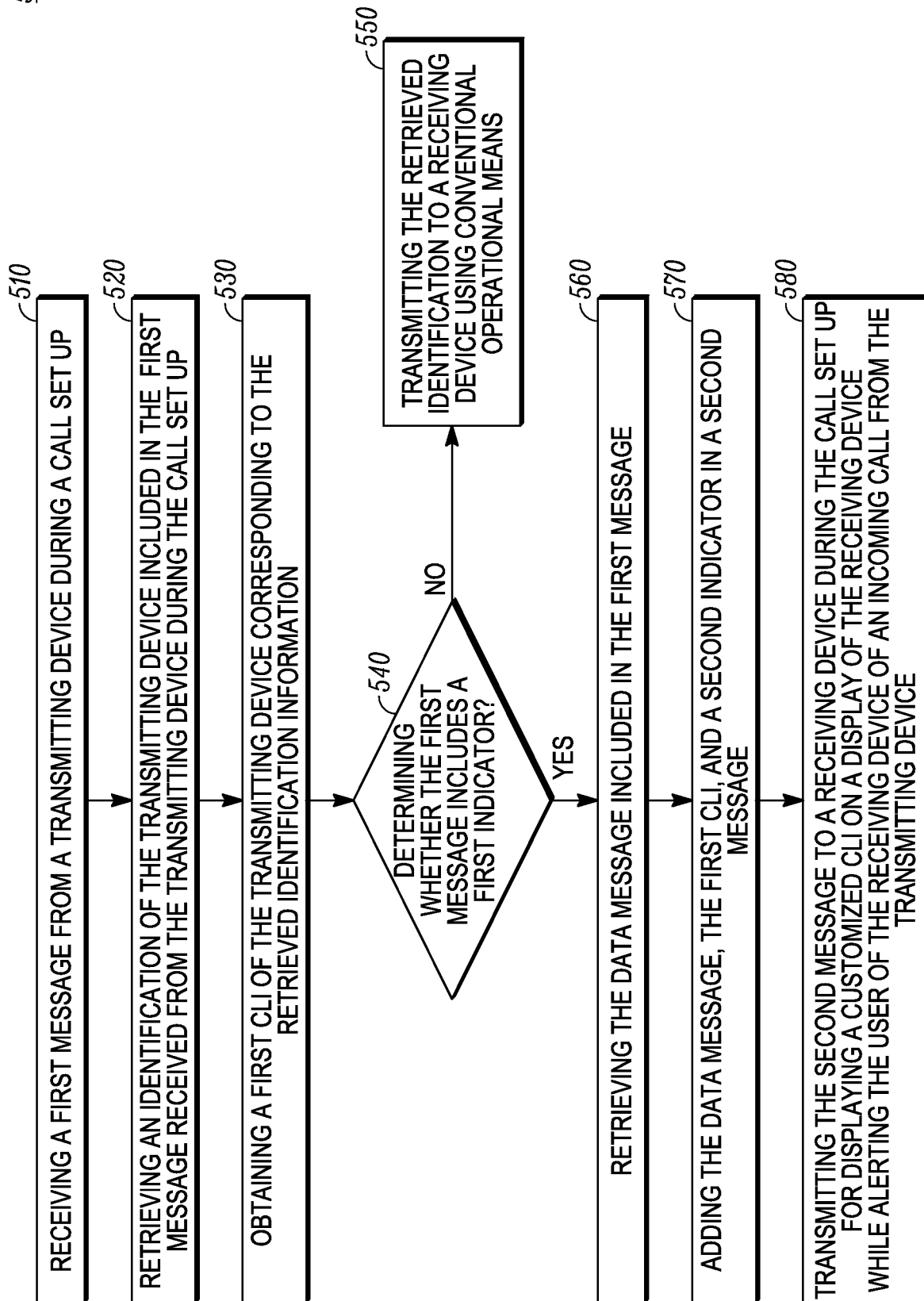


FIG. 5

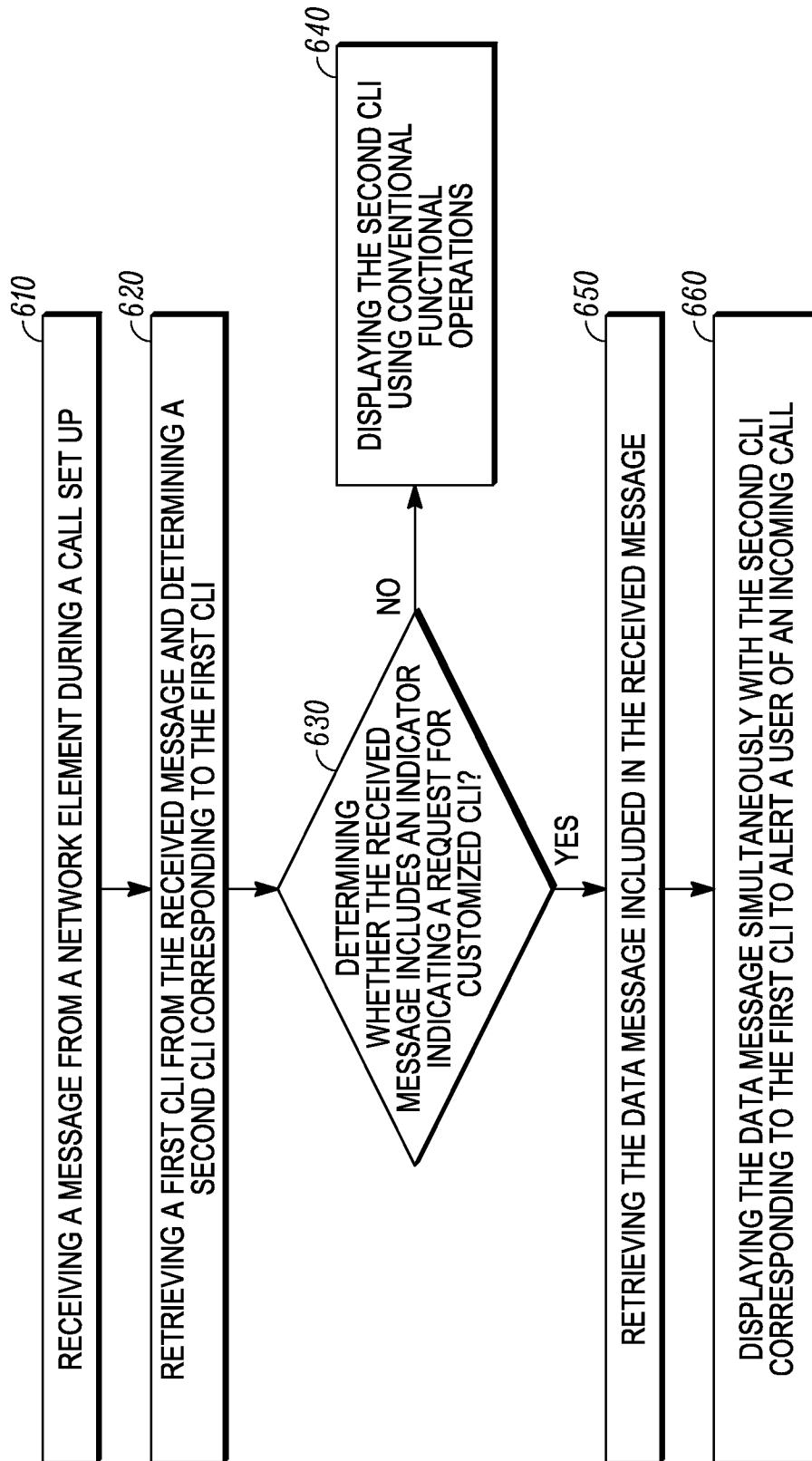
600

FIG. 6

700

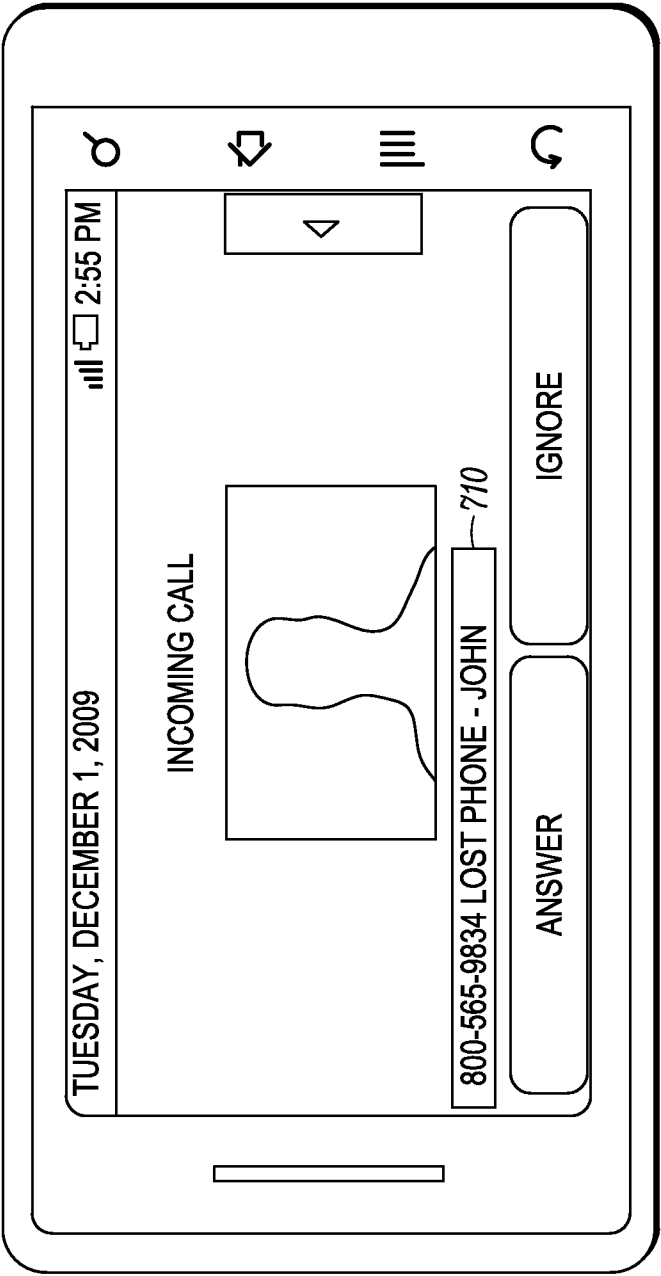


FIG. 7

800

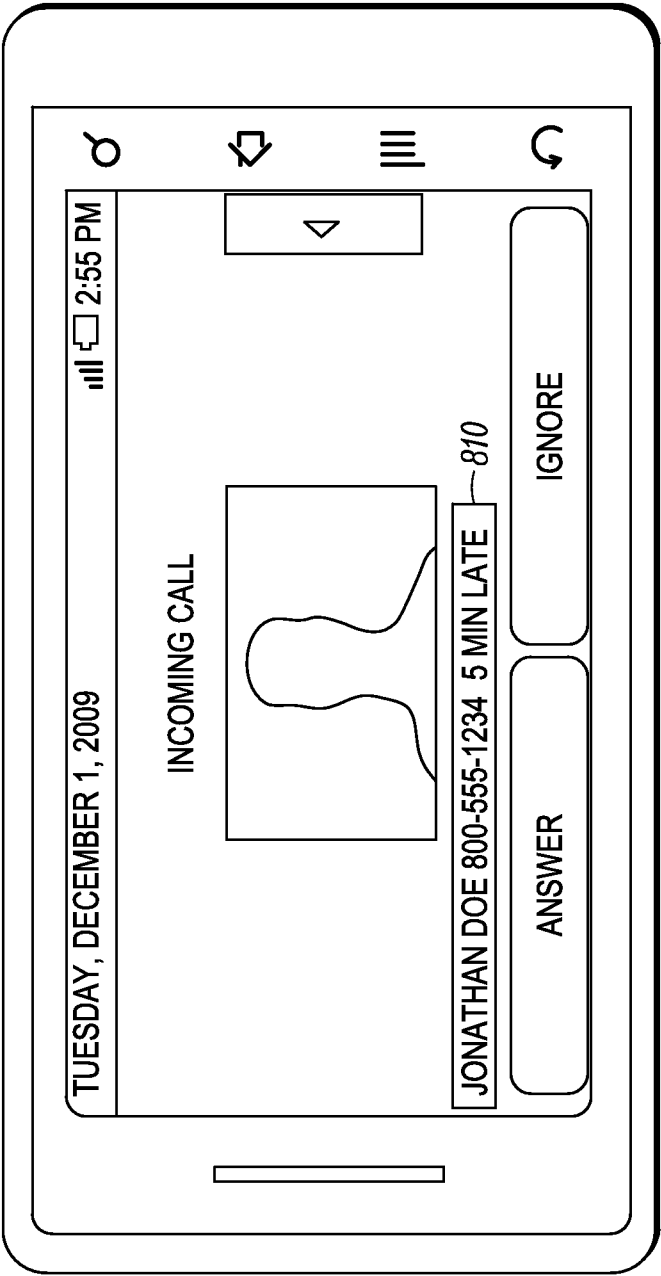


FIG. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/061582

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04M3/42
ADD.

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)
H04M

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/139172 A1 (LAMPELA JUHA [FI] ET AL) 24 July 2003 (2003-07-24) abstract figure 7 paragraph [0002] paragraph [0015] - paragraph [0016] paragraph [0025] - paragraph [0027] paragraph [0029] paragraph [0036] paragraph [0040] - paragraph [0041] ----- -/-	1-11, 13-21



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search

23 February 2012

Date of mailing of the international search report

29/02/2012

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Molinari, Fausto

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/061582

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/069212 A1 (AT & T CORP [US]; ESLAMBOLCHI HOSSEIN [US]; CROAK MARIAN [US]) 29 June 2006 (2006-06-29) abstract paragraph [0003] paragraph [0016] paragraph [0020] figures 1,2,3 -----	1-21
X	EP 1 874 017 A1 (NORTEL NETWORKS LTD [CA]) 2 January 2008 (2008-01-02) abstract paragraph [0001] paragraph [0003] - paragraph [0004] paragraph [0017] - paragraph [0019] paragraph [0023] figures 2-6 -----	1-21

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/061582

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			CN 1620802 A 25-05-2005
			EP 1468553 A2 20-10-2004
			US 2003139172 A1 24-07-2003
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			JP 2008524968 A 10-07-2008
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