

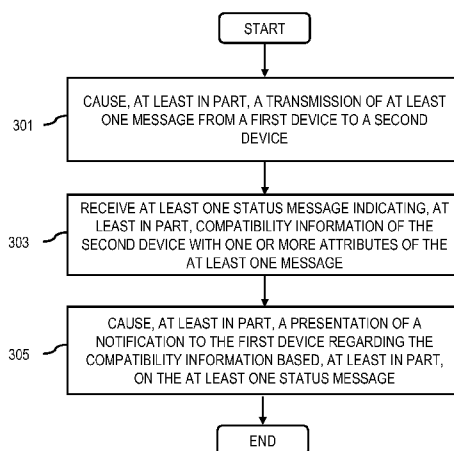


- (51) **International Patent Classification:**
H04W 4/12 (2009.01) *H04W 4/18* (2009.01)
- (21) **International Application Number:**
PCT/CN2013/078049
- (22) **International Filing Date:**
26 June 2013 (26.06.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
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- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).
- Declarations under Rule 4.17:**
— of inventorship (Rule 4.17(iv))
- Published:**
— with international search report (Art. 21(3))

(54) **Title:** METHOD AND APPARATUS FOR PROVIDING MESSAGING COMPATIBILITY STATUS

FIG. 3

300



(57) **Abstract:** An approach is provided causing, at least in part, a transmission of at least one message from a first device to a second device. The approach involves receiving at least one status message indicating, at least in part, compatibility information of the second device with one or more attributes of the at least one message. The approach further involves causing, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message.

METHOD AND APPARATUS FOR PROVIDING MESSAGING COMPATIBILITY STATUS

BACKGROUND

5 [0001] Service providers and device manufacturers (e.g., wireless, cellular, etc.) are continually challenged to deliver value and convenience to consumers by, for example, providing compelling network services. One area of interest has been the development of messaging services and technologies (e.g., text messaging, multimedia messaging, etc.), which has resulted greater adoption of messaging as a primary means of communication. However, as
10 messaging services draw more users and adopt new formats, the risk of incompatibility arising from, e.g., language differences, difference in messaging device/application capabilities, etc. also increases. As a result, service providers and device manufacturers face significant technical challenges to ensure that users are aware of potential incompatibilities between messaging devices or application so that the user can address or otherwise work around those
15 incompatibilities.

SOME EXAMPLE EMBODIMENTS

[0002] Therefore, there is a need for an approach for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in
20 part, on the status of a receiving device with one or more attributes of the at least one message.

[0003] According to one embodiment, a method comprises causing, at least in part, a transmission of at least one message from a first device to a second device. The method also comprises receiving at least one status message indicating, at least in part, compatibility information of the second device with one or more attributes of the at least one message. The
25 method further comprises causing, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message.

[0004] According to another embodiment, an apparatus comprises at least one processor, and at least one memory including computer program code for one or more computer programs, the at least one memory and the computer program code configured to, with the at least one processor, cause, at least in part, the apparatus to cause, at least in part, a transmission of at least one message from a first device to a second device. The apparatus is also caused to receive at least one status message indicating, at least in part, compatibility information of the second device with one or more attributes of the at least one message. The apparatus further causes, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message.

[0005] According to another embodiment, a computer-readable storage medium carries one or more sequences of one or more instructions which, when executed by one or more processors, cause, at least in part, an apparatus to cause, at least in part, a transmission of at least one message from a first device to a second device. The apparatus is also caused to receive at least one status message indicating, at least in part, compatibility information of the second device with one or more attributes of the at least one message. The apparatus further causes, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message.

[0006] According to another embodiment, an apparatus comprises means for causing, at least in part, a transmission of at least one message from a first device to a second device. The apparatus also comprises means for receiving at least one status message indicating, at least in part, compatibility information of the second device with one or more attributes of the at least one message. The apparatus further comprises means for causing, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message.

[0007] In addition, for various example embodiments of the invention, the following is applicable: a method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on (or derived at least in part from) any one or any combination

of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0008] For various example embodiments of the invention, the following is also applicable: a method comprising facilitating access to at least one interface configured to allow access to at least one service, the at least one service configured to perform any one or any combination of network or service provider methods (or processes) disclosed in this application.

[0009] For various example embodiments of the invention, the following is also applicable: a method comprising facilitating creating and/or facilitating modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based, at least in part, on data and/or information resulting from one or any combination of methods or processes disclosed in this application as relevant to any embodiment of the invention, and/or at least one signal resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0010] For various example embodiments of the invention, the following is also applicable: a method comprising creating and/or modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based at least in part on data and/or information resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention, and/or at least one signal resulting from one or any combination of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0011] In various example embodiments, the methods (or processes) can be accomplished on the service provider side or on the mobile device side or in any shared way between service provider and mobile device with actions being performed on both sides.

[0012] For various example embodiments, the following is applicable: An apparatus comprising means for performing the method of any of originally filed claims 1-20 and 36-38.

[0013] Still other aspects, features, and advantages of the invention are readily apparent from the following detailed description, simply by illustrating a number of particular embodiments and implementations, including the best mode contemplated for carrying out the invention. The

invention is also capable of other and different embodiments, and its several details can be modified in various obvious respects, all without departing from the spirit and scope of the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

5 BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The embodiments of the invention are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings:

[0015] FIG. 1 is a diagram of a system capable of causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message, according to one embodiment;

[0016] FIG. 2 is a diagram of the components of message platform 109, according to one embodiment;

[0017] FIG. 3 is a flowchart of a process for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message, according to one embodiment;

[0018] FIG. 4 is a flowchart of a process for determining at least one attribute and/or at least one default attribute associated with the first device and/or the second device, according to one embodiment;

[0019] FIG. 5 is a flowchart of a process for causing a transmission of the converted message based, at least in part, on the at least one status message and/or the compatibility information, according to one embodiment;

[0020] FIG. 6 is a ladder diagram that illustrates a sequence of processes used in a presentation of a notification regarding compatibility information for one or more messages, according to one embodiment;

[0021] FIGs. 7A-7C are diagrams of user interfaces utilized in the processes of FIGs. 3-5, according to various embodiments;

[0022] FIG. 8A is a diagram of a user interface utilized in the processes of FIGs. 3-5, according to one embodiment;

5 [0023] FIG. 8B is a diagram of a user interface utilized in the processes of FIGs. 3-5, according to one embodiment;

[0024] FIG. 8C is a diagram of a user interface utilized in the processes of FIGs. 3-5, according to one embodiment;

10 [0025] FIG. 9 is a diagram of hardware that can be used to implement an embodiment of the invention;

[0026] FIG. 10 is a diagram of a chip set that can be used to implement an embodiment of the invention; and

[0027] FIG. 11 is a diagram of a mobile terminal (e.g., handset) that can be used to implement an embodiment of the invention.

15 DESCRIPTION OF SOME EMBODIMENTS

[0028] Examples of a method, apparatus, and computer program for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message are disclosed. In the following description, for the purposes of explanation, numerous
20 specific details are set forth in order to provide a thorough understanding of the embodiments of the invention. It is apparent, however, to one skilled in the art that the embodiments of the invention may be practiced without these specific details or with an equivalent arrangement. In other instances, well-known structures and devices are shown in block diagram form in order to avoid unnecessarily obscuring the embodiments of the invention.

25 [0029] FIG. 1 is a diagram of a system capable of causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on

the status of a receiving device with one or more attributes of the at least one message, according to one embodiment. As mentioned before, the development of messaging services and technologies has resulted greater adoption of messaging as a primary means of communication, as a result service providers are continually challenged to deliver value and convenience to consumers by taking into account the risk of incompatibility arising from, e.g., language differences, difference in messaging device/application capabilities, etc. For example, a user may create a group message to ensure that one or more conveyed message reaches his/her numerous friends, however, if one of the friend's UE 101 does not support the group messaging features, that friend may never receive the conveyed message. In fact, both the sender and the friend remain unaware of the failure in transmission of the conveyed message. Accordingly, system 100 addresses this problem by presenting a notification to the message conveying UE 101 with compatibility information of a recipient device with one or more attributes of the at least one conveyed message. In one scenario, a message conveying UE 101 sends a Short Message Service (SMS) in Chinese to a recipient UE 101, the recipient UE 101 is unable to display Chinese characters, thereby renders a presentation of messy codes confusing the users. In this event, the message conveying UE 101 is not notified about the failure in transmission of the at least one conveyed message because the recipient UE 101 is not compatible with the one or more attributes of the at least one conveyed message. Therefore, there is a need for informing the users of the incompatibilities between messaging devices, to ensure successful transmission of the conveyed message. The existing mobile devices do not accurately utilize the available technologies for efficient transmission of inconsistent messages between one or more devices. Since mobile phones have so far emerged as the most personalized and the most reachable communication device, employing a service that causes a presentation of a notification to the first device regarding the compatibility information of the second device improves user convenience and adds value to a mobile device.

[0030] To address this problem, a system 100 of FIG. 1 introduces the capability to improve user experience during message communication when one or more attributes associated with at least one message is not compatible with the recipient UE 101. As shown in FIG. 1, the system 100 comprises user equipment (UE) 101a-101n (collectively referred to as UE 101) that may include or be associated with applications 103a-103n (collectively referred to as applications 103)

and sensors 105a-105n (collectively referred to as sensors 105). In one embodiment, the UE 101 has connectivity to the message platform 109 via the communication network 107. By way of example, the UE 101 is any type of mobile terminal, fixed terminal, or portable terminal including a mobile handset, station, unit, device, multimedia computer, multimedia tablet, Internet node, communicator, desktop computer, laptop computer, notebook computer, netbook computer, tablet computer, personal communication system (PCS) device, personal navigation device, personal digital assistants (PDAs), audio/video player, digital camera/camcorder, positioning device, television receiver, radio broadcast receiver, electronic book device, game device, or any combination thereof, including the accessories and peripherals of these devices, or any combination thereof. It is also contemplated that the UE 101 can support any type of interface to the user (such as “wearable” circuitry, etc.).

[0031] By way of example, the applications 103 may be any type of application that is executable at the UE 101, such as message provisioning applications, media (e.g., audio, video, images, etc.) player applications, social networking applications, calendar applications, content provisioning services, location-based service applications and the like. In one embodiment, one of the applications 103 at the UE 101 may act as a client for the message platform 109 and perform one or more functions associated with the functions of the message platform 109 by interacting with the message platform 109 over communication network 107.

[0032] By way of example, the sensors 105 may be any type of sensor. In certain embodiments, the sensors 105 may include, for example, a network detection sensor for detecting wireless signals or network data, a camera/imaging sensor for gathering image data, location sensors (e.g., GPS), audio sensors (e.g., microphone), or receivers for different short-range communications (e.g., Bluetooth, WiFi, near field communication etc.). In one scenario, the location sensor may assist the message platform 109 in determining one or more default attributes, for instance, a default language may be determined based on location information of the recipient UE 101.

[0033] The communication network 107 of system 100 includes one or more networks such as a data network, a wireless network, a telephony network, or any combination thereof. It is contemplated that the data network may be any local area network (LAN), metropolitan area

network (MAN), wide area network (WAN), a public data network (e.g., the Internet), short range wireless network, or any other suitable packet-switched network, such as a commercially owned, proprietary packet-switched network, e.g., a proprietary cable or fiber-optic network, and the like, or any combination thereof. In addition, the wireless network may be, for example, a
5 cellular network and may employ various technologies including enhanced data rates for global evolution (EDGE), general packet radio service (GPRS), global system for mobile communications (GSM), Internet protocol multimedia subsystem (IMS), universal mobile telecommunications system (UMTS), peer to peer (P2P) etc., as well as any other suitable wireless medium, e.g., worldwide interoperability for microwave access (WiMAX), Long Term
10 Evolution (LTE) networks, code division multiple access (CDMA), wideband code division multiple access (WCDMA), wireless fidelity (WiFi), wireless LAN (WLAN), Bluetooth®, Internet Protocol (IP) data casting, satellite, mobile ad-hoc network (MANET), and the like, or any combination thereof.

[0034] In one embodiment, the message platform 109 may be a platform with multiple
15 interconnected components. The message platform 109 may include multiple servers, intelligent networking devices, computing devices, components and corresponding software for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. In addition, it is noted that the message platform
20 109 may be a separate entity of the system 100, a part of the one or more services 115 of the service platform 113, or included within the UE 101 (e.g., as part of the applications 103).

[0035] In one embodiment, the message platform 109 may cause, at least in part, a transmission of at least one message from a first device to a second device. In one embodiment, the message platform 109 may cause a receiving of at least one status message indicating, at least
25 in part, compatibility information of the second device with one or more attributes of the at least one message. In one scenario, a message conveying UE 101 may send a Multimedia Messaging Service (MMS) message to the recipient UE 101. However, the transmission of the MMS message is unsuccessful because the format of the conveyed MMS message is not compatible with the recipient UE 101, thereby the message platform 109 may cause a receiving

of a status message indicating the compatibility information for the recipient UE 101. Then, the MMS message may be converted into a compatible format for effective transmission.

[0036] In one embodiment, the message platform 109 causes, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message. In one scenario, the message platform 109 may cause a transmission of the at least one concatenated SMS format to overcome the limitation on the number of characters that can be sent in a single SMS text message transmission. The message platform 109 may cause a presentation of a notification to the first device regarding the compatibility information for the second device upon determining that the conveyed concatenated SMS is not compatible with the second device. In one scenario, the message platform 109 may determine that the at least one concatenated SMS message includes information on the one or more other attributes that are compatible with the second device. Subsequently, the message platform 109 may cause a presentation of the at least one recommended attribute to the first device. Thereafter, the message platform 109 may cause, at least in part, a conversion of the at least one message based, at least in part, on the at least one compatibility information of the second device.

[0037] In one embodiment, the message platform 109 may include or have access to a message database 111 to access and/or store message related data, such as attribute information, default attribute information, compatibility information, status messages etc. The data stored in the message database 111 may, for instance, be provided by the UEs 101, a service platform 113, services 115a-115n (collectively referred to as services 115), and content providers 117a-117n (collectively referred to as content providers 117). For example, a certain UEs 101 may provide capability information, a certain content provider 117 may provide attribute information and so on.

[0038] The service platform 113 may include any type of service. By way of example, the service platform 113 may include social networking services, content (e.g., audio, video, texts, images, etc.) provisioning services, application services, storage services, contextual information determination services, location based services, etc. In one scenario, the social networking and content provisioning services may assist message platform 109 in determining one or more

attributes, compatibility information, or a combination thereof, to supplement or aid in the efficient transmission of messages.

[0039] By way of example, services 115 may be an online service that reflects interests and/or activities of users. In one scenario, the services 115 provide representations of each user (e.g., a profile), his/her social links, and a variety of additional information. The services 115 allow users to share message information, location information, contextual information, language information, attribute information, compatibility information etc., and provides for data portability.

[0040] The content providers 117 may provide content to the UE 101, the message platform 109, and the services 115 of the service platform 113. The content provided may be any type of content, such as textual content, audio content, video content, image content, etc. In one embodiment, the content providers 117 may provide content that may supplement content of the applications 103, the sensors 105, or a combination thereof. By way of example, the content providers 117 may provide content that may aid in the processing of the message information. In one embodiment, the content providers 117 may also store content associated with the UE 101, the message platform 109, and the services 115 of the service platform 113. In one embodiment, the content providers 117 may manage access to a central repository of data, and offer a consistent, standard interface to data, such as a repository of one or more status message and/or compatibility information, to one or more UE 101 during message transmission.

[0041] By way of example, the UE 101, the message platform 109, the service platform 113 and the content providers 117 communicate with each other and other components of the communication network 107 using well known, new or still developing protocols. In this context, a protocol includes a set of rules defining how the network nodes within the communication network 107 interact with each other based on information sent over the communication links. The protocols are effective at different layers of operation within each node, from generating and receiving physical signals of various types, to selecting a link for transferring those signals, to the format of information indicated by those signals, to identifying which software application executing on a computer system sends or receives the information.

The conceptually different layers of protocols for exchanging information over a network are described in the Open Systems Interconnection (OSI) Reference Model.

[0042] Communications between the network nodes are typically effected by exchanging discrete packets of data. Each packet typically comprises (1) header information associated with a particular protocol, and (2) payload information that follows the header information and contains information that may be processed independently of that particular protocol. In some protocols, the packet includes (3) trailer information following the payload and indicating the end of the payload information. The header includes information such as the source of the packet, its destination, the length of the payload, and other properties used by the protocol. Often, the data in the payload for the particular protocol includes a header and payload for a different protocol associated with a different, higher layer of the OSI Reference Model. The header for a particular protocol typically indicates a type for the next protocol contained in its payload. The higher layer protocol is said to be encapsulated in the lower layer protocol. The headers included in a packet traversing multiple heterogeneous networks, such as the Internet, typically include a physical (layer 1) header, a data-link (layer 2) header, an internetwork (layer 3) header and a transport (layer 4) header, and various application (layer 5, layer 6 and layer 7) headers as defined by the OSI Reference Model.

[0043] FIG. 2 is a diagram of the components of the message platform 109, according to one embodiment. By way of example, the message platform 109 includes one or more components for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. It is contemplated that the functions of these components may be combined in one or more components or performed by other components of equivalent functionality. In this embodiment, the message platform 109 includes a control module 201, an attribute determination module 203, a message transmission module 205, a notification module 207, a conversion module 209, and a display module 211.

[0044] The control module 201 executes at least one algorithm for executing functions of the message platform 109. For example, the control module 201 may execute an algorithm to interact with attribute determination module 203 for processing at least one conveyed message to

determine the one or more attributes and/or processing at least one UE 101 to determine the compatibility information. By way of another example, the control module 201 may execute an algorithm to interact with the message transmission module 205 to determine successful transmission of the at least one conveyed message to the recipient UE 101. The control module
5 201 may further execute an algorithm to interact with the notification module 207 to cause a notification to the message conveying UE 101 regarding the compatibility information of the recipient UE 101 based, at least in part, on the at least one status message. The control module 201 may also execute an algorithm to interact with the conversion module 209 to inform the message conveying UE 101 on compatibility information of the recipient UE 101, thereby
10 converting the message for successful transmission. The control module 201 may also execute an algorithm to interact with the display module 211 to cause a display of the at least one converted message compatible with the recipient UE 101.

[0045] In one embodiment, the attribute determination module 203 may process the one or more UE 101 to determine compatibility information for the one or more UE 101. In one
15 embodiment, the attribute determination module 203 may process the message conveyed by at least one UE 101 to determine the one or more attributes of the at least one message. The attribute determination module 203 may then determine any inconsistencies in compatibility between the conveyed message and the recipient UE 101. In one scenario, a message is conveyed in Chinese, whereby the attribute determination module 203 may determine the
20 attributes of the at least one conveyed message by identifying the Chinese texts in the message during the transmission phase, and may further processes the recipient UE 101 to determine the compatibility information.

[0046] In one embodiment, the message transmission module 205 may check whether the conveyed message has been properly transmitted to the recipient UE 101. The message
25 transmission module 205 may coordinate with the attribute determination module 203 in determining whether the recipient UE 101 supports the one or more attributes in the conveyed message. In one embodiment, the message transmission module 205 may inform the notification module 207 regarding the incapability of the recipient UE 101 to display the

conveyed message because the recipient UE 101 does not support the attributes in the message composition.

[0047] In one embodiment, the notification module 207 may provide the message conveying UE 101 with a notification message if the message transmission module 205 determines that the conveyed message could not be successfully transmitted to the recipient UE 101. In one embodiment, the notification module 207 may provide status message for at least one message which may include one or more attributes information for the recipient UE 101. The one or more attribute information may be embedded with a support list, whereby the message conveying UE 101 may choose at least one attribute that is compatible with the recipient UE 101 and/or message conveying UE 101. In one scenario, a message is conveyed in Japanese, however, the recipient UE 101 does not have the language capability to display the message. The notification module 207 may then inform the message conveying UE 101 regarding the delivery status for the at least one message, and may further provide a list of language supported by the recipient UE 101.

[0048] In one embodiment, the conversion module 209 may cause a conversion of the at least one message into one or more attributes supported by the recipient UE 101. In one embodiment, the one or more converted message may be based, at least in part, on the at least one status message and/or the compatibility information of the recipient UE 101. In one embodiment, the conversion module 209 may provide the message conveying UE 101 with a list of attributes supported by the recipient UE 101 upon determination that the one or more attributes capability of the recipient UE 101 restricts the display of the conveyed message. The, conversion module 209 may convert the conveyed message in a format supported by the recipient UE 101. In one embodiment, the conversion module 209 may convert the one or more conveyed messages into an image format, whereby the screenshot of the message conveying UE 101 may be transmitted to the recipient UE 101 upon determination that the one or more conveyed message is incompatible with the recipient UE 101.

[0049] In one embodiment, the display module 211 causes, at least in part, a presentation of a notification to the message conveying device regarding the compatibility information based, at least in part, on the at least one status message. In one embodiment, the display module 211

causes, at least in part, a presentation of the at least one recommended attribute to the first device. In one scenario, the display module 211 may cause a presentation of one or more messages converted by the conversion module 209 based, at least in part, on the one or more attributes. In one embodiment, the display module 211 may cause a display of the screen capture of the message conveying UE 101 to the recipient UE 101 in a compatible image format.

[0050] FIG. 3 is a flowchart of a process for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message, according to one embodiment. In one embodiment, the message platform 109 performs the process 300 and is implemented in, for instance, a chip set including a processor and a memory as shown in FIG. 10.

[0051] In step 301, the message platform 109 causes, at least in part, a transmission of at least one message from a first device to a second device.

[0052] In step 303, the message platform 109 receives at least one status message indicating, at least in part, compatibility information of the second device with one or more attributes of the at least one message. In one embodiment, the one or more attributes include, at least in part, a language of the at least one message and/or a format of the at least one message. In one embodiment, the format includes, at least in part, a Short Message Service (SMS) format and/or a Multimedia Messaging Service (MMS) format and/or a concatenated Short Message Service (SMS) format. In one scenario, the message platform 109 may process the one or more conveyed messages and/or the one or more UE 101 to determine the one or more attributes for successful transmission of the conveyed messages.

[0053] In step 305, the message platform 109 causes, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message. In one embodiment, the compatibility notification indicates a failed state of the transmission of the at least one message if the compatibility information indicates that the second device is not compatible with the one or more attributes of the at least one message.

[0054] FIG. 4 is a flowchart of a process for determining at least one attribute and/or at least one default attribute associated with the first device and/or the second device, according to one embodiment. In one embodiment, the message platform 109 performs the process 400 and is implemented in, for instance, a chip set including a processor and a memory as shown in FIG. 10.

5 [0055] In step 401, the message platform 109 determines at least one recommended attribute from among the one or more other attributes. In one embodiment, the at least one message includes information on the one or more other attributes that are compatible with the second device, whereby the message platform 109 determines at least one attribute for successful transmission of the conveyed message. In one scenario, a message is conveyed in a language
10 not compatible with the recipient UE 101, whereby the message platform 109 may determine one or more attributes of the at least one conveyed message that is compatible with both the message conveying UE 101 and the recipient UE 101.

[0056] In step 403, the message platform 109 causes, at least in part, a presentation of the at least one recommended attribute to the first device. In one embodiment, the message platform
15 109 may determine compatibility information of the second device with one or more attributes of the at least one message. In one scenario, the message platform 109 may determine whether the format for the at least one message is supported by the at least one recipient UE 101. The message platform 109 upon determining that the format for the at least one message is not supported by the recipient UE 101, may cause a processing of the at least one conveyed message
20 and/or the at least one recipient UE 101 for determining one or more attributes that is compatible with the recipient UE 101. The message platform 109 may cause a presentation of the suitable format to the message conveying UE 101 for successful transmission of the conveyed message.

[0057] In step 405, the message platform 109 determines the at least one recommended attribute based, at least in part, the one or more other attributes that are compatible with the first
25 device. In one scenario, the language composition associated with the at least one message is not supported by the at least one recipient UE 101, whereby a notification is caused to the message conveying UE 101 regarding the compatibility information for the at least one recipient UE 101. The notification may include language support information for the recipient UE 101,

whereby the message platform 109 may determine a language that is compatible with the message conveying UE 101.

[0058] In step 407, the message platform 109 determines at least one default attribute associated with the first device and/or the second device, wherein the at least one recommended attribute is based, at least in part, on the at least one default attribute. In one scenario, a default attributes may be based on various factors, for instance, geographic location of the recipient UE 101. In one scenario, the message platform 109 may determine a default attribute based, at least in part, on the location information and/or contextual information of the recipient UE 101.

[0059] FIG. 5 is a flowchart of a process for causing a transmission of the converted message based, at least in part, on the at least one status message and/or the compatibility information, according to one embodiment. In one embodiment, the message platform 109 performs the process 500 and is implemented in, for instance, a chip set including a processor and a memory as shown in FIG. 10

[0060] In step 501, the message platform 109 causes, at least in part, a storage of the at least one status message and/or the compatibility information, wherein a transmission of one or more other messages to the second device is based, at least in part, on the stored at least one status message, the stored compatibility information, or a combination thereof. In one scenario, the message platform 109 causes a presentation of status message and/or the compatibility information upon determining one or more attributes between the message conveying UE 101 and the recipient UE 101. The message platform 109 may cause, at least in part, storage of the status message and/or the compatibility information for future reference.

[0061] In step 503, the message platform 109 causes, at least in part, a conversion of the at least one message based, at least in part, on the at least one status message, the compatibility information, or a combination thereof. In one scenario, the message platform 109 may translate the incompatible language in a message into a language supported by both the message conveying UE 101 and the recipient UE 101. In one scenario, the message platform 109 may convert the format of a message into a format that is compatible with the recipient UE 101.

[0062] In step 505, the message platform 109 causes, at least in part, a transmission of the converted at least one message to the second device. In one scenario, the message platform 109 may convert the incompatible message into a compatible format based, at least in part, on the at least one status message and/or the compatibility information. The message platform 109 may then cause a transmission of the converted message to the recipient UE 101.

[0063] In step 507, the message platform 109 causes, at least in part, a decoding of the at least one status message in an encoded message format to determine the compatibility information.

[0064] FIG. 6 is a ladder diagram that illustrates a sequence of processes used in causing a presentation of a notification regarding compatibility information for one or more messages to one or more devices, according to one embodiment. In step 601, a UE 101a may transmit a message to UE 101b. The message platform 109 in UE 101b upon receiving the message may process the message and retrieve the attribute information for the conveyed message. In step 603, UE 101b returns the conveyed message to UE 101a, whereby the message platform 109 in UE 101a may determine that the attributes of the at least one conveyed message is not supported by UE 101b. In one scenario, the UE 101a may be notified that the delivery for the conveyed message failed, and the user is suggested to resend the message in a language and/or format supported by UE 101b. In addition, the UE 101a may be notified with one or more attribute support information for UE 101b. In one scenario, when UE 101a receives the notification, the message platform 109 of UE 101a may convert the conveyed message into an attribute supported by UE 101b (605). Then, the UE 101 may transmit the converted message to UE 101b, whereby the message may be properly displayed in UE 101b.

[0065] FIGs. 7A-7C are diagrams of user interfaces utilized in the processes of FIGs. 3-5, according to various embodiments. FIG. 7A represents a scenario whereby a user of UE 101a may compose a message in Chinese (701) and sends the message to the user of UE 101b. However, UE 101b does not have the language capability to display Chinese characters, as a result UE 101b renders a display of messy codes (703) confusing the user. In one scenario, UE 101b may further cause a display of a message relaying to the user that the language of the at least one message and/or the format of the at least one message, is not supported by the device

(705). In one scenario, FIG. 7B represents a situation wherein UE 101b receives a message with one or more attributes that is not compatible with UE 101b (707). Then, the UE 101b may inform the user that the received message failed and cannot be displayed (709), and may further inform the user that an automated notification shall be sent to UE 101a regarding the delivery status for the relayed message (709). The automated notification sent to UE 101a may be embedded with a list of languages supported by UE 101b. In one scenario, FIG. 7C illustrates an example whereby the recipient UE 101b sends a notification to the message conveying UE 101a regarding the failure to display the conveyed message, and instructing the UE 101a to resend the message in at least one attributes supported by the UE 101b (711). In addition, the UE 101a may receive a special format message with information embedded, such as, a support language list, format list (713). The user of UE 101 has the option to choose a language and/or format from the list (713), and once the user chooses a language supported by UE 101b, the message platform 109 may convert the earlier conveyed message and the message may be resent (715). In one scenario, the user of UE 101a may choose Korean language whereby the previously conveyed message in Chinese may be converted into Korean and may be properly displayed in UE 101b (717).

[0066] FIG. 8A is a diagram of a user interface utilized in the processes of FIGs. 3-5, according to one embodiment. In one scenario, UE 101a may request a transmission of at least one message to UE 101b. The attributes in the at least one conveyed message (803) is not supported by the receiving UE 101b (801), whereby the message platform 109 may determine at least one default attribute associated with the first device and/or the second device. In one scenario, the message platform 109 may determine English as a default attribute (805, 807), whereby the message platform 109 may convert the previously conveyed Chinese message to English (805), which may be properly displayed in the recipient UE 101b (807).

[0067] FIG. 8B is a diagram of a user interface utilized in the processes of FIGs. 3-5, according to one embodiment. FIG. 8B represents a scenario whereby a user of UE 101a may compose a message in Chinese (809) and sends the message to the user of UE 101b. However, UE 101b cannot display the message because it does not support Chinese characters, as a result UE 101b renders a display of messy codes (811) confusing the user. Subsequently, UE 101b

may cause a display of a message relaying to the user that the received message failed because the language of the at least one message and/or the format of the at least one message, is not supported by the device (813). In one scenario, the message platform 109 may cause a display of a screen capture of UE 101a, thereby ensuring that the user of UE 101b gets to view the incompatible message in an image format. In one scenario, both the user of message conveying UE 101a and the recipient UE 101b may understand Chinese, but since the recipient UE 101b is not compatible with Chinese characters, the message in Chinese language may not be displayed, thereby the message platform 109 may cause a presentation of a screenshot of the conveyed message and assist in successful transmission of the one or more incompatible message to the recipient UE 101 in an image format.

[0068] FIG. 8C is a diagram of a user interface utilized in the processes of FIGs. 3-5, according to one embodiment. FIG. 8C depicts a situation where the message transmitted by the message conveying UE 101a cannot be accurately displayed in the recipient UE 101b. In one scenario, UE 101a may transmit a message in Chinese language (817), however, only parts of the message is displayed in the recipient UE 101b because some of the Chinese characters in the message is not supported by the recipient UE 101b. Since, Chinese language have numerous characters, all the Chinese characters are not recognized by the recipient UE 101b, as a result, an incomplete message is displayed (819). Subsequently, the message platform 109 may convey a notification to the message conveying UE 101a that there was a failure in proper transmission of the message because some characters in the message were not recognized by the recipient UE 101b. In this manner, the message platform 109 causes awareness of partial incompatibility in the message, so that the message conveying UE 101a can address or otherwise work around the determined incompatibility by converting the message in a format supported by the recipient UE 101b.

[0069] The processes described herein for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message may be advantageously implemented via software, hardware, firmware or a combination of software and/or firmware and/or hardware. For example, the processes described herein, may be

advantageously implemented via processor(s), Digital Signal Processing (DSP) chip, an Application Specific Integrated Circuit (ASIC), Field Programmable Gate Arrays (FPGAs), etc. Such exemplary hardware for performing the described functions is detailed below.

[0070] FIG. 9 illustrates a computer system 900 upon which an embodiment of the invention may be implemented. Although computer system 900 is depicted with respect to a particular device or equipment, it is contemplated that other devices or equipment (e.g., network elements, servers, etc.) within FIG. 9 can deploy the illustrated hardware and components of system 900. Computer system 900 is programmed (e.g., via computer program code or instructions) to cause, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message as described herein and includes a communication mechanism such as a bus 910 for passing information between other internal and external components of the computer system 900. Information (also called data) is represented as a physical expression of a measurable phenomenon, typically electric voltages, but including, in other embodiments, such phenomena as magnetic, electromagnetic, pressure, chemical, biological, molecular, atomic, sub-atomic and quantum interactions. For example, north and south magnetic fields, or a zero and non-zero electric voltage, represent two states (0, 1) of a binary digit (bit). Other phenomena can represent digits of a higher base. A superposition of multiple simultaneous quantum states before measurement represents a quantum bit (qubit). A sequence of one or more digits constitutes digital data that is used to represent a number or code for a character. In some embodiments, information called analog data is represented by a near continuum of measurable values within a particular range. Computer system 900, or a portion thereof, constitutes a means for performing one or more steps of causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message.

[0071] A bus 910 includes one or more parallel conductors of information so that information is transferred quickly among devices coupled to the bus 910. One or more processors 902 for processing information are coupled with the bus 910.

[0072] A processor (or multiple processors) 902 performs a set of operations on information as specified by computer program code related to causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. The computer program code is a set of instructions or statements providing instructions for the operation of the processor and/or the computer system to perform specified functions. The code, for example, may be written in a computer programming language that is compiled into a native instruction set of the processor. The code may also be written directly using the native instruction set (e.g., machine language). The set of operations include bringing information in from the bus 910 and placing information on the bus 910. The set of operations also typically include comparing two or more units of information, shifting positions of units of information, and combining two or more units of information, such as by addition or multiplication or logical operations like OR, exclusive OR (XOR), and AND. Each operation of the set of operations that can be performed by the processor is represented to the processor by information called instructions, such as an operation code of one or more digits. A sequence of operations to be executed by the processor 902, such as a sequence of operation codes, constitute processor instructions, also called computer system instructions or, simply, computer instructions. Processors may be implemented as mechanical, electrical, magnetic, optical, chemical, or quantum components, among others, alone or in combination.

[0073] Computer system 900 also includes a memory 904 coupled to bus 910. The memory 904, such as a random access memory (RAM) or any other dynamic storage device, stores information including processor instructions for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. Dynamic memory allows information stored therein to be changed by the computer system 900. RAM allows a unit of information stored at a location called a memory address to be stored and retrieved independently of information at neighboring addresses. The memory 904 is also used by the processor 902 to store temporary values during execution of processor instructions. The computer system 900 also includes a read only memory (ROM) 906 or any other static storage device coupled to the bus 910 for storing static information, including instructions, that is not

changed by the computer system 900. Some memory is composed of volatile storage that loses the information stored thereon when power is lost. Also coupled to bus 910 is a non-volatile (persistent) storage device 908, such as a magnetic disk, optical disk or flash card, for storing information, including instructions, that persists even when the computer system 900 is turned off or otherwise loses power.

[0074] Information, including instructions for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message, is provided to the bus 910 for use by the processor from an external input device 912, such as a keyboard containing alphanumeric keys operated by a human user, a microphone, an Infrared (IR) remote control, a joystick, a game pad, a stylus pen, a touch screen, or a sensor. A sensor detects conditions in its vicinity and transforms those detections into physical expression compatible with the measurable phenomenon used to represent information in computer system 900. Other external devices coupled to bus 910, used primarily for interacting with humans, include a display device 914, such as a cathode ray tube (CRT), a liquid crystal display (LCD), a light emitting diode (LED) display, an organic LED (OLED) display, a plasma screen, or a printer for presenting text or images, and a pointing device 916, such as a mouse, a trackball, cursor direction keys, or a motion sensor, for controlling a position of a small cursor image presented on the display 914 and issuing commands associated with graphical elements presented on the display 914, and one or more camera sensors 994 for capturing, recording and causing to store one or more still and/or moving images (e.g., videos, movies, etc.) which also may comprise audio recordings. In some embodiments, for example, in embodiments in which the computer system 900 performs all functions automatically without human input, one or more of external input device 912, display device 914 and pointing device 916 may be omitted.

[0075] In the illustrated embodiment, special purpose hardware, such as an application specific integrated circuit (ASIC) 920, is coupled to bus 910. The special purpose hardware is configured to perform operations not performed by processor 902 quickly enough for special purposes. Examples of ASICs include graphics accelerator cards for generating images for display 914, cryptographic boards for encrypting and decrypting messages sent over a network,

speech recognition, and interfaces to special external devices, such as robotic arms and medical scanning equipment that repeatedly perform some complex sequence of operations that are more efficiently implemented in hardware.

[0076] Computer system 900 also includes one or more instances of a communications interface 970 coupled to bus 910. Communication interface 970 provides a one-way or two-way communication coupling to a variety of external devices that operate with their own processors, such as printers, scanners and external disks. In general the coupling is with a network link 978 that is connected to a local network 980 to which a variety of external devices with their own processors are connected. For example, communication interface 970 may be a parallel port or a serial port or a universal serial bus (USB) port on a personal computer. In some embodiments, communications interface 970 is an integrated services digital network (ISDN) card or a digital subscriber line (DSL) card or a telephone modem that provides an information communication connection to a corresponding type of telephone line. In some embodiments, a communication interface 970 is a cable modem that converts signals on bus 910 into signals for a communication connection over a coaxial cable or into optical signals for a communication connection over a fiber optic cable. As another example, communications interface 970 may be a local area network (LAN) card to provide a data communication connection to a compatible LAN, such as Ethernet. Wireless links may also be implemented. For wireless links, the communications interface 970 sends or receives or both sends and receives electrical, acoustic or electromagnetic signals, including infrared and optical signals, that carry information streams, such as digital data. For example, in wireless handheld devices, such as mobile telephones like cell phones, the communications interface 970 includes a radio band electromagnetic transmitter and receiver called a radio transceiver. In certain embodiments, the communications interface 970 enables connection to the communication network 105 for causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message to the UE 101.

[0077] The term “computer-readable medium” as used herein refers to any medium that participates in providing information to processor 902, including instructions for execution.

Such a medium may take many forms, including, but not limited to computer-readable storage medium (e.g., non-volatile media, volatile media), and transmission media. Non-transitory media, such as non-volatile media, include, for example, optical or magnetic disks, such as storage device 908. Volatile media include, for example, dynamic memory 904.

5 Transmission media include, for example, twisted pair cables, coaxial cables, copper wire, fiber optic cables, and carrier waves that travel through space without wires or cables, such as acoustic waves and electromagnetic waves, including radio, optical and infrared waves. Signals include man-made transient variations in amplitude, frequency, phase, polarization or other physical properties transmitted through the transmission media. Common forms of computer-readable
10 media include, for example, a floppy disk, a flexible disk, hard disk, magnetic tape, any other magnetic medium, a CD-ROM, CDRW, DVD, any other optical medium, punch cards, paper tape, optical mark sheets, any other physical medium with patterns of holes or other optically recognizable indicia, a RAM, a PROM, an EPROM, a FLASH-EPROM, an EEPROM, a flash memory, any other memory chip or cartridge, a carrier wave, or any other medium from which a
15 computer can read. The term computer-readable storage medium is used herein to refer to any computer-readable medium except transmission media.

[0078] Logic encoded in one or more tangible media includes one or both of processor instructions on a computer-readable storage media and special purpose hardware, such as ASIC 920.

20 [0079] Network link 978 typically provides information communication using transmission media through one or more networks to other devices that use or process the information. For example, network link 978 may provide a connection through local network 980 to a host computer 982 or to equipment 984 operated by an Internet Service Provider (ISP). ISP equipment 984 in turn provides data communication services through the public, world-wide
25 packet-switching communication network of networks now commonly referred to as the Internet 990.

[0080] A computer called a server host 992 connected to the Internet hosts a process that provides a service in response to information received over the Internet. For example, server host 992 hosts a process that provides information representing video data for presentation at

display 914. It is contemplated that the components of system 900 can be deployed in various configurations within other computer systems, e.g., host 982 and server 992.

[0081] At least some embodiments of the invention are related to the use of computer system 900 for implementing some or all of the techniques described herein. According to one embodiment of the invention, those techniques are performed by computer system 900 in response to processor 902 executing one or more sequences of one or more processor instructions contained in memory 904. Such instructions, also called computer instructions, software and program code, may be read into memory 904 from another computer-readable medium such as storage device 908 or network link 978. Execution of the sequences of instructions contained in memory 904 causes processor 902 to perform one or more of the method steps described herein. In alternative embodiments, hardware, such as ASIC 920, may be used in place of or in combination with software to implement the invention. Thus, embodiments of the invention are not limited to any specific combination of hardware and software, unless otherwise explicitly stated herein.

[0082] The signals transmitted over network link 978 and other networks through communications interface 970, carry information to and from computer system 900. Computer system 900 can send and receive information, including program code, through the networks 980, 990 among others, through network link 978 and communications interface 970. In an example using the Internet 990, a server host 992 transmits program code for a particular application, requested by a message sent from computer 900, through Internet 990, ISP equipment 984, local network 980 and communications interface 970. The received code may be executed by processor 902 as it is received, or may be stored in memory 904 or in storage device 908 or any other non-volatile storage for later execution, or both. In this manner, computer system 900 may obtain application program code in the form of signals on a carrier wave.

[0083] Various forms of computer readable media may be involved in carrying one or more sequence of instructions or data or both to processor 902 for execution. For example, instructions and data may initially be carried on a magnetic disk of a remote computer such as host 982. The remote computer loads the instructions and data into its dynamic memory and sends the instructions and data over a telephone line using a modem. A modem local to the

computer system 900 receives the instructions and data on a telephone line and uses an infra-red transmitter to convert the instructions and data to a signal on an infra-red carrier wave serving as the network link 978. An infrared detector serving as communications interface 970 receives the instructions and data carried in the infrared signal and places information representing the instructions and data onto bus 910. Bus 910 carries the information to memory 904 from which processor 902 retrieves and executes the instructions using some of the data sent with the instructions. The instructions and data received in memory 904 may optionally be stored on storage device 908, either before or after execution by the processor 902.

[0084] FIG. 10 illustrates a chip set or chip 1000 upon which an embodiment of the invention may be implemented. Chip set 1000 is programmed to cause, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message as described herein and includes, for instance, the processor and memory components described with respect to FIG. 9 incorporated in one or more physical packages (e.g., chips).

By way of example, a physical package includes an arrangement of one or more materials, components, and/or wires on a structural assembly (e.g., a baseboard) to provide one or more characteristics such as physical strength, conservation of size, and/or limitation of electrical interaction. It is contemplated that in certain embodiments the chip set 1000 can be implemented in a single chip. It is further contemplated that in certain embodiments the chip set or chip 1000 can be implemented as a single “system on a chip.” It is further contemplated that in certain embodiments a separate ASIC would not be used, for example, and that all relevant functions as disclosed herein would be performed by a processor or processors. Chip set or chip 1000, or a portion thereof, constitutes a means for performing one or more steps of providing user interface navigation information associated with the availability of functions.

Chip set or chip 1000, or a portion thereof, constitutes a means for performing one or more steps of causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message.

[0085] In one embodiment, the chip set or chip 1000 includes a communication mechanism such as a bus 1001 for passing information among the components of the chip set 1000. A processor 1003 has connectivity to the bus 1001 to execute instructions and process information stored in, for example, a memory 1005. The processor 1003 may include one or more
5 processing cores with each core configured to perform independently. A multi-core processor enables multiprocessing within a single physical package. Examples of a multi-core processor include two, four, eight, or greater numbers of processing cores. Alternatively or in addition, the processor 1003 may include one or more microprocessors configured in tandem via the bus 1001 to enable independent execution of instructions, pipelining, and multithreading. The
10 processor 1003 may also be accompanied with one or more specialized components to perform certain processing functions and tasks such as one or more digital signal processors (DSP) 1007, or one or more application-specific integrated circuits (ASIC) 1009. A DSP 1007 typically is configured to process real-world signals (e.g., sound) in real time independently of the processor 1003. Similarly, an ASIC 1009 can be configured to performed specialized functions not easily
15 performed by a more general purpose processor. Other specialized components to aid in performing the inventive functions described herein may include one or more field programmable gate arrays (FPGA), one or more controllers, or one or more other special-purpose computer chips.

[0086] In one embodiment, the chip set or chip 1000 includes merely one or more processors
20 and some software and/or firmware supporting and/or relating to and/or for the one or more processors.

[0087] The processor 1003 and accompanying components have connectivity to the memory 1005 via the bus 1001. The memory 1005 includes both dynamic memory (e.g., RAM, magnetic disk, writable optical disk, etc.) and static memory (e.g., ROM, CD-ROM, etc.) for
25 storing executable instructions that when executed perform the inventive steps described herein to cause, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. The memory 1005 also stores the data associated with or generated by the execution of the inventive steps.

[0088] FIG. 11 is a diagram of exemplary components of a mobile terminal (e.g., handset) for communications, which is capable of operating in the system of FIG. 1, according to one embodiment. In some embodiments, mobile terminal 1101, or a portion thereof, constitutes a means for performing one or more steps of causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. Generally, a radio receiver is often defined in terms of front-end and back-end characteristics. The front-end of the receiver encompasses all of the Radio Frequency (RF) circuitry whereas the back-end encompasses all of the base-band processing circuitry. As used in this application, the term “circuitry” refers to both: (1) hardware-only implementations (such as implementations in only analog and/or digital circuitry), and (2) to combinations of circuitry and software (and/or firmware) (such as, if applicable to the particular context, to a combination of processor(s), including digital signal processor(s), software, and memory(ies) that work together to cause an apparatus, such as a mobile phone or server, to perform various functions). This definition of “circuitry” applies to all uses of this term in this application, including in any claims. As a further example, as used in this application and if applicable to the particular context, the term “circuitry” would also cover an implementation of merely a processor (or multiple processors) and its (or their) accompanying software/or firmware. The term “circuitry” would also cover if applicable to the particular context, for example, a baseband integrated circuit or applications processor integrated circuit in a mobile phone or a similar integrated circuit in a cellular network device or other network devices.

[0089] Pertinent internal components of the telephone include a Main Control Unit (MCU) 1103, a Digital Signal Processor (DSP) 1105, and a receiver/transmitter unit including a microphone gain control unit and a speaker gain control unit. A main display unit 1107 provides a display to the user in support of various applications and mobile terminal functions that perform or support the steps of causing, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. The display 1107 includes display circuitry configured to display at least a portion of a user interface of the mobile terminal (e.g., mobile telephone). Additionally, the display 1107 and display circuitry are

configured to facilitate user control of at least some functions of the mobile terminal. An audio function circuitry 1109 includes a microphone 1111 and microphone amplifier that amplifies the speech signal output from the microphone 1111. The amplified speech signal output from the microphone 1111 is fed to a coder/decoder (CODEC) 1113.

5 [0090] A radio section 1115 amplifies power and converts frequency in order to communicate with a base station, which is included in a mobile communication system, via antenna 1117. The power amplifier (PA) 1119 and the transmitter/modulation circuitry are operationally responsive to the MCU 1103, with an output from the PA 1119 coupled to the duplexer 1121 or circulator or antenna switch, as known in the art. The PA 1119 also couples
10 to a battery interface and power control unit 1120.

[0091] In use, a user of mobile terminal 1101 speaks into the microphone 1111 and his or her voice along with any detected background noise is converted into an analog voltage. The analog voltage is then converted into a digital signal through the Analog to Digital Converter (ADC) 1123. The control unit 1103 routes the digital signal into the DSP 1105 for processing
15 therein, such as speech encoding, channel encoding, encrypting, and interleaving. In one embodiment, the processed voice signals are encoded, by units not separately shown, using a cellular transmission protocol such as enhanced data rates for global evolution (EDGE), general packet radio service (GPRS), global system for mobile communications (GSM), Internet protocol multimedia subsystem (IMS), universal mobile telecommunications system (UMTS),
20 etc., as well as any other suitable wireless medium, e.g., microwave access (WiMAX), Long Term Evolution (LTE) networks, code division multiple access (CDMA), wideband code division multiple access (WCDMA), wireless fidelity (WiFi), satellite, and the like, or any combination thereof.

[0092] The encoded signals are then routed to an equalizer 1125 for compensation of any
25 frequency-dependent impairments that occur during transmission through the air such as phase and amplitude distortion. After equalizing the bit stream, the modulator 1127 combines the signal with a RF signal generated in the RF interface 1129. The modulator 1127 generates a sine wave by way of frequency or phase modulation. In order to prepare the signal for transmission, an up-converter 1131 combines the sine wave output from the modulator 1127

with another sine wave generated by a synthesizer 1133 to achieve the desired frequency of transmission. The signal is then sent through a PA 1119 to increase the signal to an appropriate power level. In practical systems, the PA 1119 acts as a variable gain amplifier whose gain is controlled by the DSP 1105 from information received from a network base station. The signal
5 is then filtered within the duplexer 1121 and optionally sent to an antenna coupler 1135 to match impedances to provide maximum power transfer. Finally, the signal is transmitted via antenna 1117 to a local base station. An automatic gain control (AGC) can be supplied to control the gain of the final stages of the receiver. The signals may be forwarded from there to a remote telephone which may be another cellular telephone, any other mobile phone or a land-line
10 connected to a Public Switched Telephone Network (PSTN), or other telephony networks.

[0093] Voice signals transmitted to the mobile terminal 1101 are received via antenna 1117 and immediately amplified by a low noise amplifier (LNA) 1137. A down-converter 1139 lowers the carrier frequency while the demodulator 1141 strips away the RF leaving only a digital bit stream. The signal then goes through the equalizer 1125 and is processed by the DSP
15 1105. A Digital to Analog Converter (DAC) 1143 converts the signal and the resulting output is transmitted to the user through the speaker 1145, all under control of a Main Control Unit (MCU) 1103 which can be implemented as a Central Processing Unit (CPU).

[0094] The MCU 1103 receives various signals including input signals from the keyboard 1147. The keyboard 1147 and/or the MCU 1103 in combination with other user input
20 components (e.g., the microphone 1111) comprise a user interface circuitry for managing user input. The MCU 1103 runs a user interface software to facilitate user control of at least some functions of the mobile terminal 1101 to cause, at least in part, a presentation of a notification to a sending device regarding the compatibility information based, at least in part, on the status of a receiving device with one or more attributes of the at least one message. The MCU 1103 also
25 delivers a display command and a switch command to the display 1107 and to the speech output switching controller, respectively. Further, the MCU 1103 exchanges information with the DSP 1105 and can access an optionally incorporated SIM card 1149 and a memory 1151. In addition, the MCU 1103 executes various control functions required of the terminal. The DSP 1105 may, depending upon the implementation, perform any of a variety of conventional digital

processing functions on the voice signals. Additionally, DSP 1105 determines the background noise level of the local environment from the signals detected by microphone 1111 and sets the gain of microphone 1111 to a level selected to compensate for the natural tendency of the user of the mobile terminal 1101.

5 [0095] The CODEC 1113 includes the ADC 1123 and DAC 1143. The memory 1151 stores various data including call incoming tone data and is capable of storing other data including music data received via, e.g., the global Internet. The software module could reside in RAM memory, flash memory, registers, or any other form of writable storage medium known in the art. The memory device 1151 may be, but not limited to, a single memory, CD, DVD,
10 ROM, RAM, EEPROM, optical storage, magnetic disk storage, flash memory storage, or any other non-volatile storage medium capable of storing digital data.

[0096] An optionally incorporated SIM card 1149 carries, for instance, important information, such as the cellular phone number, the carrier supplying service, subscription details, and security information. The SIM card 1149 serves primarily to identify the mobile
15 terminal 1101 on a radio network. The card 1149 also contains a memory for storing a personal telephone number registry, text messages, and user specific mobile terminal settings.

[0097] Further, one or more camera sensors 1153 may be incorporated onto the mobile station 1101 wherein the one or more camera sensors may be placed at one or more locations on the mobile station. Generally, the camera sensors may be utilized to capture, record, and cause
20 to store one or more still and/or moving images (e.g., videos, movies, etc.) which also may comprise audio recordings.

[0098] While the invention has been described in connection with a number of embodiments and implementations, the invention is not so limited but covers various obvious modifications and equivalent arrangements, which fall within the purview of the appended claims. Although
25 features of the invention are expressed in certain combinations among the claims, it is contemplated that these features can be arranged in any combination and order.

WHAT IS CLAIMED IS:

1. A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on the following:

- 5 a transmission of at least one message from a first device to a second device;
 a receipt of at least one status message indicating, at least in part, compatibility information
 of the second device with one or more attributes of the at least one message; and
 a presentation of a notification to the first device regarding the compatibility information
 based, at least in part, on the at least one status message.

- 10 2. A method of claim 1, wherein the one or more attributes include, at least in part, a
language of the at least one message, a format of the at least one message, or a combination
thereof.

3. A method of claim 2, wherein the format includes, at least in part, a Short Message
Service (SMS) format, a Multimedia Messaging Service (MMS) format, a concatenated Short
15 Message Service (SMS) format, or a combination thereof.

4. A method of any of claims 1-3, wherein the at least one message includes information on
the one or more other attributes that are compatible with the second device, the method further
comprising:
 at least one determination of at least one recommended attribute from among the one or more
20 other attributes; and
 a presentation of the at least one recommended attribute to the first device.

5. A method of claim 4, wherein the (1) data and/or (2) information and/or (3) at least one
signal are further based, at least in part, on the following:

at least one determination of the at least one recommended attribute based, at least in part, the one or more other attributes that are compatible with the first device.

6. A method of any of claims 4 and 5, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

5 at least one determination of at least one default attribute associated with the first device, the second device, or a combination thereof, wherein the at least one recommended attribute is based, at least in part, on the at least one default attribute.

10 7. A method of any of claims 1-6, wherein the compatibility notification indicates a failed state of the transmission of the at least one message if the compatibility information indicates that the second device is not compatible with the one or more attributes of the at least one message.

8. A method of any of claims 1-7, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

15 a storage of the at least one status message, the compatibility information, or a combination thereof, wherein a transmission of one or more other messages to the second device is based, at least in part, on the stored at least one status message, the stored compatibility information, or a combination thereof.

20 9. A method of any of claims 1-8, wherein the (1) data and/or (2) information and/or (3) at least one signal are further based, at least in part, on the following:

a conversion of the at least one message based, at least in part, on the at least one status message, the compatibility information, or a combination thereof; and a transmission of the converted at least one message to the second device.

10. A method of any of claims 1-9, wherein the at least one status message is in an encoded message format, the method further comprising:

a decoding of the at least one status message to determine the compatibility information.

11. A method comprising:

5 causing, at least in part, a transmission of at least one message from a first device to a second device;
receiving at least one status message indicating, at least in part, compatibility information of the second device with one or more attributes of the at least one message; and
causing, at least in part, a presentation of a notification to the first device regarding the
10 compatibility information based, at least in part, on the at least one status message.

12. A method of claim 11, wherein the one or more attributes include, at least in part, a language of the at least one message, a format of the at least one message, or a combination thereof.

13. A method of claim 12, wherein the format includes, at least in part, a Short Message Service (SMS) format, a Multimedia Messaging Service (MMS) format, a concatenated Short Message Service (SMS) format, or a combination thereof.

14. A method of any of claims 11-13, wherein the at least one message includes information on the one or more other attributes that are compatible with the second device, the method further comprising:
20 determining at least one recommended attribute from among the one or more other attributes;
and
causing, at least in part, a presentation of the at least one recommended attribute to the first device.

15. A method of claim 14, further comprising:

determining the at least one recommended attribute based, at least in part, the one or more other attributes that are compatible with the first device.

16. A method of any of claims 14 and 15, further comprising:

determining at least one default attribute associated with the first device, the second device,
5 or a combination thereof,

wherein the at least one recommended attribute is based, at least in part, on the at least one default attribute.

17. A method of any of claims 11-16, wherein the compatibility notification indicates a failed state of the transmission of the at least one message if the compatibility information

10 indicates that the second device is not compatible with the one or more attributes of the at least one message.

18. A method of any of claims 11-17, further comprising:

causing, at least in part, a storage of the at least one status message, the compatibility information, or a combination thereof,

15 wherein a transmission of one or more other messages to the second device is based, at least in part, on the stored at least one status message, the stored compatibility information, or a combination thereof.

19. A method of any of claims 11-18, further comprising:

causing, at least in part, a conversion of the at least one message based, at least in part, on the
20 at least one status message, the compatibility information, or a combination thereof; and

causing, at least in part, a transmission of the converted at least one message to the second device.

20. A method of any of claims 11-19, wherein the at least one status message is in an encoded message format, the method further comprising:

causing, at least in part, a decoding of the at least one status message to determine the compatibility information.

21. An apparatus comprising:

at least one processor; and

5 at least one memory including computer program code for one or more programs,
the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus to perform at least the following,

cause, at least in part, a transmission of at least one message from a first device to a second device;

10 receive at least one status message indicating, at least in part, compatibility
information of the second device with one or more attributes of the at least one message; and

cause, at least in part, a presentation of a notification to the first device regarding the compatibility information based, at least in part, on the at least one status message.

15 22. An apparatus of claim 21, wherein the one or more attributes include, at least in part, a language of the at least one message, a format of the at least one message, or a combination thereof.

23. An apparatus of claim 22, wherein the format includes, at least in part, a Short Message Service (SMS) format, a Multimedia Messaging Service (MMS) format, a concatenated Short
20 Message Service (SMS) format, or a combination thereof.

24. An apparatus of any of claims 21-23, wherein the at least one message includes information on the one or more other attributes that are compatible with the second device, the method further comprising:

determine at least one recommended attribute from among the one or more other attributes;

25 and

cause, at least in part, a presentation of the at least one recommended attribute to the first device.

25. An apparatus of claim 24, wherein the apparatus is further caused to:
determine the at least one recommended attribute based, at least in part, the one or more
5 other attributes that are compatible with the first device.

26. An apparatus of any of claims 24 and 25, wherein the apparatus is further caused to:
determine at least one default attribute associated with the first device, the second device, or
a combination thereof,
wherein the at least one recommended attribute is based, at least in part, on the at least one
10 default attribute.

27. An apparatus of any of claims 21-26, wherein the compatibility notification indicates a
failed state of the transmission of the at least one message if the compatibility information
indicates that the second device is not compatible with the one or more attributes of the at least
one message.

15 28. An apparatus of any of claims 21-27, wherein the apparatus is further caused to:
cause, at least in part, a storage of the at least one status message, the compatibility
information, or a combination thereof,
wherein a transmission of one or more other messages to the second device is based, at least
in part, on the stored at least one status message, the stored compatibility information, or
20 a combination thereof.

29. An apparatus of any of claims 21-28, wherein the apparatus is further caused to:
cause, at least in part, a conversion of the at least one message based, at least in part, on the
at least one status message, the compatibility information, or a combination thereof; and

cause, at least in part, a transmission of the converted at least one message to the second device.

30. An apparatus of any of claims 21-29, wherein the at least one status message is in an encoded message format, the method further comprising:

5 cause, at least in part, a decoding of the at least one status message to determine the compatibility information.

31. An apparatus of any of claims 21-30, wherein the apparatus is a mobile phone further comprising:

10 user interface circuitry and user interface software configured to facilitate user control of at least some functions of the mobile phone through use of a display and configured to respond to user input; and
a display and display circuitry configured to display at least a portion of a user interface of the mobile phone, the display and display circuitry configured to facilitate user control of at least some functions of the mobile phone.

15 32. A computer-readable storage medium carrying one or more sequences of one or more instructions which, when executed by one or more processors, cause an apparatus to perform at least a method of any of claims 1-20.

33. An apparatus comprising means for performing at least a method of any of claims 1-20.

20 34. An apparatus of claim 33, wherein the apparatus is a mobile phone further comprising:
user interface circuitry and user interface software configured to facilitate user control of at least some functions of the mobile phone through use of a display and configured to respond to user input; and

a display and display circuitry configured to display at least a portion of a user interface of the mobile phone, the display and display circuitry configured to facilitate user control of at least some functions of the mobile phone.

35. A computer program product including one or more sequences of one or more
5 instructions which, when executed by one or more processors, cause an apparatus to at least perform at least a method of any of claims 1-20.

36. A method comprising facilitating access to at least one interface configured to allow access to at least one service, the at least one service configured to perform at least a method of any of claims 1-20.

10 37. A method comprising facilitating a processing of and/or processing (1) data and/or (2) information and/or (3) at least one signal, the (1) data and/or (2) information and/or (3) at least one signal based, at least in part, on at least a method of any of claims 1-20.

15 38. A method comprising facilitating creating and/or facilitating modifying (1) at least one device user interface element and/or (2) at least one device user interface functionality, the (1) at least one device user interface element and/or (2) at least one device user interface functionality based, at least in part, on at least a method of any of claims 1-20.

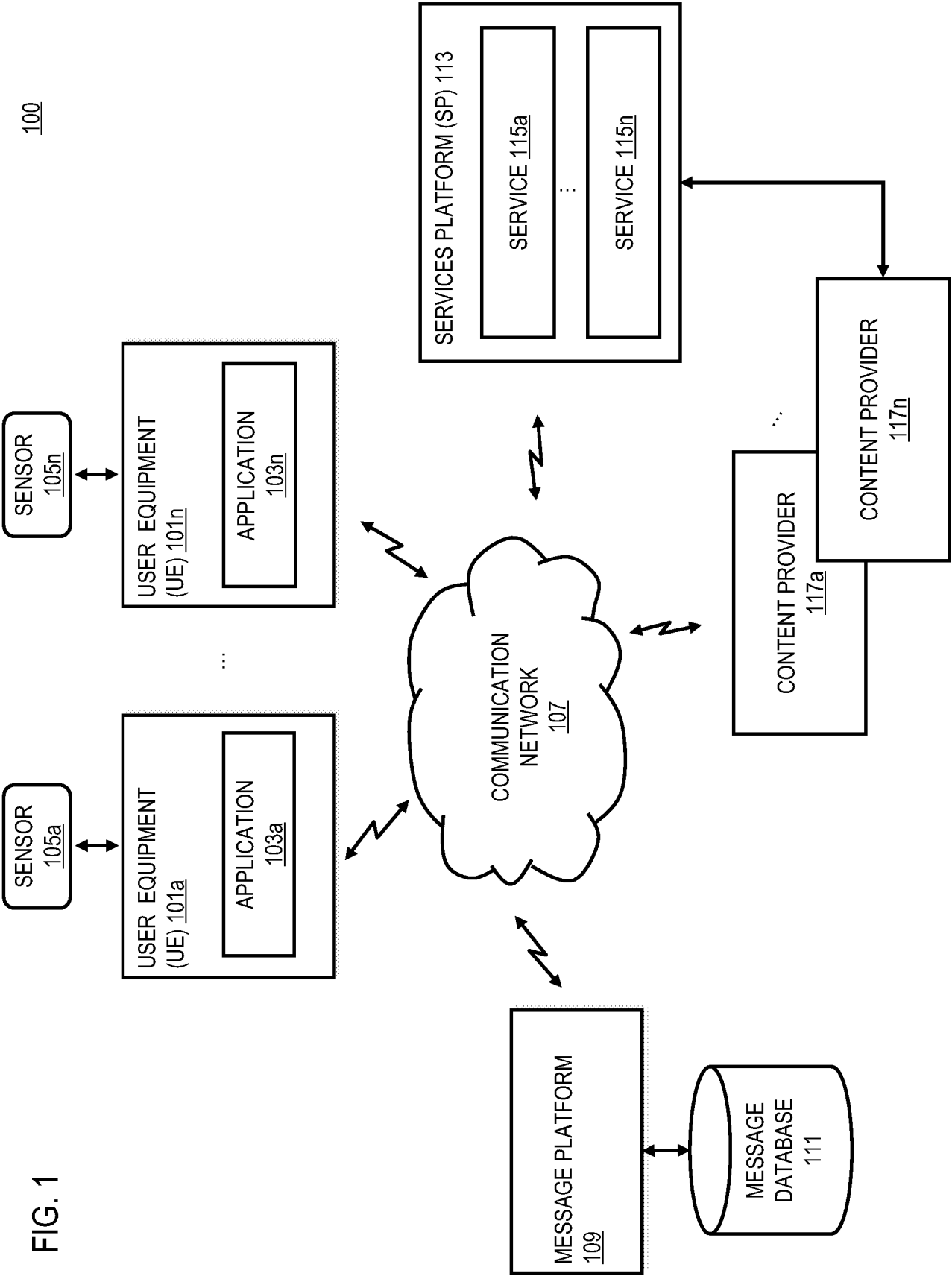
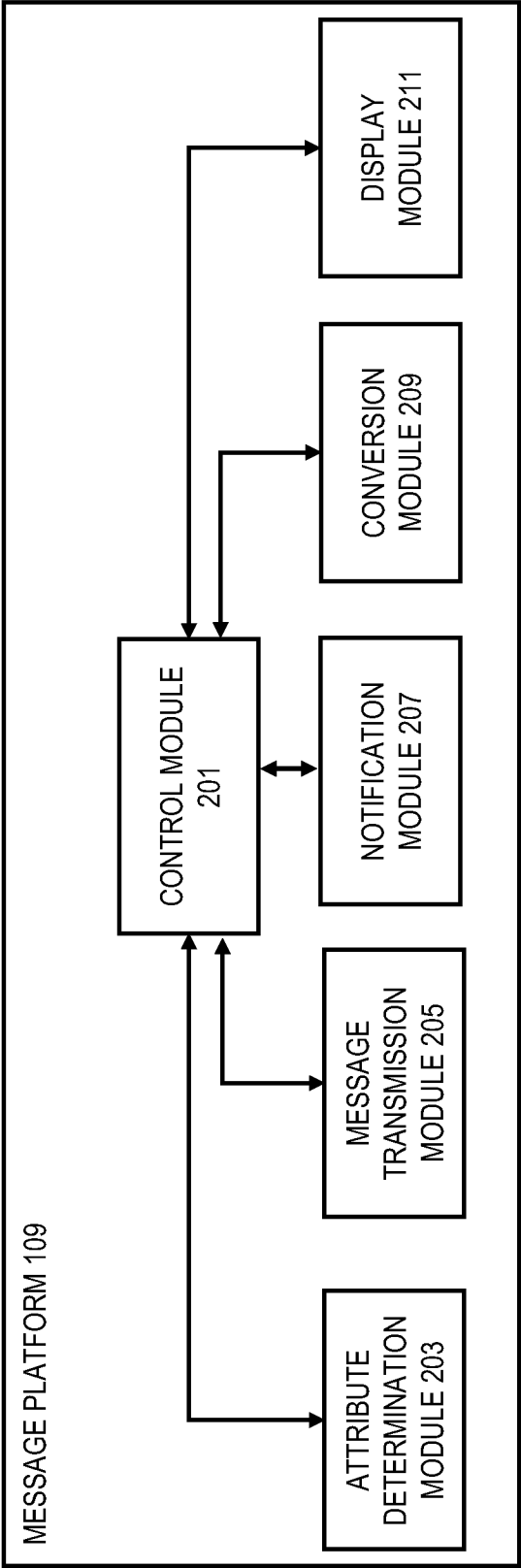
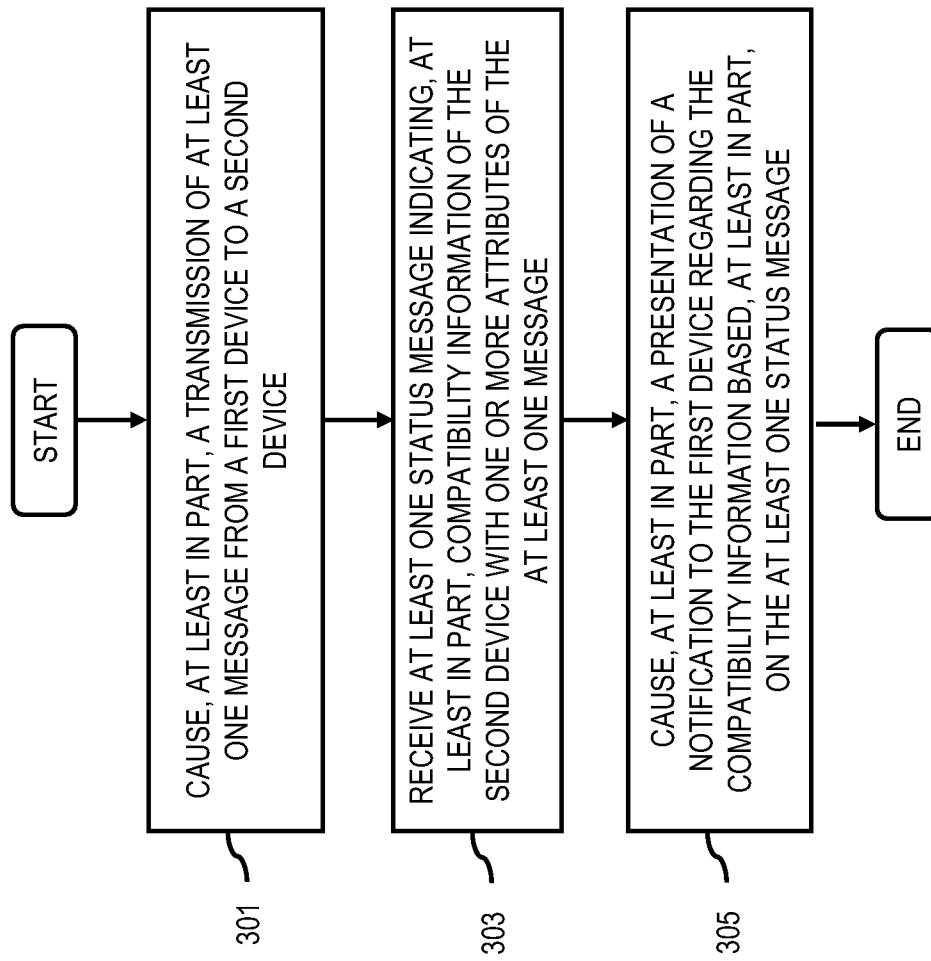


FIG. 2



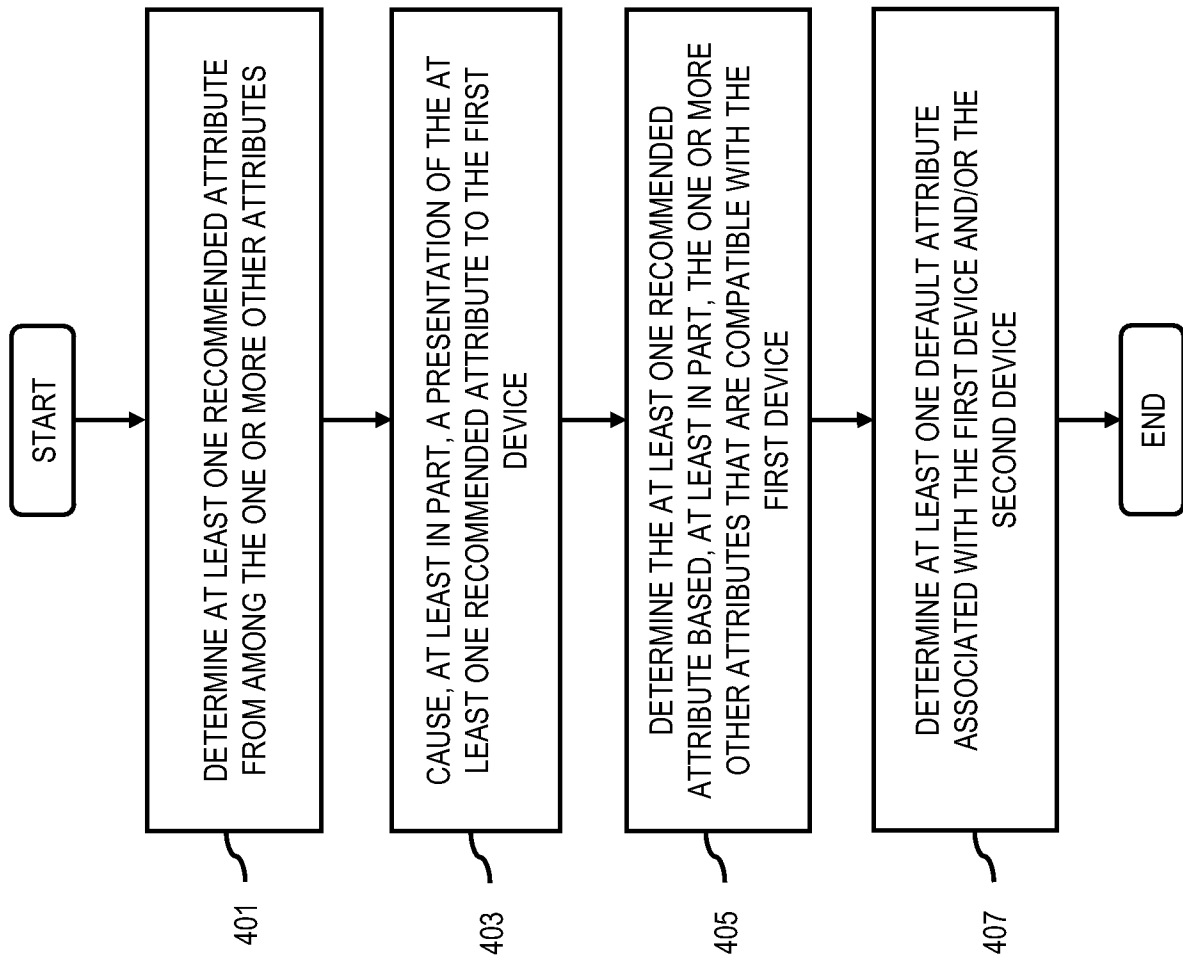
300

FIG. 3



400

FIG. 4



500

FIG. 5

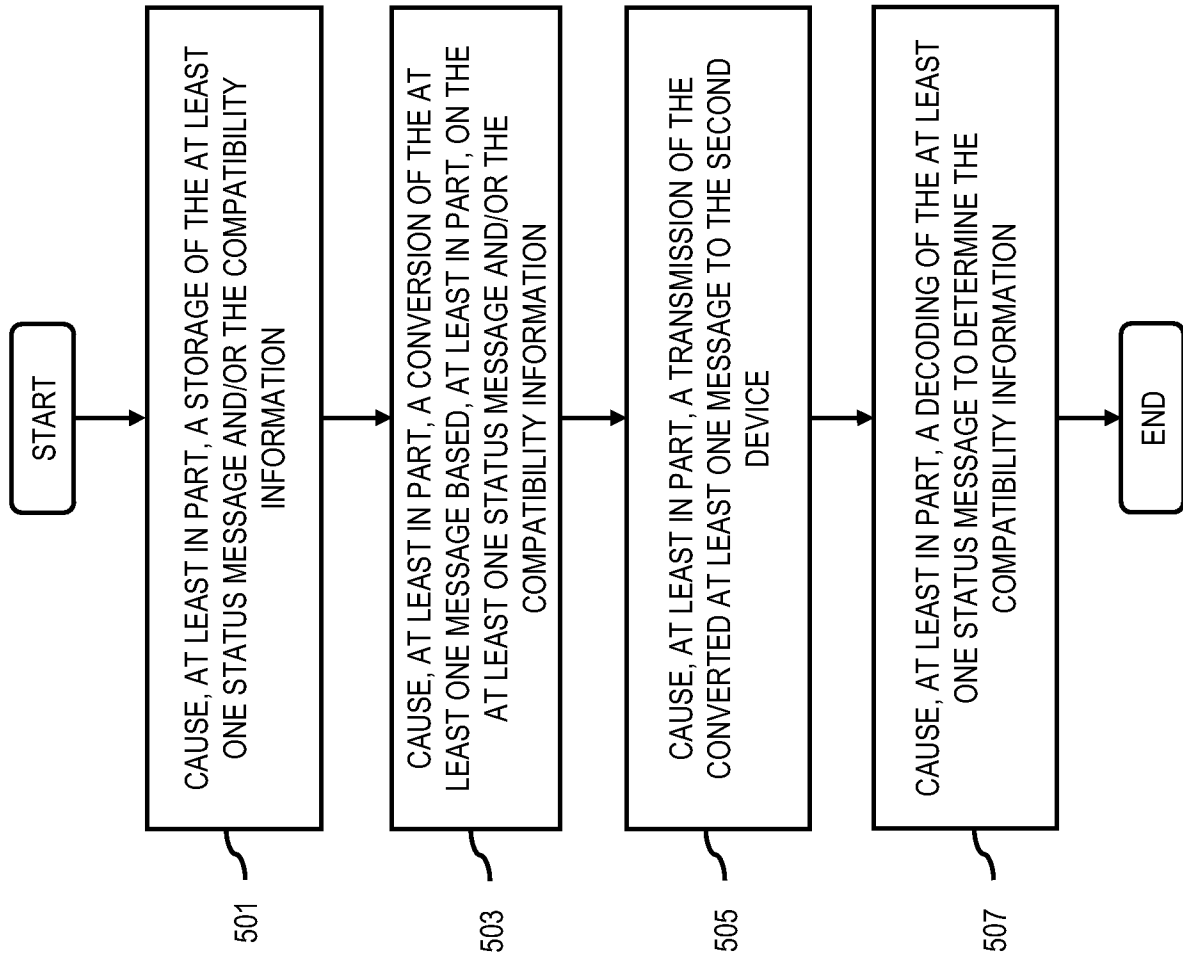


FIG. 6

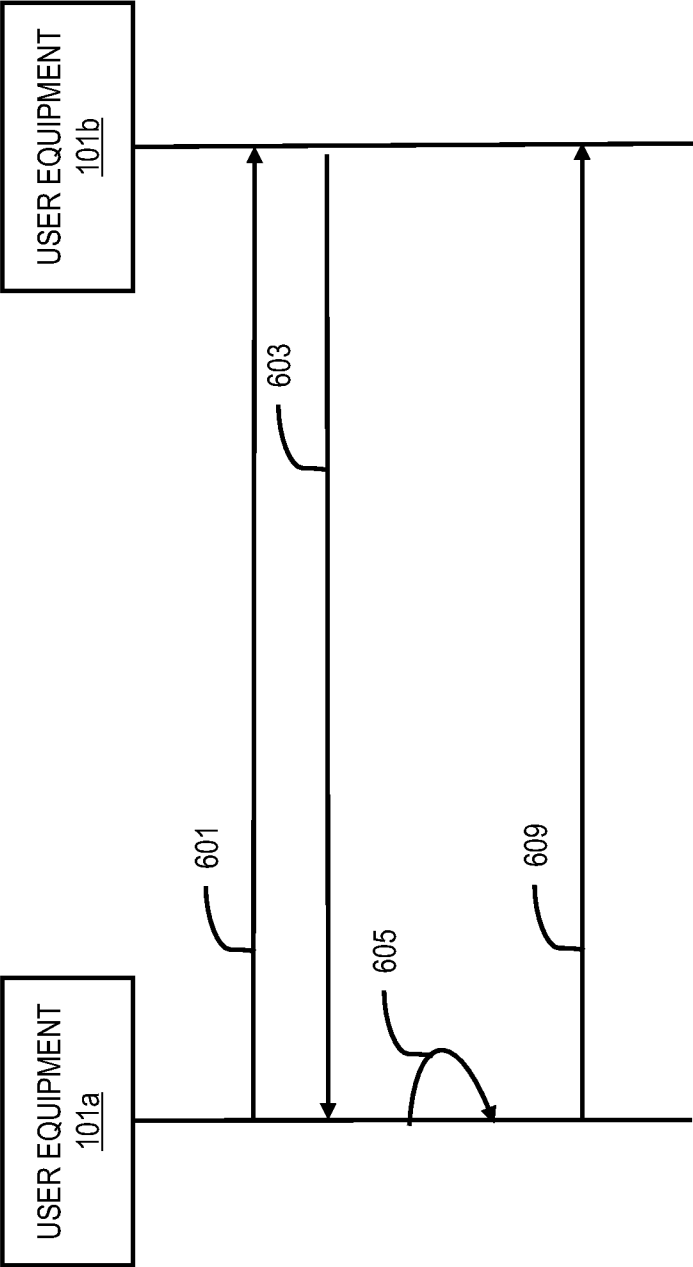


FIG. 7A

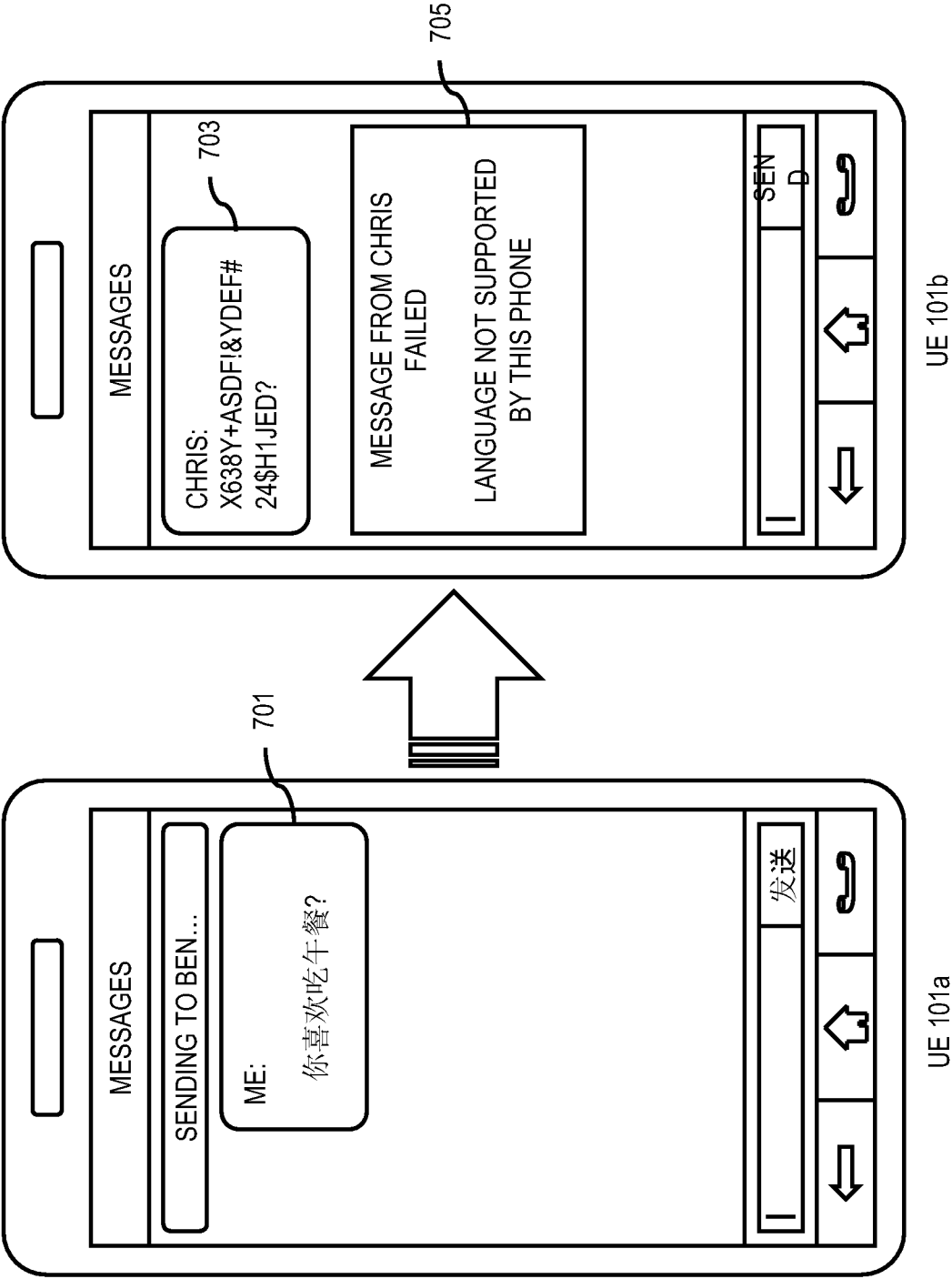


FIG. 7B

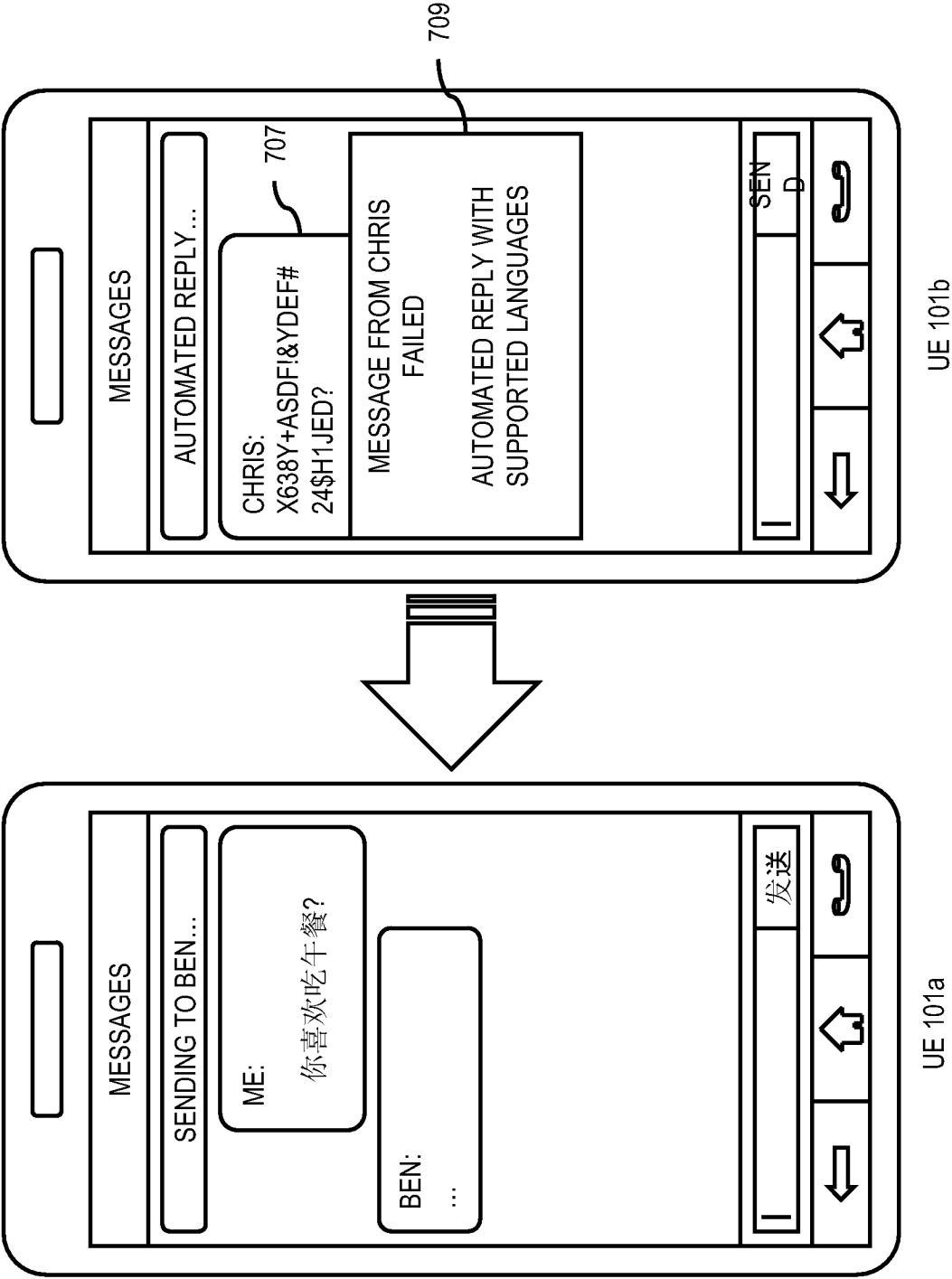


FIG. 7C

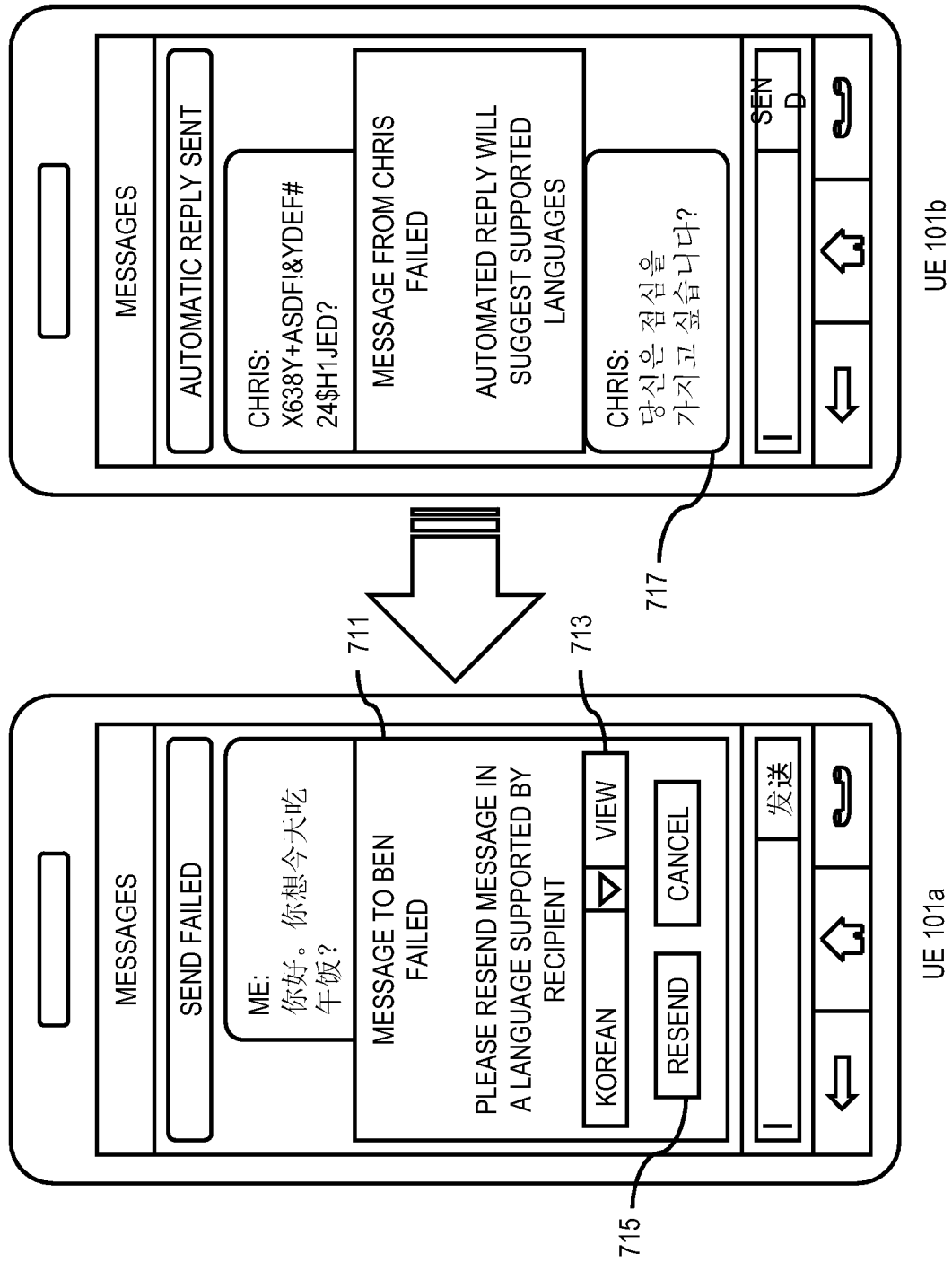


FIG. 8 A

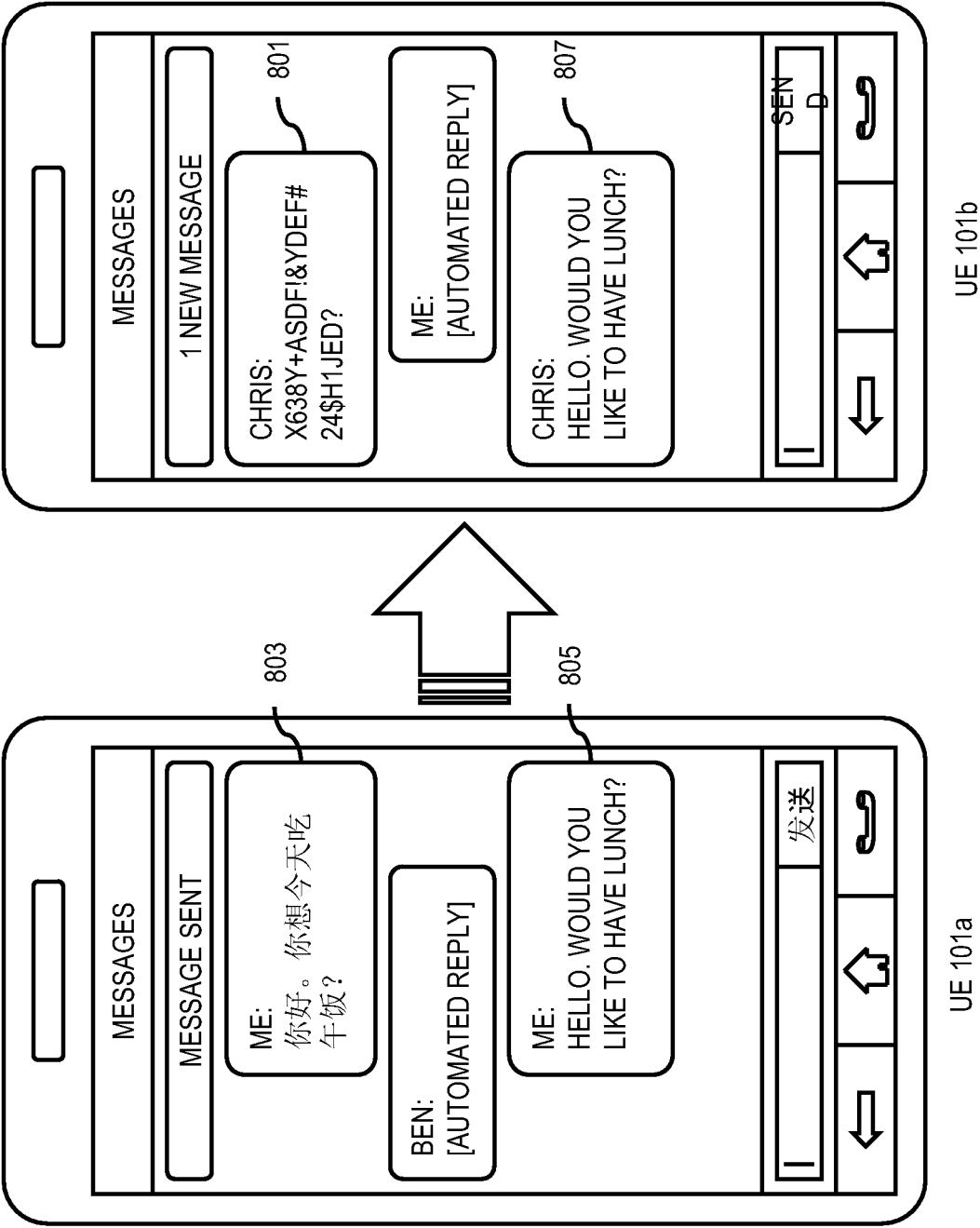


FIG. 8B

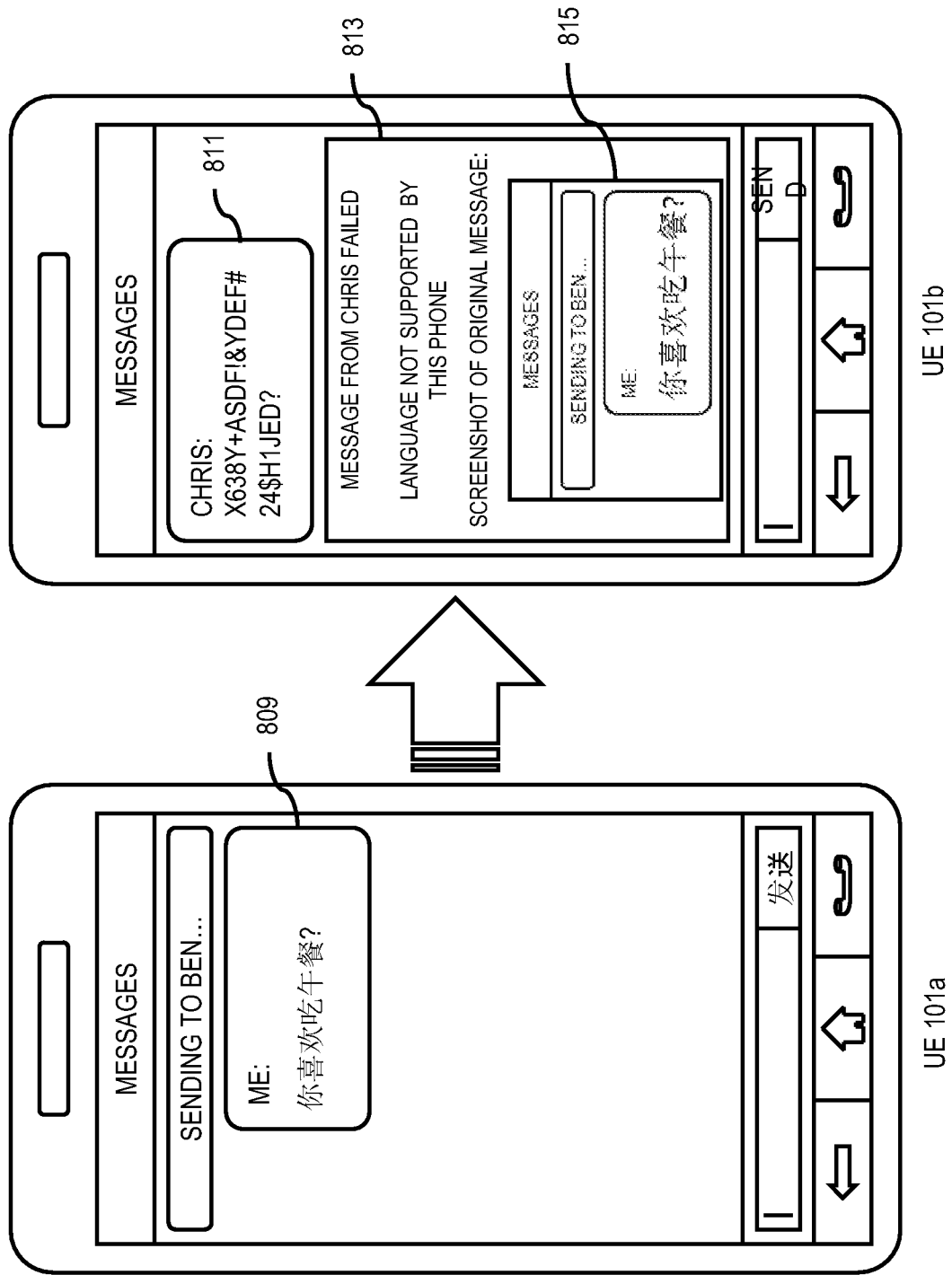


FIG. 8C

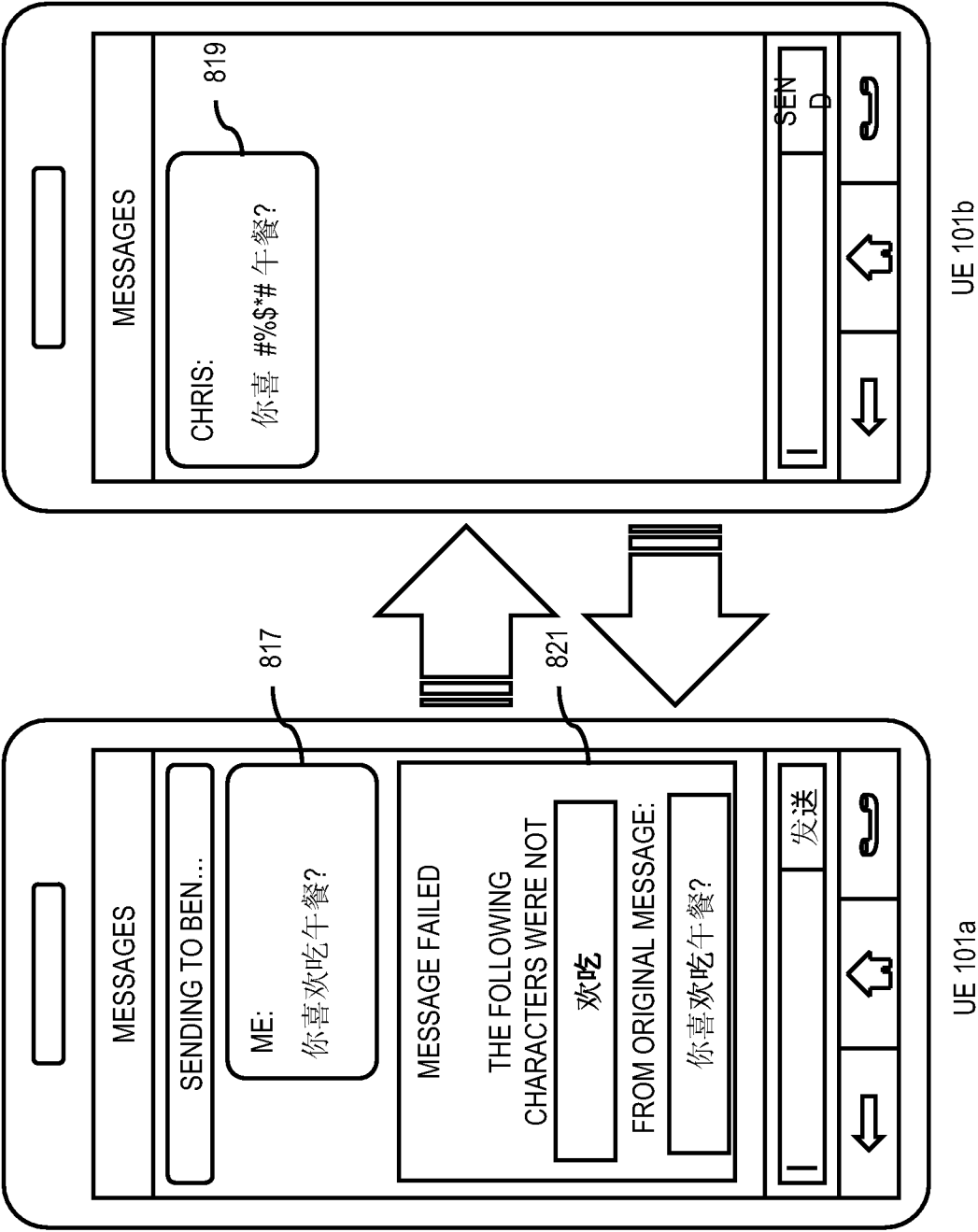


FIG. 9

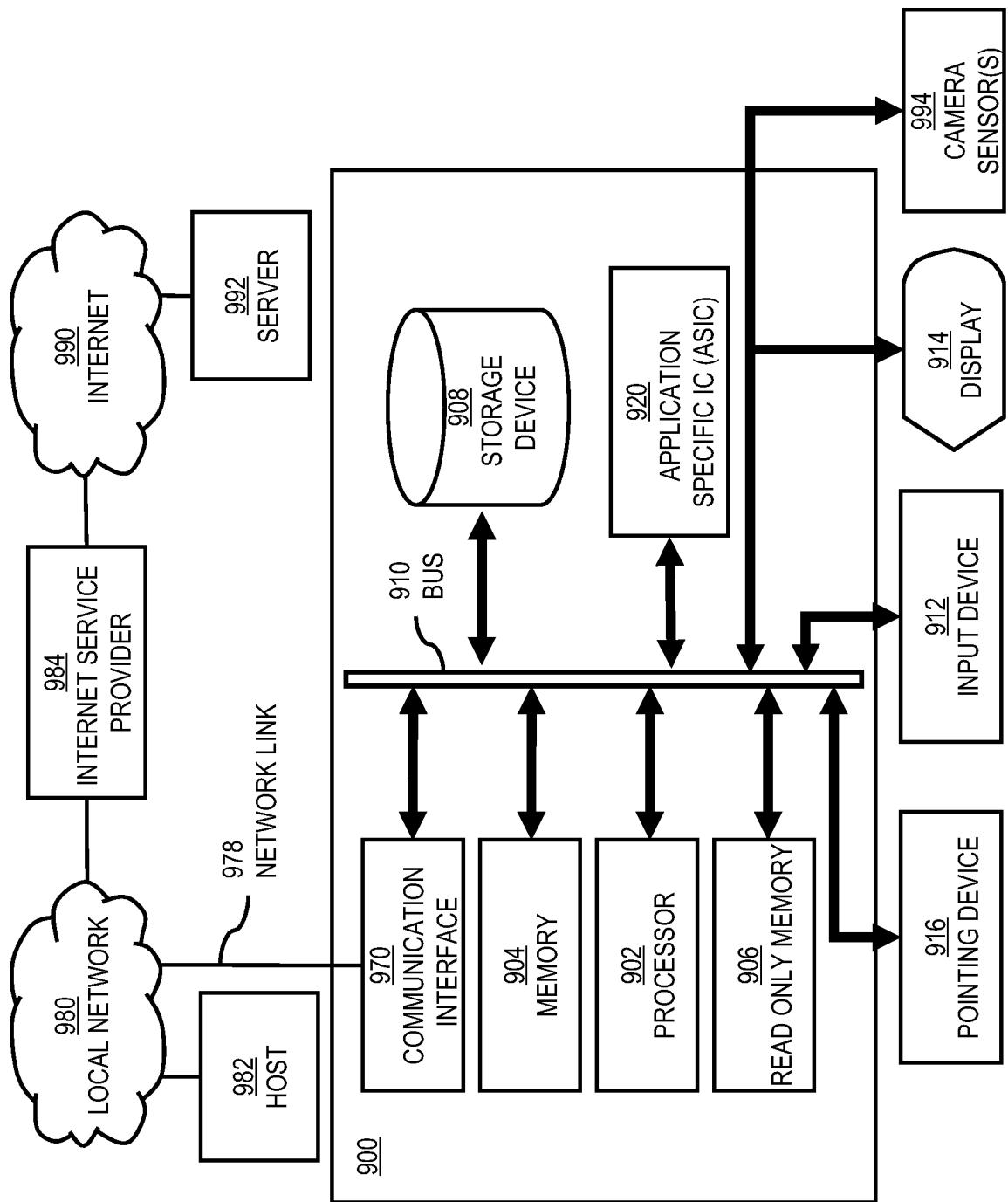


FIG. 10

1000

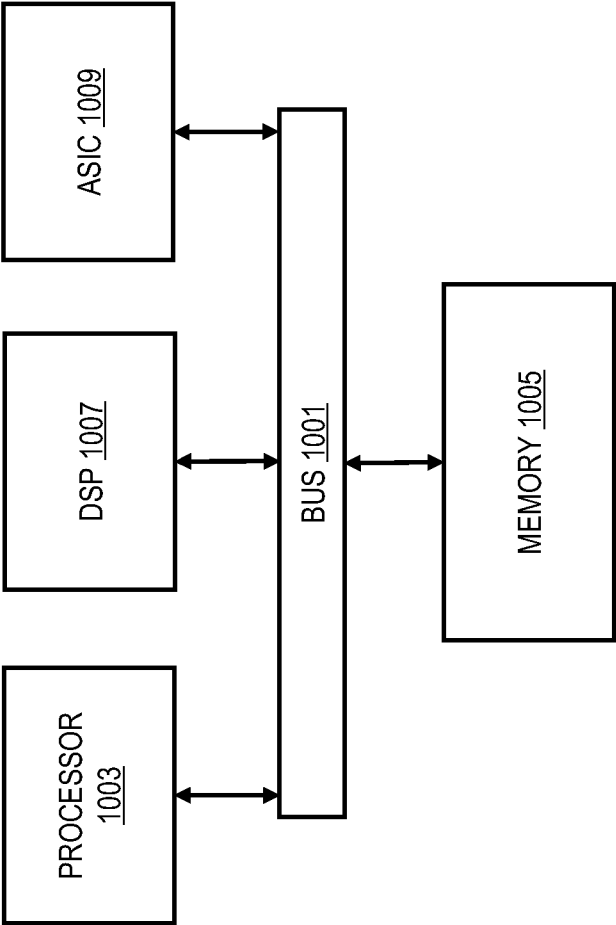
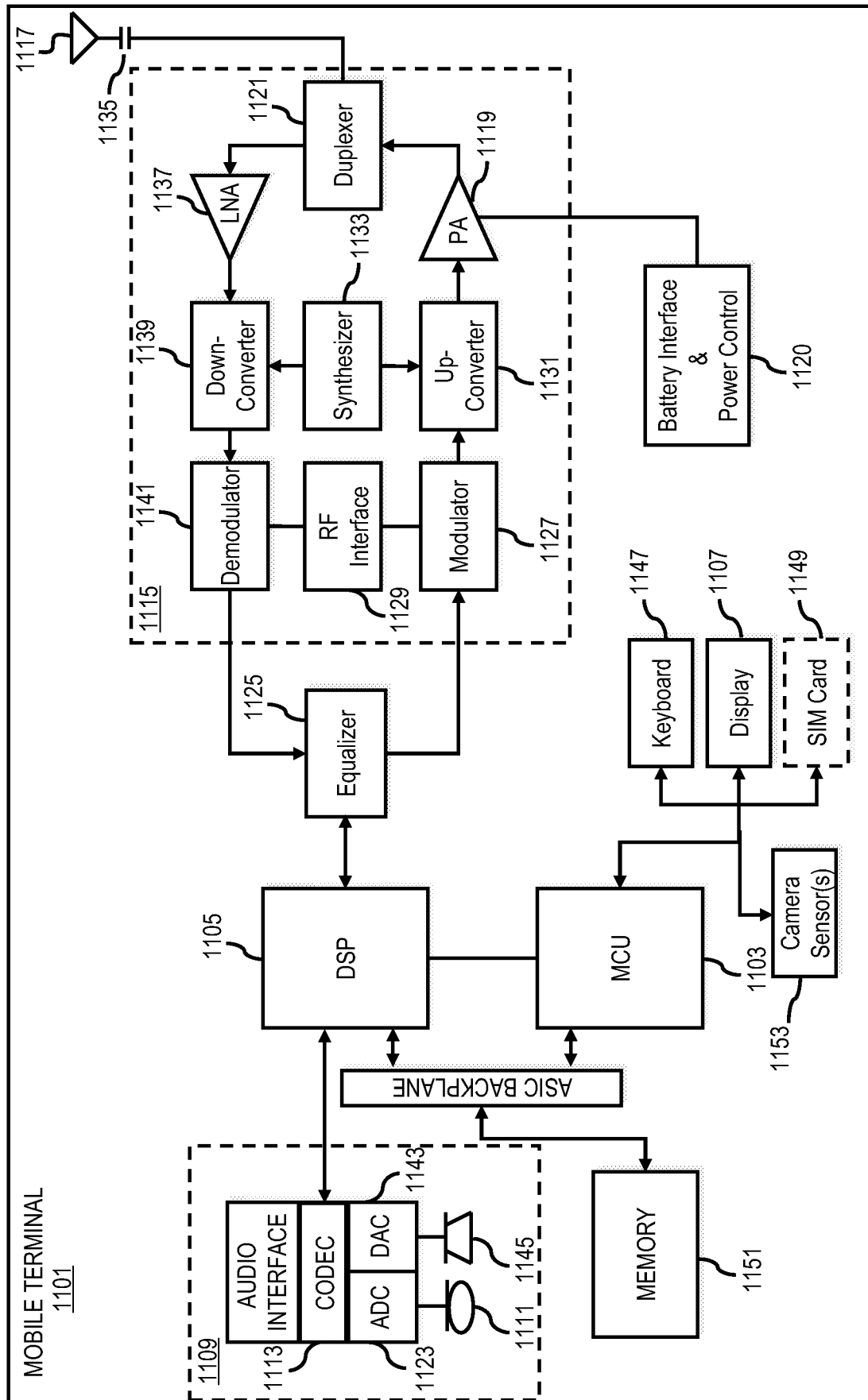


FIG. 11



INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/078049

A. CLASSIFICATION OF SUBJECT MATTER

see the extra sheet

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: H04W

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

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

CPRSABS,CNABS,CNXTX,GOOGLE,SIPOABS,DWPI: message, compatibility, attribut+, language, convert+, transmi+, receiv+, first, second, status, present+, format, multimedia, recommend+, signal, data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 101610485 A (SHENZHEN HUAWEI TELECOM TECHNOLOGIES CO.) 23 December 2009 (23.12.2009) abstract, claims 1-9, description, page 3, line 7 to page 5, line 10, and figures 1 to 2	1-38
A	CN 101296197 A (TENCENT SCI&TECHNOLOGY SHENZHEN CO., LTD.) 29 October 2008 (29.10.2008) the whole document	1-38
A	US 2007288657 A1 (NOKIA CORPORATION) 13 December 2007 (13.12.2007) the whole document	1-38

☐ 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 28 February 2014 (28.02.2014)	Date of mailing of the international search report 03 Apr. 2014 (03.04.2014)
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer LIANG Jing Telephone No. (86-10)62414423

International application No.
PCT/CN2013/078049

Form PCT/ISA /210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2013/078049

A. CLASSIFICATION OF SUBJECT MATTER

H04W 4/12 (2009.01) i

H04W 4/18 (2009.01) i