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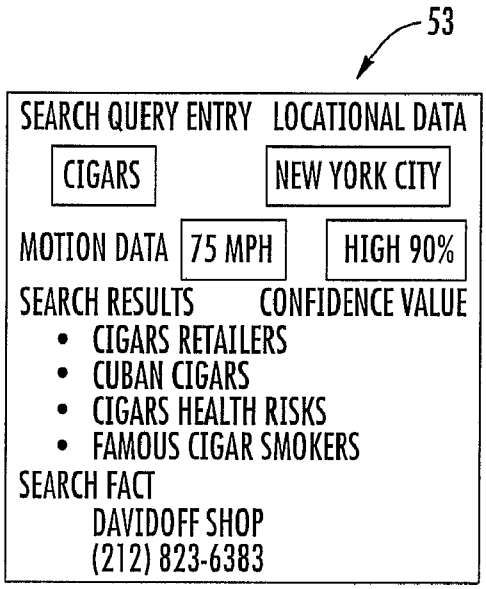

FIG. 3D

(57) Abstract: A wireless communication system may include a server, and a wireless communications device communicating with the server. The wireless communications device may include a processor, and an input device cooperating therewith to accept a search query. The server may provide search results to the wireless communications device based upon the search query from the wireless communications device. The search results may include a search fact associated with the search query. The server may generate the search fact based upon location data, and a motion value associated with the wireless communications device.

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WIRELESS COMMUNICATION SYSTEM WITH SERVER PROVIDING SEARCH FACTS AND RELATED METHODS

Technical Field

[0001] The present disclosure relates to the field of communications, and, more particularly, to wireless communications and related methods.

Background

[0002] Mobile communications devices have become an integral part of society over the last two decades. Indeed, more than eighty-two percent of Americans own a mobile communications device, for example, a mobile phone. Even further, international mobile phone penetration has reached 3.3 billion units. In other words, approximately half the world's population has a mobile phone. Although the first mobile phones typically included only voice or limited short message service capabilities, the capabilities of mobile phones have increased greatly over the last decade. For example, typical advanced cell phones, typically called smart phones, today are capable of running a variety of advanced programs spanning from typical word processing software to global positioning system navigation software.

[0003] One particularly useful and popular smart phone device program is the mobile web browser application. The mobile web browser application permits access to the web sites on the limited screen of the smart phone. For example, the mobile web browser application may provide access to the typical web search engine. In some smart phone platforms, the web search engine may have a proprietary dedicated onboard application providing access to the search functions outside the mobile web browser application.

[0004] Several user experience characteristics are endemic to the mobile communications device. For example, as is typical in mobile devices, the resources of the smart phone are limited, in particular, the available screen real estate. Moreover, given the mobile nature of the device, the typical user may multi-task while using the

device, for example, operating the device while operating a motor vehicle or more simply, while walking.

Brief Description of the Drawings

[0005] FIG. 1 is a schematic diagram of a wireless communication system, according to an example embodiment.

[0006] FIG. 2 is a flowchart illustrating operation of the wireless communication system of FIG. 1.

[0007] FIGS. 3A-3E are screenshots from typical wireless communications devices and an example embodiment of the wireless communications device.

[0008] FIG. 4 is a block diagram of an example embodiment of a mobile device that may be used with the wireless communication system of FIG. 1.

[0009] FIG. 5 is a block diagram of an example embodiment of the communication subsystem components of the mobile device of FIG. 4.

[0010] FIG. 6 is an example block diagram of a node of a wireless network.

[0011] FIG. 7 is a block diagram illustrating components of a host system in one example configuration for use with the wireless network of FIG. 6 and the mobile device of FIG. 4.

Detailed Description

[0012] The present description is made with reference to the accompanying drawings, in which various example embodiments are shown. However, many different example embodiments may be used, and thus the description should not be construed as limited to the example embodiments set forth herein. Rather, these example embodiments are provided so that this disclosure will be thorough and complete. Like numbers refer to like elements throughout.

[0013] Generally speaking, a wireless communication system may comprise a server, and at least one wireless communications device (also referred to herein as a mobile device) configured to communicate with the server. The at least one wireless communications device may comprise a processor, and an input device cooperating

therewith and configured to accept a search query. The server may be configured to provide search results to the at least one wireless communications device based upon the search query from the at least one wireless communications device, the search results comprising at least one search fact associated with the search query, and generate the at least one search fact based upon location data and a motion value associated with the at least one wireless communications device.

[0014] In some example embodiments, the server may be configured to generate the at least one search fact based upon a confidence value. The server may be configured to truncate the at least one search fact when the motion value exceeds a threshold value. The server may be configured to generate the at least one search fact by at least compiling text from a plurality of resources.

[0015] Additionally, the server may be configured to selectively provide the at least one search fact to the at least one wireless communications device based upon location data associated with the plurality of resources. For example, the plurality of resources may comprise a plurality of Internet resources. The server may be configured to provide a plurality of versions of the at least one search fact based upon the location data and the motion value. In some example embodiments, the at least one wireless communications device may comprise a global positioning system (GPS) antenna configured to generate the location data and the motion value.

[0016] More specifically, the at least one wireless communications device may comprise an accelerometer configured to generate the motion value. The at least one wireless communications device may comprise a cellular wireless communications device operable on a cellular network, and the cellular network may generate the location data and the motion value. For example, the server may be configured to provide the at least one search fact comprising weather data associated with the location data of the at least one wireless communications device.

[0017] Another aspect is directed to a method of operating a server communicating with at least one wireless communications device. The method may comprise providing

search results to the at least one wireless communications device based upon a search query from the at least one wireless communications device, the search results comprising at least one search fact associated with the search query, and generating the at least one search fact based upon location data and a motion value associated with the at least one wireless communications device.

[0018] Referring now to FIGS. 1-2, a wireless communication system **10** and a flowchart **30** illustrating operation thereof according to the present disclosure are now described (Block **31**). The wireless communication system **10** illustratively includes a server **11**, and a plurality of wireless communications devices **14a-14b** configured to communicate with the server. For example, each wireless communications device **14a-14b** may comprise a mobile cellular device, for example.

[0019] In particular, each wireless communications device **14a-14b** illustratively includes a processor **17a-17b**, and an input device **15a-15b**, such as a keyboard, touch screen display, etc., cooperating therewith and configured to accept a search query (Block **33**). As will be appreciated by those skilled in the art, the search query may comprise one or more keyword terms.

[0020] In the illustrated example embodiment, the wireless communications device **14a** comprises a global positioning system (GPS) antenna **16a** configured to generate location data, such as longitude and latitude values, and a motion value, for example, a velocity vector. Alternatively, the given wireless communications device **14b** may comprise an accelerometer **16b** configured to generate the motion value, such as an orientation change value. In cellular example embodiments, the associated cellular network may generate the location data and the motion value for the server **11**, such as using the automatic number identification (ANI) number of the given mobile wireless communications device **14a-14b** to derive location data.

[0021] The server **11** illustratively includes a processor **12**, and a memory **13** cooperating therewith. As will be appreciated by those skilled in the art, the server **11** may comprise an Internet search engine, for example. The server **11** may be

configured to compile text from a plurality of resources, for example, Internet based documents such as web pages, digital documents.

[0022] The server **11** is illustratively configured to provide search results to the given wireless communications device **14a-14b** based upon the search query from the given wireless communications device. In the illustrated example embodiment, the server **11** is configured to provide the search results comprising at least one search fact associated with the search query (Block **35**). For example, if the search query comprises "New York City Weather," the server **11** would generate the search results associated with the search query and generate the search fact comprising a weather forecast for New York City. The server **11** may generate the search fact from the compiled resources located in an available search database.

[0023] In the illustrated example embodiments, the server **11** generates the search fact based upon the location data and the motion value associated with the given wireless communications device **14a-14b** (Blocks **37-45**). In particular, the server **11** checks for received location data at Block **37**, whether the motion value has been exceeded at Block **39**, and whether the confidence value has been met at Block **44**. If the confidence value is exceeded, the search fact is transmitted to the mobile wireless communications device **14a-14b** at Block **46**. As will be appreciated by those skilled in the art, the order and timing of the steps in the flowchart **30** may be modified and reordered within the scope of the appended claims and present disclosure.

[0024] In particular, the server **11** is configured to truncate the search fact when the motion value exceeds a threshold value, for example, speed value cap (i.e. indicting that the wireless communications device and user are moving at a high velocity) or an orientation change value cap (i.e. indicating that the wireless communications device is being moved around). In other words, if the server **11** receives the motion value, indicating that perhaps a user of the given mobile wireless communications device **14a-14b** is traveling in a motor vehicle, the server shortens the search fact for rapid consumption by the user. For example, if the search fact is the aforesaid weather

forecast for New York City, the server **11** may provide only the current day's weather rather than an extended forecast. Usefully, if the motion value indicates movement, the user is not bothered with a tedious reading of a long search fact, but is provided with a concise version that is readily consumed by the user.

[0025] Additionally, in certain example embodiments, the server **11** may be configured to selectively provide the search fact to the given wireless communications device **14a-14b** based upon location data associated with the plurality of resources. More specifically, the server **11** may generate a confidence value for each search fact based upon the geographic region of origin of the resources compiled to generate the same. For example, the relative freedom of speech of the geographic region may be taken in to account. In an example embodiment, if the geographic region of origin of the resources limits freedom of speech and thus censors certain published information, the corresponding confidence value is reduced. Further, the server **11** may selectively provide the search fact if it exceeds a threshold confidence value. Usefully, the user of the given mobile wireless communications device **14a-14b** is provided with high quality search facts.

[0026] In certain example embodiments, the server **11** may be configured to provide a plurality of versions of the search fact, based upon the location data and the motion value, in case the user may wish to compare the various versions. In an example, the server **11** provides both the truncated and the non-truncated full versions of the search fact. In another example, the server **11** provides versions of the search fact based upon the current location data and past location data where a user previously conducted a search, or a favorite location of the user. In another example, the server **11** provides multiple versions of the search fact based upon various location data, such as various geographic regions around the world. (In that example, since in some geographic regions, information that searched is filtered by the government of that geographic region, the user may be interested in seeing the various versions of the search fact, as presented to the user in the user's current location, as well as presented to other users

in other geographic regions.) In another example, the server **11** may provide multiple versions of the search fact based upon multiple locations stored in data history file, such as a user profile cookie file.

[0027] Referring now additionally to FIGS. 3A-3E, operation of the above described wireless communication system **10** is demonstrated in example fashion with screenshots **50-54**. The first screenshot **50** illustrates the operation of a typical search result, where the search query is "cigars." The search results are provided along with a search fact comprising a list of popular cigar shops. The next screenshot **51** illustrates the operation of the typical search result that uses location data. The search query and search results remain the same as before, but location data is provided, i.e. "New York City." Accordingly, the provided search fact is modified based upon the location data to provide details of the cigar shop relevant to the location data. The next screenshot **52** demonstrates the operation of the wireless communication system **10** by providing the search fact, being based upon the search query, the location data, and provided motion data, illustrated as 75 MPH (the threshold motion value assumed to be less than 75 MPH), in truncated form.

[0028] The next screenshot **53** is similar to the prior screenshot **52**, but further includes a visual indicator of the confidence value for the geographic region of origin for the search fact, illustrated as a high value. The fifth screenshot **54** is similar to the prior screenshot **52**, but further includes presentation of alternate search fact versions for alternate geographical regions. In this example, the alternate region is based upon the home region of the mobile wireless communications device **14a-14b**.

[0029] Example components that may be used in the wireless communication system of FIGS. 1-2 are further described below with reference to FIGS. 4-7. Generally speaking, a mobile device may be configured according to an IT policy. It should be noted that the term IT policy, in general, refers to a collection of IT policy rules, in which the IT policy rules can be defined as being either grouped or non-grouped and global or per-user. The terms grouped, non-grouped, global and per-user are defined further below.

Examples of applicable communication devices include pagers, cellular phones, cellular smart-phones, wireless organizers, personal digital assistants, computers, laptops, handheld wireless communication devices, wirelessly enabled notebook computers and the like.

[0030] The mobile device is a communication device having at least data and optionally also voice communication capabilities, and the capability to wirelessly communicate with other devices or computer or host systems. Depending on the functionality provided by the mobile device **100**, in some example embodiments the mobile device **100** is a smartphone, a mobile phone, a PDA (personal digital assistant), a portable electronic device, computer, laptop, or tablet (all of which may have wireless communication capabilities). To aid the reader in understanding the structure of the mobile device and how it communicates with other devices and computer or host systems, reference will now be made to FIGS. 4-7.

[0031] Referring first to FIG. 4, shown therein is a block diagram of a mobile device **100** in which example embodiments can be applied. The mobile device **100** includes a number of components such as a main processor **102** that controls the overall operation of the mobile device **100**. Communication functions, including data and voice communications, are performed through a communication subsystem **104**. The communication subsystem **104** receives messages from and sends messages to a wireless network **200**. In this example embodiment of the mobile device **100**, the communication subsystem **104** is configured in accordance with the Global System for Mobile Communication (GSM) and General Packet Radio Services (GPRS) standards. The GSM/GPRS wireless network is used worldwide and it is expected that these standards will be superseded eventually by Enhanced Data GSM Environment (EDGE) and Universal Mobile Telecommunications Service (UMTS). New standards are still being defined, but it is believed that they will have similarities to the network behavior described herein, and it will also be understood by persons skilled in the art that the example embodiments described herein are intended to use any other suitable

standards that are developed in the future. The wireless link connecting the communication subsystem **104** with the wireless network **200** represents one or more different Radio Frequency (RF) channels, operating according to defined protocols specified for GSM/GPRS communications. With newer network protocols, these channels are capable of supporting both circuit switched voice communications and packet switched data communications.

[0032] Although the wireless network **200** associated with mobile device **100** is a GSM/GPRS wireless network in one example implementation, other wireless networks may also be associated with the mobile device **100** in variant implementations. The different types of wireless networks that may be employed include, for example, data-centric wireless networks, voice-centric wireless networks, and dual-mode networks that can support both voice and data communications over the same physical base stations. Combined dual-mode networks include, but are not limited to, Code Division Multiple Access (CDMA) or CDMA2000 networks, GSM/GPRS networks (as mentioned above), and future third-generation (3G) networks like EDGE and UMTS. Some other examples of data-centric networks include WiFi 802. 11, Mobitex™ and DataTAC™ network communication systems. Examples of other voice-centric data networks include Personal Communication Systems (PCS) networks like GSM and Time Division Multiple Access (TDMA) systems.

[0033] The main processor **102** also interacts with additional subsystems such as a Random Access Memory (RAM) **106**, a flash memory **108**, a display **110**, an auxiliary input/output (I/O) subsystem **112**, a data port **114**, a keyboard **116**, a speaker **118**, a microphone **120**, short-range communications **122** and other device subsystems **124**.

[0034] Some of the subsystems of the mobile device **100** perform communication-related functions, whereas other subsystems may provide "resident" or on-device functions. By way of example, the display **110** and the keyboard **116** may be used for both communication-related functions, such as entering a text message for transmission over the network **200**, and device-resident functions such as a calculator or task list.

[0035] The mobile device **100** can send and receive communication signals over the wireless network **200** after required network registration or activation procedures have been completed. Network access is associated with a subscriber or user of the mobile device **100**. To identify a subscriber, the mobile device **100** requires a SIM/RUIM card **126** (i.e., Subscriber Identity Module or a Removable User Identity Module) to be inserted into a SIM/RUIM interface **128** in order to communicate with a network. The SIM card or RUIM **126** is one type of a conventional "smart card" that can be used to identify a subscriber of the mobile device **100** and to personalize the mobile device **100**, among other things. Without the SIM card **126**, the mobile device **100** is not fully operational for communication with the wireless network **200**. By inserting the SIM card/RUIM **126** into the SIM/RUIM interface **128**, a subscriber can access all subscribed services. Services may include: web browsing and messaging such as email, voice mail, Short Message Service (SMS), and Multimedia Messaging Services (MMS). More advanced services may include: point of sale, field service and sales force automation. The SIM card/RUIM **126** includes a processor and memory for storing information. Once the SIM card/RUIM **126** is inserted into the SIM/RUIM interface **128**, it is coupled to the main processor **102**. In order to identify the subscriber, the SIM card/RUIM **126** can include some user parameters such as an International Mobile Subscriber Identity (IMSI). An advantage of using the SIM card/RUIM **126** is that a subscriber is not necessarily bound by any single physical mobile device. The SIM card/RUIM **126** may store additional subscriber information for a mobile device as well, including date book (or calendar) information and recent call information. Alternatively, user identification information can also be programmed into the flash memory **108**.

[0036] The mobile device **100** is a battery-powered device and includes a battery interface **132** for receiving one or more rechargeable batteries **130**. In at least some example embodiments, the battery **130** can be a smart battery with an embedded microprocessor. The battery interface **132** is coupled to a regulator (not shown), which assists the battery **130** in providing power V+ to the mobile device **100**. Although

current technology makes use of a battery, future technologies such as micro fuel cells may provide the power to the mobile device **100**.

[0037] The mobile device **100** also includes an operating system **134** and software components **136** to **146** which are described in more detail below. The operating system **134** and the software components **136** to **146** that are executed by the main processor **102** are typically stored in a persistent store such as the flash memory **108**, which may alternatively be a read-only memory (ROM) or similar storage element (not shown). Those skilled in the art will appreciate that portions of the operating system **134** and the software components **136** to **146**, such as specific device applications, or parts thereof, may be temporarily loaded into a volatile store such as the RAM **106**. Other software components can also be included, as is well known to those skilled in the art.

[0038] The subset of software applications **136** that control basic device operations, including data and voice communication applications, will normally be installed on the mobile device **100** during its manufacture. Other software applications include a message application **138** that can be any suitable software program that allows a user of the mobile device **100** to send and receive electronic messages. Various alternatives exist for the message application **138** as is well known to those skilled in the art. Messages that have been sent or received by the user are typically stored in the flash memory **108** of the mobile device **100** or some other suitable storage element in the mobile device **100**. In at least some example embodiments, some of the sent and received messages may be stored remotely from the device **100** such as in a data store of an associated host system that the mobile device **100** communicates with.

[0039] The software applications can further include a device state module **140**, a Personal Information Manager (PIM) **142**, and other suitable modules (not shown). The device state module **140** provides persistence, i. e. , the device state module **140** ensures that important device data is stored in persistent memory, such as the flash

memory **108**, so that the data is not lost when the mobile device **100** is turned off or loses power.

[0040] The PIM **142** includes functionality for organizing and managing data items of interest to the user, such as, but not limited to, email, contacts, calendar events, voice mails, appointments, and task items. A PIM application has the ability to send and receive data items via the wireless network **200**. PIM data items may be seamlessly integrated, synchronized, and updated via the wireless network **200** with the mobile device subscriber's corresponding data items stored and/or associated with a host computer system. This functionality creates a mirrored host computer on the mobile device **100** with respect to such items. This can be particularly advantageous when the host computer system is the mobile device subscriber's office computer system.

[0041] The mobile device **100** also includes a connect module **144**, and an IT policy module **146**. The connect module **144** implements the communication protocols that are required for the mobile device **100** to communicate with the wireless infrastructure and any host system, such as an enterprise system, that the mobile device **100** is authorized to interface with. Examples of a wireless infrastructure and an enterprise system are given in FIGS. 6 and 7, which are described in more detail below.

[0042] The connect module **144** includes a set of APIs that can be integrated with the mobile device **100** to allow the mobile device **100** to use any number of services associated with the enterprise system. The connect module **144** allows the mobile device **100** to establish an end-to-end secure, authenticated communication pipe with the host system. A subset of applications for which access is provided by the connect module **144** can be used to pass IT policy commands from the host system to the mobile device **100**. This can be done in a wireless or wired manner. These instructions can then be passed to the IT policy module **146** to modify the configuration of the device **100**. Alternatively, in some cases, the IT policy update can also be done over a wired connection.

[0043] The IT policy module **146** receives IT policy data that encodes the IT policy. The IT policy module **146** then ensures that the IT policy data is authenticated by the mobile device **100**. The IT policy data can then be stored in the flash memory **106** in its native form. After the IT policy data is stored, a global notification can be sent by the IT policy module **146** to all of the applications residing on the mobile device **100**. Applications for which the IT policy may be applicable then respond by reading the IT policy data to look for IT policy rules that are applicable.

[0044] The IT policy module **146** can include a parser (not shown), which can be used by the applications to read the IT policy rules. In some cases, another module or application can provide the parser. Grouped IT policy rules, described in more detail below, are retrieved as byte streams, which are then sent (recursively, in a sense) into the parser to determine the values of each IT policy rule defined within the grouped IT policy rule. In at least some example embodiments, the IT policy module **146** can determine which applications are affected by the IT policy data and send a notification to only those applications. In either of these cases, for applications that aren't running at the time of the notification, the applications can call the parser or the IT policy module **146** when they are executed to determine if there are any relevant IT policy rules in the newly received IT policy data.

[0045] All applications that support rules in the IT Policy are coded to know the type of data to expect. For example, the value that is set for the "WEP User Name" IT policy rule is known to be a string; therefore the value in the IT policy data that corresponds to this rule is interpreted as a string. As another example, the setting for the "Set Maximum Password Attempts" IT policy rule is known to be an integer, and therefore the value in the IT policy data that corresponds to this rule is interpreted as such.

[0046] After the IT policy rules have been applied to the applicable applications or configuration files, the IT policy module **146** sends an acknowledgement back to the host system to indicate that the IT policy data was received and successfully applied.

[0047] Other types of software applications can also be installed on the mobile device **100**. These software applications can be third party applications, which are added after the manufacture of the mobile device **100**. Examples of third party applications include games, calculators, utilities, etc.

[0048] The additional applications can be loaded onto the mobile device **100** through at least one of the wireless network **200**, the auxiliary I/O subsystem **112**, the data port **114**, the short-range communications subsystem **122**, or any other suitable device subsystem **124**. This flexibility in application installation increases the functionality of the mobile device **100** and may provide enhanced on-device functions, communication-related functions, or both. For example, secure communication applications may enable electronic commerce functions and other such financial transactions to be performed using the mobile device **100**.

[0049] The data port **114** enables a subscriber to set preferences through an external device or software application and extends the capabilities of the mobile device **100** by providing for information or software downloads to the mobile device **100** other than through a wireless communication network. The alternate download path may, for example, be used to load an encryption key onto the mobile device **100** through a direct and thus reliable and trusted connection to provide secure device communication.

[0050] The data port **114** can be any suitable port that enables data communication between the mobile device **100** and another computing device. The data port **114** can be a serial or a parallel port. In some instances, the data port **114** can be a USB port that includes data lines for data transfer and a supply line that can provide a charging current to charge the battery **130** of the mobile device **100**.

[0051] The short-range communications subsystem **122** provides for communication between the mobile device **100** and different systems or devices, without the use of the wireless network **200**. For example, the subsystem **122** may include an infrared device and associated circuits and components for short-range communication. Examples of

short-range communication standards include standards developed by the Infrared Data Association (IrDA), Bluetooth, and the 802. 11 family of standards developed by IEEE.

[0052] In use, a received signal such as a text message, an email message, or web page download will be processed by the communication subsystem **104** and input to the main processor **102**. The main processor **102** will then process the received signal for output to the display **110** or alternatively to the auxiliary I/O subsystem **112**. A subscriber may also compose data items, such as email messages, for example, using the keyboard **116** in conjunction with the display **110** and possibly the auxiliary I/O subsystem **112**. The auxiliary subsystem **112** may include devices such as: a touch screen, mouse, track ball, infrared fingerprint detector, or a roller wheel with dynamic button pressing capability. The keyboard **116** is preferably an alphanumeric keyboard and/or telephone-type keypad. However, other types of keyboards may also be used. A composed item may be transmitted over the wireless network **200** through the communication subsystem **104**.

[0053] For voice communications, the overall operation of the mobile device **100** is substantially similar, except that the received signals are output to the speaker **118**, and signals for transmission are generated by the microphone **120**. Alternative voice or audio I/O subsystems, such as a voice message recording subsystem, can also be implemented on the mobile device **100**. Although voice or audio signal output is accomplished primarily through the speaker **118**, the display **110** can also be used to provide additional information such as the identity of a calling party, duration of a voice call, or other voice call related information.

[0054] Referring now to FIG. 5, an example block diagram of the communication subsystem component **104** is shown. The communication subsystem **104** includes a receiver **150**, a transmitter **152**, as well as associated components such as one or more embedded or internal antenna elements **154** and **156**, Local Oscillators (LOs) **158**, and a processing module such as a Digital Signal Processor (DSP) **160**. The particular design of the communication subsystem **104** is dependent upon the communication

network **200** with which the mobile device **100** is intended to operate. Thus, it should be understood that the design illustrated in FIG. 5 serves only as one example.

[0055] Signals received by the antenna **154** through the wireless network **200** are input to the receiver **150**, which may perform such common receiver functions as signal amplification, frequency down conversion, filtering, channel selection, and analog-to-digital (A/D) conversion. A/D conversion of a received signal allows more complex communication functions such as demodulation and decoding to be performed in the DSP **160**. In a similar manner, signals to be transmitted are processed, including modulation and encoding, by the DSP **160**. These DSP-processed signals are input to the transmitter **152** for digital-to-analog (D/A) conversion, frequency up conversion, filtering, amplification and transmission over the wireless network **200** via the antenna **156**. The DSP **160** not only processes communication signals, but also provides for receiver and transmitter control. For example, the gains applied to communication signals in the receiver **150** and the transmitter **152** may be adaptively controlled through automatic gain control algorithms implemented in the DSP **160**.

[0056] The wireless link between the mobile device **100** and the wireless network **200** can contain one or more different channels, typically different RF channels, and associated protocols used between the mobile device **100** and the wireless network **200**. An RF channel is a limited resource that must be conserved, typically due to limits in overall bandwidth and limited battery power of the mobile device **100**.

[0057] When the mobile device **100** is fully operational, the transmitter **152** is typically keyed or turned on only when it is transmitting to the wireless network **200** and is otherwise turned off to conserve resources. Similarly, the receiver **150** is periodically turned off to conserve power until it is needed to receive signals or information (if at all) during designated time periods.

[0058] Referring now to FIG. 6, a block diagram of an example implementation of a node **202** of the wireless network **200** is shown. In practice, the wireless network **200** includes one or more nodes **202**. In conjunction with the connect module **144**, the

mobile device **100** can communicate with the node **202** within the wireless network **200**. In the example implementation of FIG. 6, the node **202** is configured in accordance with General Packet Radio Service (GPRS) and Global Systems for Mobile (GSM) technologies. The node **202** includes a base station controller (BSC) **204** with an associated tower station **206**, a Packet Control Unit (PCU) **208** added for GPRS support in GSM, a Mobile Switching Center (MSC) **210**, a Home Location Register (HLR) **212**, a Visitor Location Registry (VLR) **214**, a Serving GPRS Support Node (SGSN) **216**, a Gateway GPRS Support Node (GGSN) **218**, and a Dynamic Host Configuration Protocol (DHCP) **220**. This list of components is not meant to be an exhaustive list of the components of every node **202** within a GSM/GPRS network, but rather a list of components that are commonly used in communications through the network **200**.

[0059] In a GSM network, the MSC **210** is coupled to the BSC **204** and to a landline network, such as a Public Switched Telephone Network (PSTN) **222** to satisfy circuit switched requirements. The connection through the PCU **208**, the SGSN **216** and the GGSN **218** to a public or private network (Internet) **224** (also referred to herein generally as a shared network infrastructure) represents the data path for GPRS capable mobile devices. In a GSM network extended with GPRS capabilities, the BSC **204** also contains the Packet Control Unit (PCU) **208** that connects to the SGSN **216** to control segmentation, radio channel allocation and to satisfy packet switched requirements. To track the location of the mobile device **100** and availability for both circuit switched and packet switched management, the HLR **212** is shared between the MSC **210** and the SGSN **216**. Access to the VLR **214** is controlled by the MSC **210**.

[0060] The station **206** is a fixed transceiver station and together with the BSC **204** form fixed transceiver equipment. The fixed transceiver equipment provides wireless network coverage for a particular coverage area commonly referred to as a "cell." The fixed transceiver equipment transmits communication signals to and receives communication signals from mobile devices within its cell via the station **206**. The fixed transceiver equipment normally performs such functions as modulation and possibly

encoding and/or encryption of signals to be transmitted to the mobile device **100** in accordance with particular, usually predetermined, communication protocols and parameters, under control of its controller. The fixed transceiver equipment similarly demodulates and possibly decodes and decrypts, if necessary, any communication signals received from the mobile device **100** within its cell. Communication protocols and parameters may vary between different nodes. For example, one node may employ a different modulation scheme and operate at different frequencies than other nodes.

[0061] For all mobile devices **100** registered with a specific network, permanent configuration data such as a user profile is stored in the HLR **212**. The HLR **212** also contains location information for each registered mobile device and can be queried to determine the current location of a mobile device. The MSC **210** is responsible for a group of location areas and stores the data of the mobile devices currently in its area of responsibility in the VLR **214**. Further, the VLR **214** also contains information on mobile devices that are visiting other networks. The information in the VLR **214** includes part of the permanent mobile device data transmitted from the HLR **212** to the VLR **214** for faster access. By moving additional information from a remote HLR **212** node to the VLR **214**, the amount of traffic between these nodes can be reduced so that voice and data services can be provided with faster response times and at the same time requiring less use of computing resources.

[0062] The SGSN **216** and the GGSN **218** are elements added for GPRS support, namely packet switched data support, within GSM. The SGSN **216** and the MSC **210** have similar responsibilities within the wireless network **200** by keeping track of the location of each mobile device **100**. The SGSN **216** also performs security functions and access control for data traffic on the wireless network **200**. The GGSN **218** provides internetworking connections with external packet switched networks and connects to one or more SGSN's **216** via an Internet Protocol (IP) backbone network operated within the network **200**. During normal operations, a given mobile device **100**

must perform a "GPRS Attach" to acquire an IP address and to access data services. This requirement is not present in circuit switched voice channels as Integrated Services Digital Network (ISDN) addresses are used for routing incoming and outgoing calls. Currently, all GPRS capable networks use private, dynamically assigned IP addresses, thus requiring the DHCP server **220** connected to the GGSN **218**. There are many mechanisms for dynamic IP assignment, including using a combination of a Remote Authentication Dial-In User Service (RADIUS) server and a DHCP server. Once the GPRS Attach is complete, a logical connection is established from a mobile device **100**, through the PCU **208**, and the SGSN **216** to an Access Point Node (APN) within the GGSN **218**. The APN represents a logical end of an IP tunnel that can either access direct Internet compatible services or private network connections. The APN also represents a security mechanism for the network **200**, insofar as each mobile device **100** must be assigned to one or more APNs and mobile devices **100** cannot exchange data without first performing a GPRS Attach to an APN that it has been authorized to use. The APN may be considered to be similar to an Internet domain name such as "myconnection. wireless. com. "

[0063] Once the GPRS Attach operation is complete, a tunnel is created and all traffic is exchanged within standard IP packets using any protocol that can be supported in IP packets. This includes tunneling methods such as IP over IP as in the case with some IPSecurity (IPsec) connections used with Virtual Private Networks (VPN). These tunnels are also referred to as Packet Data Protocol (PDP) Contexts and there are a limited number of these available in the network **200**. To maximize use of the PDP Contexts, the network **200** will run an idle timer for each PDP Context to determine if there is a lack of activity. When a mobile device **100** is not using its PDP Context, the PDP Context can be de-allocated and the IP address returned to the IP address pool managed by the DHCP server **220**.

[0064] Referring now to FIG. 7, shown therein is a block diagram illustrating components of an example configuration of a host system **250** that the mobile device

100 can communicate with in conjunction with the connect module **144**. The host system **250** will typically be a corporate enterprise or other local area network (LAN), but may also be a home office computer or some other private system, for example, in variant implementations. In this example shown in FIG. 7, the host system **250** is depicted as a LAN of an organization to which a user of the mobile device **100** belongs. Typically, a plurality of mobile devices can communicate wirelessly with the host system **250** through one or more nodes **202** of the wireless network **200**.

[0065] The host system **250** includes a number of network components connected to each other by a network **260**. For instance, a user's desktop computer **262a** with an accompanying cradle **264** for the user's mobile device **100** is situated on a LAN connection. The cradle **264** for the mobile device **100** can be coupled to the computer **262a** by a serial or a Universal Serial Bus (USB) connection, for example. Other user computers **262b-262n** are also situated on the network **260**, and each may or may not be equipped with an accompanying cradle **264**. The cradle **264** facilitates the loading of information (e. g. , PIM data, private symmetric encryption keys to facilitate secure communications) from the user computer **262a** to the mobile device **100**, and may be particularly useful for bulk information updates often performed in initializing the mobile device **100** for use. The information downloaded to the mobile device **100** may include certificates used in the exchange of messages.

[0066] It will be understood by persons skilled in the art that the user computers **262a-262n** will typically also be connected to other peripheral devices, such as printers, etc. which are not explicitly shown in FIG. 7. Furthermore, only a subset of network components of the host system **250** are shown in FIG. 7 for ease of exposition, and it will be understood by persons skilled in the art that the host system **250** will include additional components that are not explicitly shown in FIG. 5 for this example configuration. More generally, the host system **250** may represent a smaller part of a larger network (not shown) of the organization, and may include different components

and/or be arranged in different topologies than that shown in the example embodiment of FIG. 7.

[0067] To facilitate the operation of the mobile device **100** and the wireless communication of messages and message-related data between the mobile device **100** and components of the host system **250**, a number of wireless communication support components **270** can be provided. In some implementations, the wireless communication support components **270** can include a message management server **272**, a mobile data server **274**, a contact server **276,** and a device manager module **278**. The device manager module **278** includes an IT Policy editor **280** and an IT user property editor **282**, as well as other software components for allowing an IT administrator to configure the mobile devices **100**. In an alternative example embodiment, there may be one editor that provides the functionality of both the IT policy editor **280** and the IT user property editor **282**. The support components **270** also include a data store **284**, and an IT policy server **286**. The IT policy server **286** includes a processor **288**, a network interface **290** and a memory unit **292**. The processor **288** controls the operation of the IT policy server **286** and executes functions related to the standardized IT policy as described below. The network interface **290** allows the IT policy server **286** to communicate with the various components of the host system **250** and the mobile devices **100**. The memory unit **292** can store functions used in implementing the IT policy as well as related data. Those skilled in the art know how to implement these various components. Other components may also be included as is well known to those skilled in the art. Further, in some implementations, the data store **284** can be part of any one of the servers.

[0068] In this example embodiment, the mobile device **100** communicates with the host system **250** through node **202** of the wireless network **200** and a shared network infrastructure **224** such as a service provider network or the public Internet. Access to the host system **250** may be provided through one or more routers (not shown), and computing devices of the host system **250** may operate from behind a firewall or proxy

server **266**. The proxy server **266** provides a secure node and a wireless internet gateway for the host system **250**. The proxy server **266** intelligently routes data to the correct destination server within the host system **250**.

[0069] In some implementations, the host system **250** can include a wireless VPN router (not shown) to facilitate data exchange between the host system **250** and the mobile device **100**. The wireless VPN router allows a VPN connection to be established directly through a specific wireless network to the mobile device **100**. The wireless VPN router can be used with the Internet Protocol (IP) Version 6 (IPV6) and IP-based wireless networks. This protocol can provide enough IP addresses so that each mobile device has a dedicated IP address, making it possible to push information to a mobile device at any time. An advantage of using a wireless VPN router is that it can be an off-the-shelf VPN component, and does not require a separate wireless gateway and separate wireless infrastructure. A VPN connection can preferably be a Transmission Control Protocol (TCP)/IP or User Datagram Protocol (UDP)/IP connection for delivering the messages directly to the mobile device **100** in this alternative implementation.

[0070] Messages intended for a user of the mobile device **100** are initially received by a message server **268** of the host system **250**. Such messages may originate from any number of sources. For instance, a message may have been sent by a sender from the computer **262b** within the host system **250,** from a different mobile device (not shown) connected to the wireless network **200** or a different wireless network, or from a different computing device, or other device capable of sending messages, via the shared network infrastructure **224**, possibly through an application service provider (ASP) or Internet service provider (ISP), for example.

[0071] The message server **268** typically acts as the primary interface for the exchange of messages, particularly email messages, within the organization and over the shared network infrastructure **224**. Each user in the organization that has been set up to send and receive messages is typically associated with a user account managed by the message server **268**. Some example implementations of the message server **268**

include a Microsoft Exchange™ server, a Lotus Domino™ server, a Novell Groupwise™ server, or another suitable mail server installed in a corporate environment. In some implementations, the host system **250** may include multiple message servers **268**. The message server **268** may also be adapted to provide additional functions beyond message management, including the management of data associated with calendars and task lists, for example.

[0072] When messages are received by the message server **268**, they are typically stored in a data store associated with the message server **268**. In at least some example embodiments, the data store may be a separate hardware unit, such as data store **284**, that the message server **268** communicates with. Messages can be subsequently retrieved and delivered to users by accessing the message server **268**. For instance, an email client application operating on a user's computer **262a** may request the email messages associated with that user's account stored on the data store associated with the message server **268**. These messages are then retrieved from the data store and stored locally on the computer **262a**. The data store associated with the message server **268** can store copies of each message that is locally stored on the mobile device **100**. Alternatively, the data store associated with the message server **268** can store all of the messages for the user of the mobile device **100** and only a smaller number of messages can be stored on the mobile device **100** to conserve memory. For instance, the most recent messages (i. e. , those received in the past two to three months for example) can be stored on the mobile device **100**.

[0073] When operating the mobile device **100**, the user may wish to have email messages retrieved for delivery to the mobile device **100**. The message application **138** operating on the mobile device **100** may also request messages associated with the user's account from the message server **268**. The message application **138** may be configured (either by the user or by an administrator, possibly in accordance with an organization's information technology (IT) policy) to make this request at the direction of the user, at some pre-defined time interval, or upon the occurrence of some pre-defined

event. In some implementations, the mobile device **100** is assigned its own email address, and messages addressed specifically to the mobile device **100** are automatically redirected to the mobile device **100** as they are received by the message server **268**.

[0074] The message management server **272** can be used to specifically provide support for the management of messages, such as email messages, that are to be handled by mobile devices. Generally, while messages are still stored on the message server **268**, the message management server **272** can be used to control when, if, and how messages are sent to the mobile device **100**. The message management server **272** also facilitates the handling of messages composed on the mobile device **100**, which are sent to the message server **268** for subsequent delivery.

[0075] For example, the message management server **272** may monitor the user's "mailbox" (e. g. , the message store associated with the user's account on the message server **268**) for new email messages, and apply user-definable filters to new messages to determine if and how the messages are relayed to the user's mobile device **100**. The message management server **272** may also compress and encrypt new messages (e. g. , using an encryption technique such as Data Encryption Standard (DES), Triple DES, or Advanced Encryption Standard (AES)) and push them to the mobile device **100** via the shared network infrastructure **224** and the wireless network **200**. The message management server **272** may also receive messages composed on the mobile device **100** (e. g. , encrypted using Triple DES), decrypt and decompress the composed messages, re-format the composed messages if desired so that they will appear to have originated from the user's computer **262a**, and re-route the composed messages to the message server **268** for delivery.

[0076] Certain properties or restrictions associated with messages that are to be sent from and/or received by the mobile device **100** can be defined (e. g. , by an administrator in accordance with IT policy) and enforced by the message management server **272**. These may include whether the mobile device **100** may receive encrypted

and/or signed messages, minimum encryption key sizes, whether outgoing messages must be encrypted and/or signed, and whether copies of all secure messages sent from the mobile device **100** are to be sent to a pre-defined copy address, for example.

[0077] The message management server **272** may also be adapted to provide other control functions, such as only pushing certain message information or pre-defined portions (e. g. , "blocks") of a message stored on the message server **268** to the mobile device **100**. For example, in some cases, when a message is initially retrieved by the mobile device **100** from the message server **268**, the message management server **272** may push only the first part of a message to the mobile device **100,** with the part being of a pre-defined size (e. g. , 2 KB). The user can then request that more of the message be delivered in similar-sized blocks by the message management server **272** to the mobile device **100**, possibly up to a maximum predefined message size. Accordingly, the message management server **272** facilitates better control over the type of data and the amount of data that is communicated to the mobile device **100**, and can help to minimize potential waste of bandwidth or other resources.

[0078] The mobile data server **274** encompasses any other server that stores information that is relevant to the corporation. The mobile data server **274** may include, but is not limited to, databases, online data document repositories, customer relationship management (CRM) systems, or enterprise resource planning (ERP) applications.

[0079] The contact server **276** can provide information for a list of contacts for the user in a similar fashion as the address book on the mobile device **100**. Accordingly, for a given contact, the contact server **276** can include the name, phone number, work address and email address of the contact, among other information. The contact server **276** can also provide a global address list that contains the contact information for all of the contacts associated with the host system **250**.

[0080] It will be understood by persons skilled in the art that the message management server **272**, the mobile data server **274**, the contact server **276**, the device manager

module **278**, the data store **284** and the IT policy server **286** do not need to be implemented on separate physical servers within the host system **250**. For example, some or all of the functions associated with the message management server **272** may be integrated with the message server **268**, or some other server in the host system **250**. Alternatively, the host system **250** may include multiple message management servers **272**, particularly in variant implementations where a large number of mobile devices need to be supported.

[0081] Alternatively, in some example embodiments, the IT policy server **286** can provide the IT policy editor **280**, the IT user property editor **282** and the data store **284**. In some cases, the IT policy server **286** can also provide the device manager module **278**. The processor **288** of the IT policy server **286** can be used to perform the various steps of a method for providing IT policy data that is customizable on a per-user basis. The processor **288** can execute the editors **280** and **282**. In some cases, the functionality of the editors **280** and **282** can be provided by a single editor. In some cases, the memory unit **292** can provide the data store **284**.

[0082] The device manager module **278** provides an IT administrator with a graphical user interface with which the IT administrator interacts to configure various settings for the mobile devices **100**. As mentioned, the IT administrator can use IT policy rules to define behaviors of certain applications on the mobile device **100** that are permitted such as phone, web browser or Instant Messenger use. The IT policy rules can also be used to set specific values for configuration settings that an organization requires on the mobile devices **100** such as auto signature text, WLAN/VoIP/VPN configuration, security requirements (e. g. , encryption algorithms, password rules, etc.), specifying themes or applications that are allowed to run on the mobile device **100**, and the like.

[0083] Many modifications and other example embodiments will come to the mind of one skilled in the art having the benefit of the teachings presented in the foregoing descriptions and the associated drawings. Therefore, it is understood that various

modifications and example embodiments are intended to be included within the scope of the appended claims.

THAT WHICH IS CLAIMED IS:

1. A wireless communication system comprising:

a server; and

at least one wireless communications device configured to communicate with said server, said at least one wireless communications device comprising a processor, and an input device cooperating therewith, and configured to accept a search query;

said server configured to

provide search results to said at least one wireless communications device based upon the search query from said at least one wireless communications device, the search results comprising at least one search fact associated with the search query, and

generate the at least one search fact based upon location data and a motion value associated with said at least one wireless communications device.

2. The wireless communication system of Claim 1 wherein said server is configured to generate the at least one search fact based upon a confidence value.

3. The wireless communication system of Claim 1 wherein said server is configured to truncate the at least one search fact when the motion value exceeds a threshold value.

4. The wireless communication system of Claim 1 wherein said server is configured to generate the at least one search fact by at least compiling text from a plurality of resources.

5. The wireless communication system of Claim 4 wherein said server is configured to selectively provide the at least one search fact to said at least one wireless communications device based upon location data associated with the plurality of resources.

6. The wireless communication system of Claim 4 wherein the plurality of resources comprises a plurality of Internet resources.

7. The wireless communication system of Claim 1 wherein said server is configured to provide a plurality of versions of the at least one search fact based upon the location data and the motion value.

8. The wireless communication system of Claim 1 wherein said at least one wireless communications device comprises a global positioning system (GPS) antenna configured to generate the location data and the motion value.

9. The wireless communication system of Claim 1 wherein said at least one wireless communications device comprises an accelerometer configured to generate the motion value.

10. The wireless communication system of Claim 1 wherein said at least one wireless communications device comprises a cellular wireless communications device operable on a cellular network; and wherein the cellular network generates the location data and the motion value.

11. The wireless communication system of Claim 1 wherein said server is configured to provide the at least one search fact based upon current location data and at least one other search fact based on another geographic region.

12. A server to communicate with at least one wireless communications device and comprising:

a processor and associated memory configured to

provide search results to the at least one wireless communication device based upon a search query from said at least one wireless communications device, the search results comprising at least one search fact associated with the search query, and

generate the at least one search fact based upon location data and a motion value associated with said at least one wireless communications device.

13. The server of Claim 11 wherein said processor and associated memory are configured to truncate the at least one search fact when the motion value exceeds a threshold value.

14. The server of Claim 11 wherein said processor and associated memory are configured to generate the at least one search fact by at least compiling text from a plurality of resources.

15. The server of Claim 14 wherein said processor and associated memory are configured to selectively provide the at least one search fact to said at least one wireless communications device based upon location data associated with the plurality of resources.

16. The server of Claim 14 wherein the plurality of resources comprises a plurality of Internet resources.

17. The server of Claim 11 wherein said processor and associated memory are configured to provide a plurality of versions of the at least one search fact based upon the location data and the motion value.

18. The server of Claim 11 wherein said processor and associated memory are configured to provide the at least one search fact based upon current location data and at least one other search fact based on another geographic region.

19. A method of operating a server communicating with at least one wireless communications device, the method comprising:

providing search results to the at least one wireless communications device based upon a search query from the at least one wireless communications device, the search results comprising at least one search fact associated with the search query; and

generating the at least one search fact based upon location data and a motion value associated with the at least one wireless communications device.

20. The method of Claim 19 further comprising generating the at least one search fact based upon a confidence value.

21. The method of Claim 19 further comprising truncating the at least one search fact when the motion value exceeds a threshold value.

22. The method of Claim 19 further comprising generating the at least one search fact by at least compiling text from a plurality of resources.

23. The method of Claim 22 further comprising selectively providing the at least one search fact to the at least one wireless communications device based upon location data associated with the plurality of resources.

24. The method of Claim 22 wherein the plurality of resources comprises a plurality of Internet resources.

25. The method of Claim 19 further comprising providing a plurality of versions of the at least one search fact based upon the location data and the motion value.

26. The method of Claim 19 further comprising providing at least one other search fact based on another geographic region.

AMENDED CLAIMS
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1. A wireless communication system comprising:

at least one wireless communications device comprising a processor, and an input device cooperating therewith and configured to accept a search query; and

a server configured to

provide search results to the at least one wireless communications device based upon the search query from the at least one wireless communications device, the search results comprising at least one search fact associated with the search query, and

generate the at least one search fact based upon location data and a motion value associated with the at least one wireless communications device, and an Internet resource.

2. The wireless communication system of Claim 1 wherein the server is configured to generate the at least one search fact based upon a confidence value.

3. The wireless communication system of Claim 1 wherein the server is configured to truncate the at least one search fact when the motion value exceeds a threshold value.

4. The wireless communication system of Claim 1 wherein the server is configured to generate the at least one search fact by at least compiling text from the Internet resource and a plurality of resources.

5. The wireless communication system of Claim 4 wherein the server is configured to selectively provide the at least one search fact to the at least one wireless communications device based upon location data associated with the plurality of resources.

6. The wireless communication system of Claim 1 wherein the server is configured to provide a plurality of versions of the at least one search fact based upon the location data and the motion value.

7. The wireless communication system of Claim 1 wherein the at least one wireless communications device comprises a global positioning system (GPS) antenna configured to generate the location data and the motion value.

8. The wireless communication system of Claim 1 wherein the at least one wireless communications device comprises an accelerometer configured to generate the motion value.

9. The wireless communication system of Claim 1 wherein the at least one wireless communications device comprises a cellular wireless communications device operable on a cellular network; and wherein the cellular network generates the location data and the motion value.

10. The wireless communication system of Claim 1 wherein the server is configured to provide the at least one search fact based upon current location data and at least one other search fact based on another geographic region.

11. A server to communicate with at least one wireless communications device and comprising:

a processor and associated memory configured to

provide search results to the at least one wireless communication device based upon a search query from the at least one wireless communications device, the search results comprising at least one search fact associated with the search query, and

generate the at least one search fact based upon location data and a motion value associated with the at least one wireless communications device, and an Internet resource.

12. The server of Claim 11 wherein the processor and associated memory are configured to truncate the at least one search fact when the motion value exceeds a threshold value.

13. The server of Claim 11 wherein the processor and associated memory are configured to generate the at least one search fact by at least compiling text from the Internet resource and a plurality of resources.

14. The server of Claim 13 wherein the processor and associated memory are configured to selectively provide the at least one search fact to the at least one wireless communications device based upon location data associated with the plurality of resources.

15. The server of Claim 11 wherein the processor and associated memory are configured to provide a plurality of versions of the at least one search fact based upon the location data and the motion value.

16. The server of Claim 11 wherein the processor and associated memory are configured to provide the at least one search fact based upon current location data and at least one other search fact based on another geographic region.

17. A method of operating a server communicating with at least one wireless communications device, the method comprising:

providing search results to the at least one wireless communications device based upon a search query from the at least one wireless communications device, the search results comprising at least one search fact associated with the search query; and

generating the at least one search fact based upon location data and a motion value associated with the at least one wireless communications device, and an Internet resource.

18. The method of Claim 17 further comprising generating the at least one search fact based upon a confidence value.

19. The method of Claim 17 further comprising truncating the at least one search fact when the motion value exceeds a threshold value.

20. The method of Claim 17 further comprising generating the at least one search fact by at least compiling text from the Internet resource and a plurality of resources.

21. The method of Claim 20 further comprising selectively providing the at least one search fact to the at least one wireless communications device based upon location data associated with the plurality of resources.

22. The method of Claim 17 further comprising providing a plurality of versions of the at least one search fact based upon the location data and the motion value.

23. The method of Claim 17 further comprising providing at least one other search fact based on another geographic region.

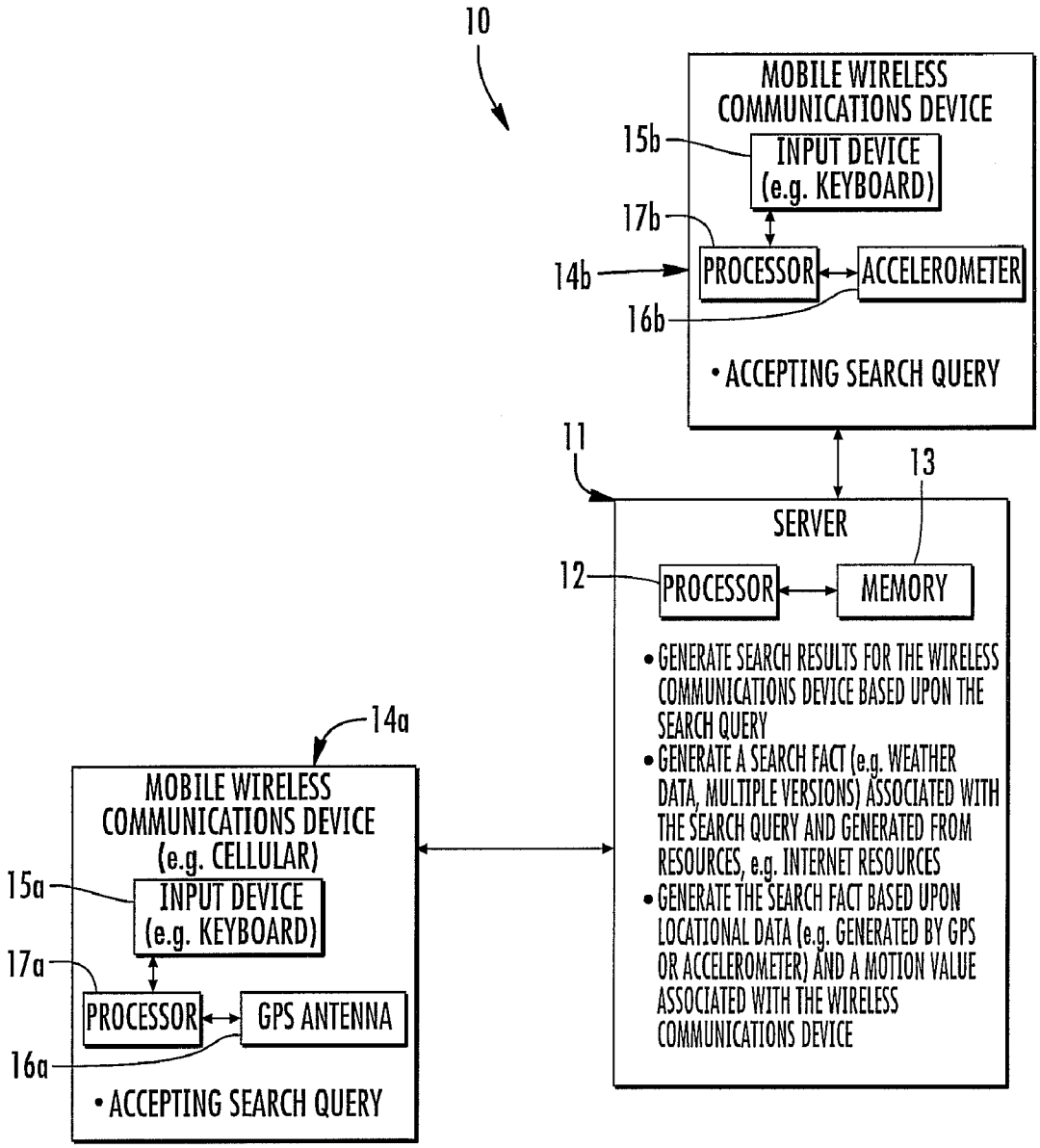
10
MOBILE WIRELESS COMMUNICATIONS DEVICE
15b
INPUT DEVICE (e.g. KEYBOARD)
17b
14b
PROCESSOR
ACCELEROMETER
16b
• ACCEPTING SEARCH QUERY
11
13
SERVER
12
PROCESSOR
MEMORY
• GENERATE SEARCH RESULTS FOR THE WIRELESS COMMUNICATIONS DEVICE BASED UPON THE SEARCH QUERY
• GENERATE A SEARCH FACT (e.g. WEATHER DATA, MULTIPLE VERSIONS) ASSOCIATED WITH THE SEARCH QUERY AND GENERATED FROM RESOURCES, e.g. INTERNET RESOURCES
• GENERATE THE SEARCH FACT BASED UPON LOCATIONAL DATA (e.g. GENERATED BY GPS OR ACCELEROMETER) AND A MOTION VALUE ASSOCIATED WITH THE WIRELESS COMMUNICATIONS DEVICE
14a
MOBILE WIRELESS COMMUNICATIONS DEVICE (e.g. CELLULAR)
15a
INPUT DEVICE (e.g. KEYBOARD)
17a
PROCESSOR
GPS ANTENNA
16a
• ACCEPTING SEARCH QUERY

FIG. 1

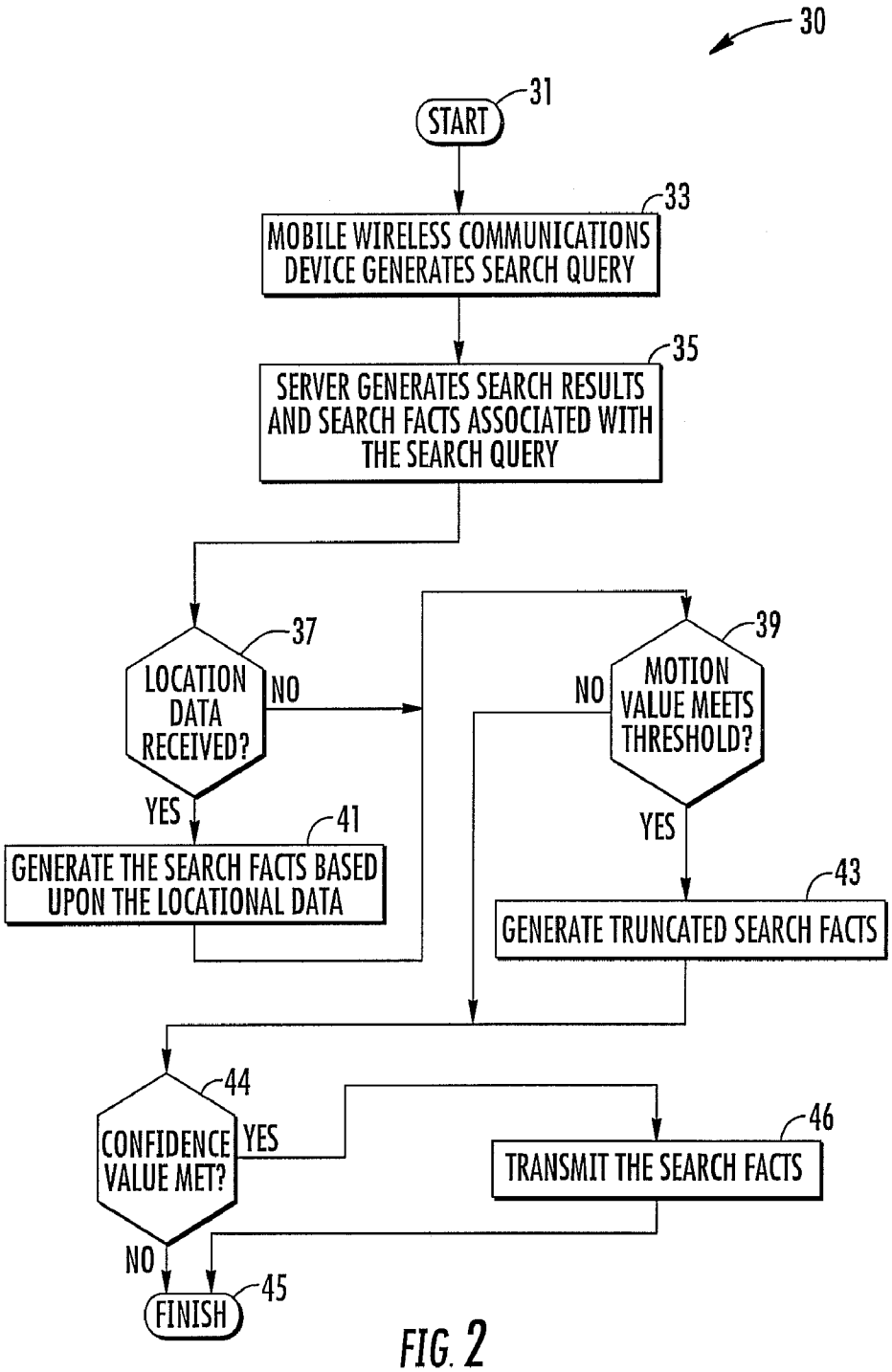
30
START
31
MOBILE WIRELESS COMMUNICATIONS DEVICE GENERATES SEARCH QUERY
33
SERVER GENERATES SEARCH RESULTS AND SEARCH FACTS ASSOCIATED WITH THE SEARCH QUERY
35
LOCATION DATA RECEIVED?
37
NO
YES
GENERATE THE SEARCH FACTS BASED UPON THE LOCATIONAL DATA
41
MOTION VALUE MEETS THRESHOLD?
39
NO
YES
GENERATE TRUNCATED SEARCH FACTS
43
CONFIDENCE VALUE MET?
44
YES
NO
TRANSMIT THE SEARCH FACTS
46
FINISH
45

FIG. 2

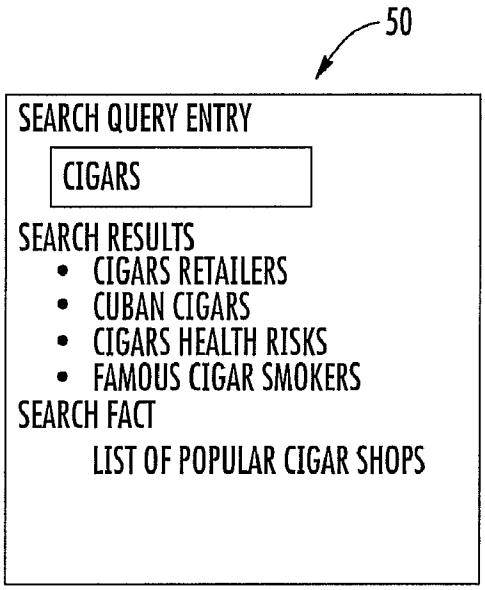

FIG. 3A
PRIOR ART

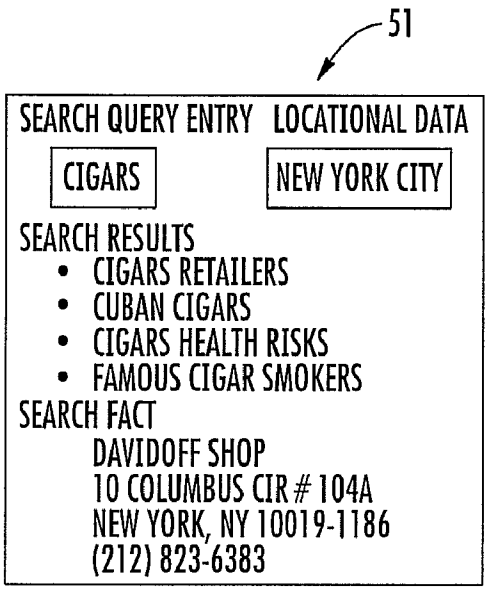

FIG. 3B
PRIOR ART

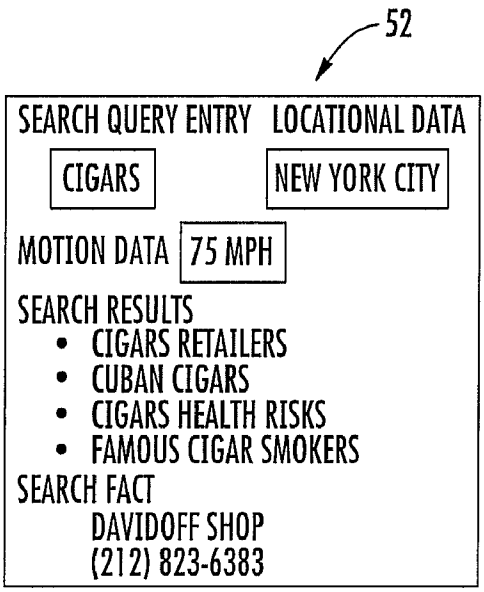

FIG. 3C

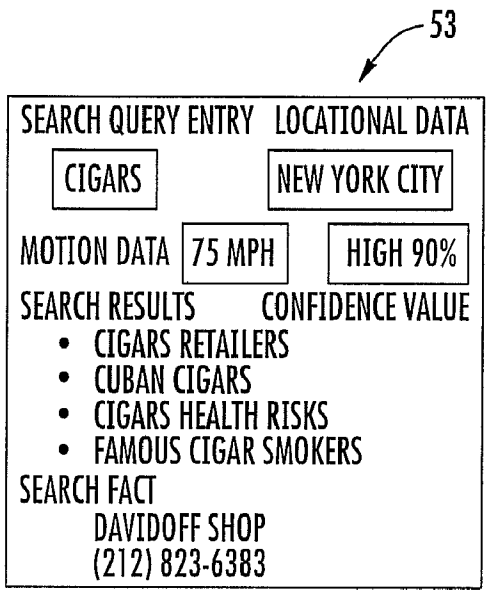

FIG. 3D

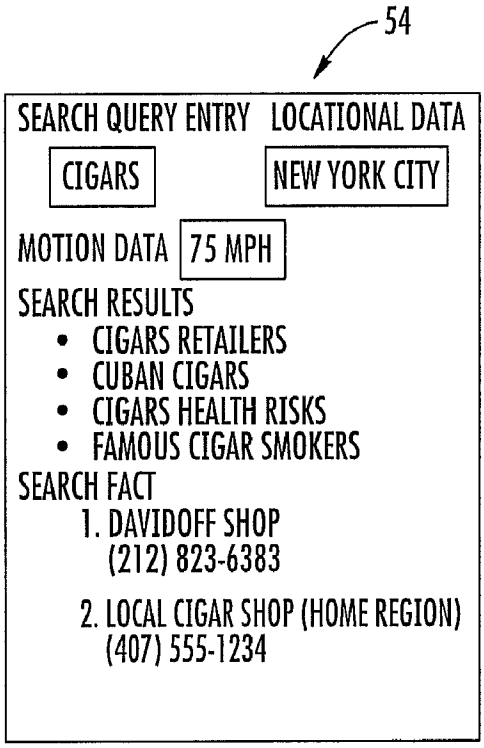
54
SEARCH QUERY ENTRY
LOCATIONAL DATA
CIGARS
NEW YORK CITY
MOTION DATA
75 MPH
SEARCH RESULTS
• CIGARS RETAILERS
• CUBAN CIGARS
• CIGARS HEALTH RISKS
• FAMOUS CIGAR SMOKERS
SEARCH FACT
1. DAVIDOFF SHOP
(212) 823-6383
2. LOCAL CIGAR SHOP (HOME REGION)
(407) 555-1234

FIG. 3E

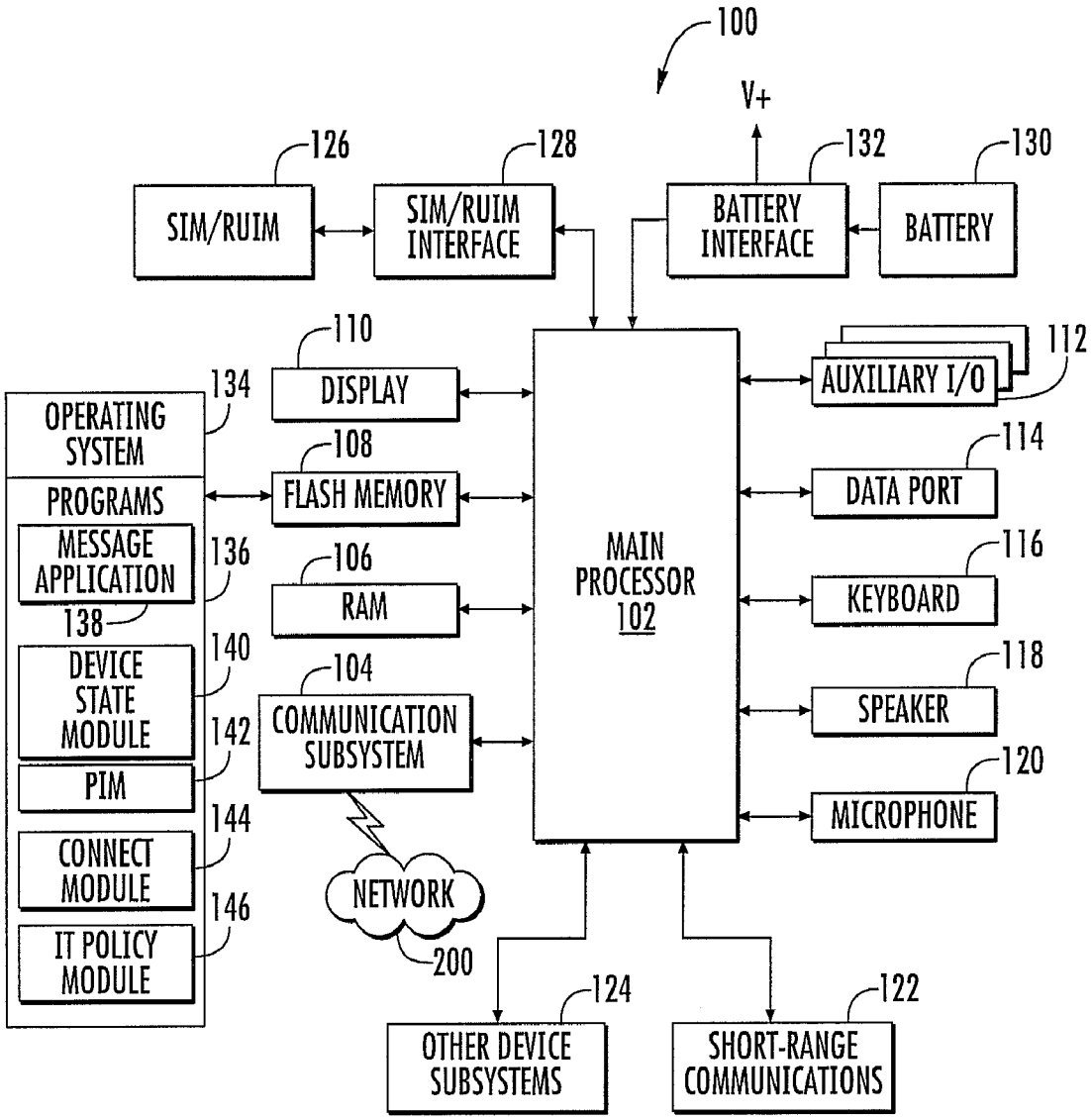
100
V+
126
128
132
130
SIM/RUIM
SIM/RUIM INTERFACE
BATTERY INTERFACE
BATTERY
110
112
134
DISPLAY
AUXILIARY I/O
OPERATING SYSTEM
PROGRAMS
108
114
FLASH MEMORY
DATA PORT
MESSAGE APPLICATION
136
MAIN PROCESSOR 102
116
106
138
RAM
KEYBOARD
140
DEVICE STATE MODULE
104
118
142
COMMUNICATION SUBSYSTEM
SPEAKER
PIM
120
144
MICROPHONE
CONNECT MODULE
NETWORK
146
IT POLICY MODULE
200
124
122
OTHER DEVICE SUBSYSTEMS
SHORT-RANGE COMMUNICATIONS

FIG. 4

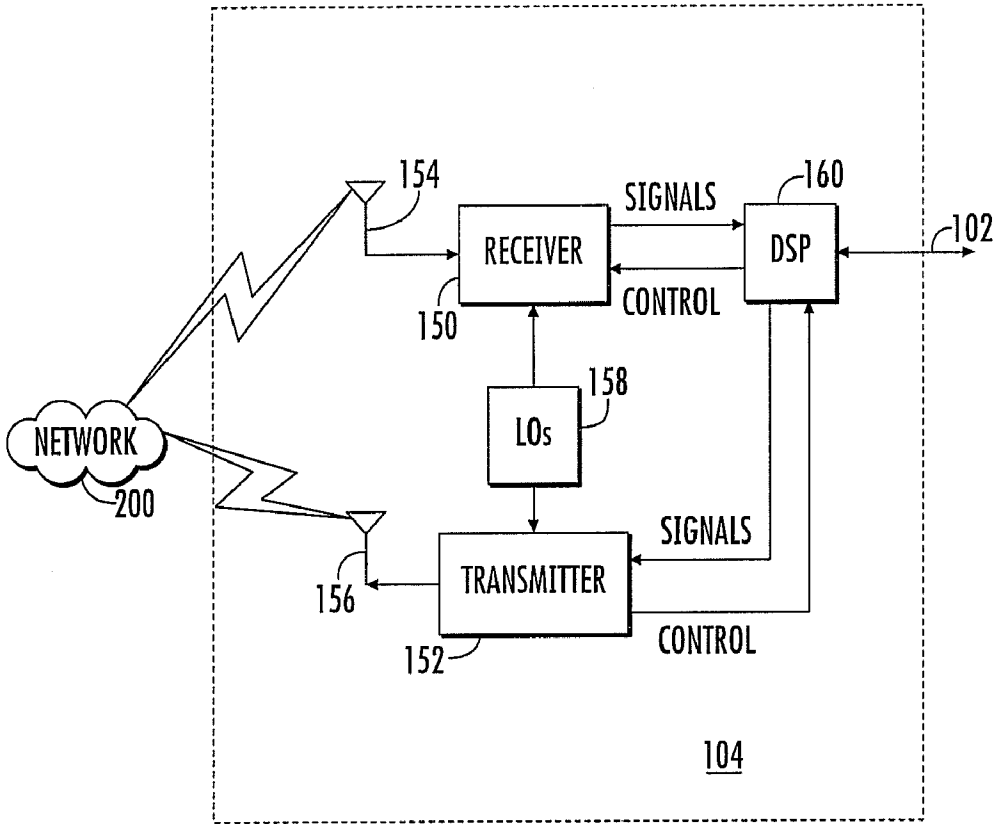
154
SIGNALS
160
102
RECEIVER
DSP
CONTROL
150
158
LOs
NETWORK
200
SIGNALS
TRANSMITTER
156
CONTROL
152
104

FIG. 5

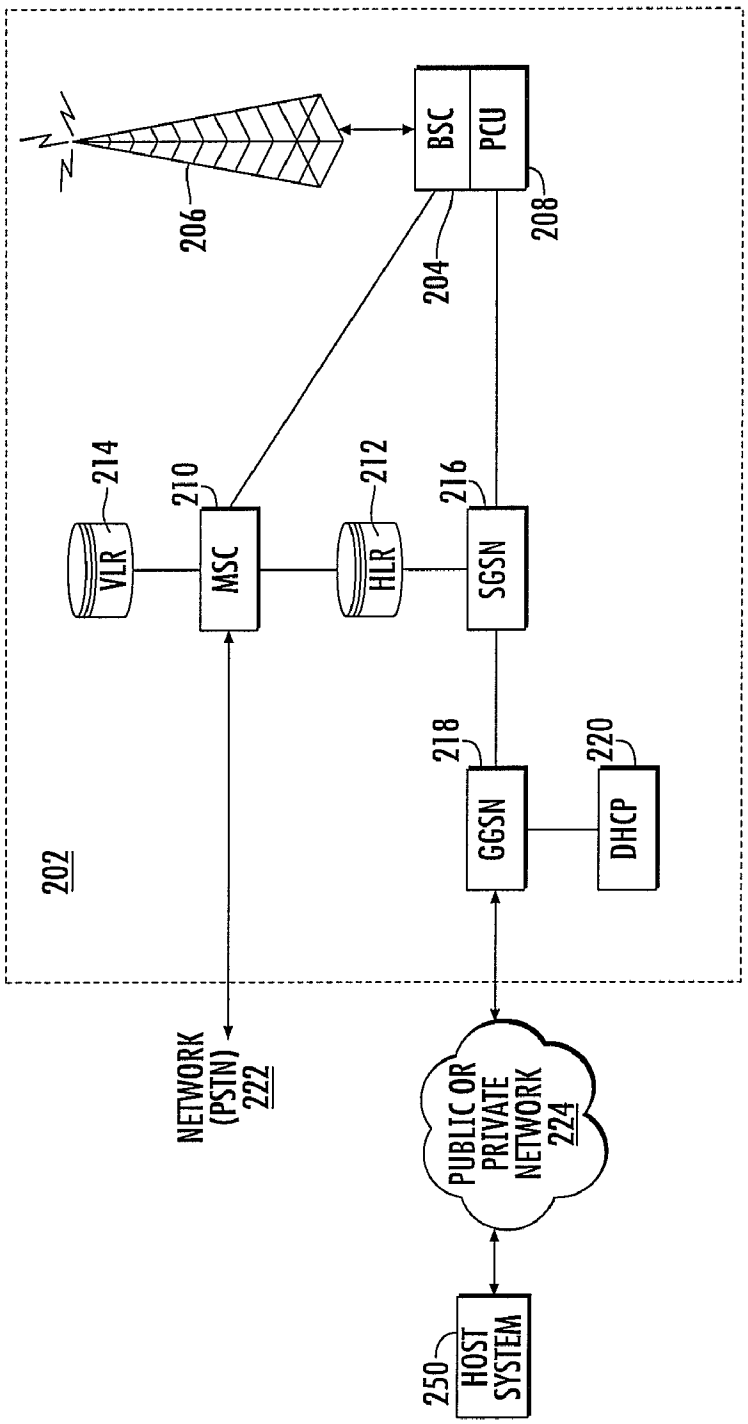
BSC
PCU
206
204
208
214
210
212
216
VLR
MSC
HLR
SGSN
218
220
GGSN
DHCP
202
NETWORK (PSTN) 222
PUBLIC OR PRIVATE NETWORK 224
250
HOST SYSTEM

FIG. 6

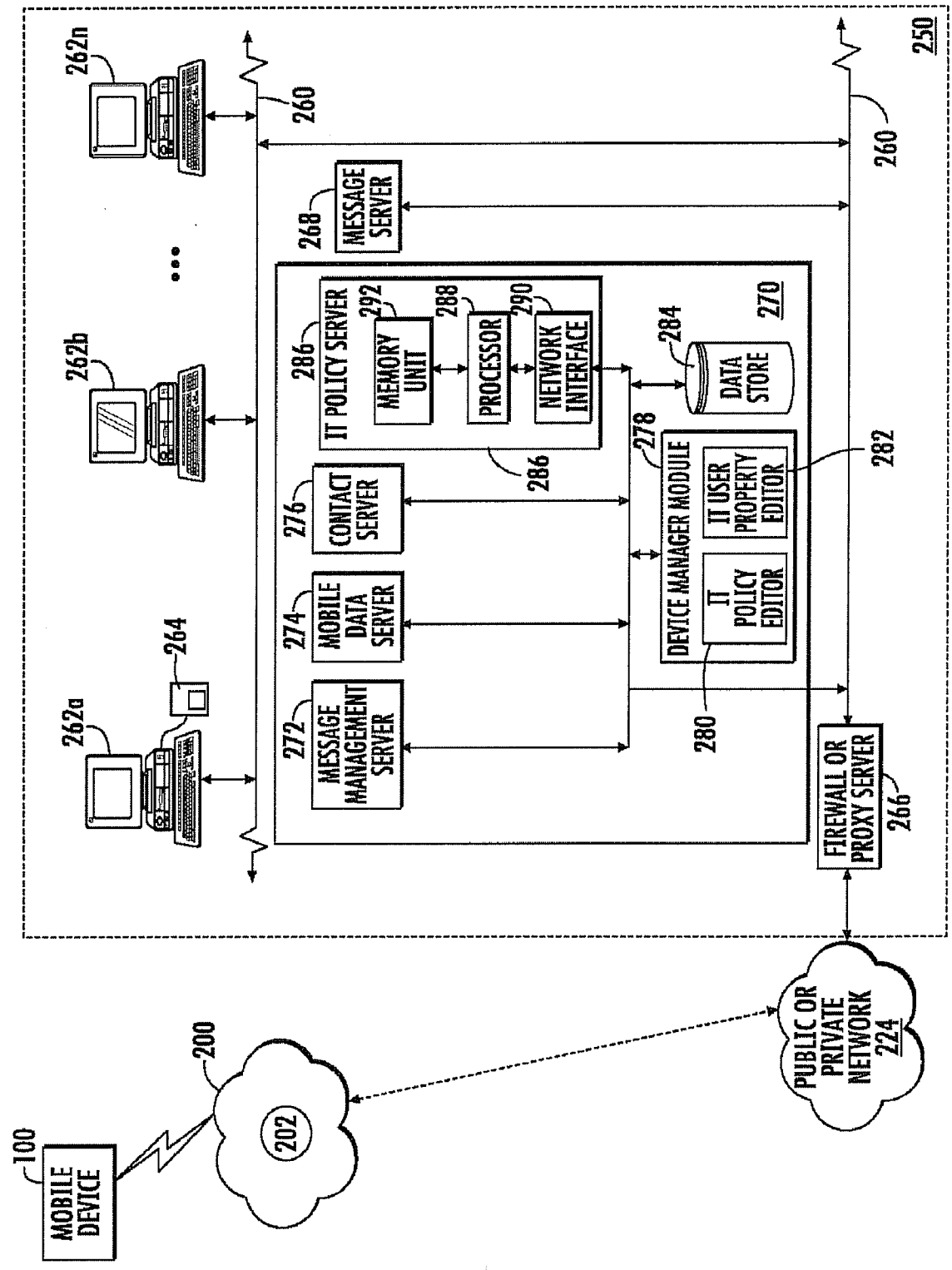
MOBILE DEVICE
100
202
200
PUBLIC OR PRIVATE NETWORK 224
FIREWALL OR PROXY SERVER
266
250
260
262n
262b
262a
264
MESSAGE SERVER
268
IT POLICY SERVER
286
MEMORY UNIT
292
PROCESSOR
288
NETWORK INTERFACE
290
DATA STORE
284
270
CONTACT SERVER
276
MOBILE DATA SERVER
274
MESSAGE MANAGEMENT SERVER
272
DEVICE MANAGER MODULE
278
IT POLICY EDITOR
IT USER PROPERTY EDITOR
282
280

FIG. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/036483

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F17/30
ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
G06F

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/105781 A1 (UEDA FUMIO [JP] ET AL) 18 May 2006 (2006-05-18) abstract paragraphs [0130], [0138], [0139], [0140], [0151], [0152]; figures 1,2,5	1-26
X	US 2005/223030 A1 (MORRIS TONIA G [US] ET AL) 6 October 2005 (2005-10-06) paragraphs [0012] - [0019] - paragraph [0019]; figures 1,2	1-26
X	US 2007/006098 A1 (KRUMM JOHN C [US] ET AL) 4 January 2007 (2007-01-04) abstract paragraph [0053]; figure 4 paragraph [0069]; figure 7	1-26

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 January 2012	27/01/2012

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Siódmok, Wojciech

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/036483

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008/146250 A1 (AARON JEFFREY [US]) 19 June 2008 (2008-06-19) paragraph [0032] -----	1-26

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2011/036483

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006105781 A1	18-05-2006	NONE	
US 2005223030 A1	06-10-2005	NONE	
US 2007006098 A1	04-01-2007	US 2007006098 A1	04-01-2007
		US 2011161276 A1	30-06-2011
US 2008146250 A1	19-06-2008	NONE	