



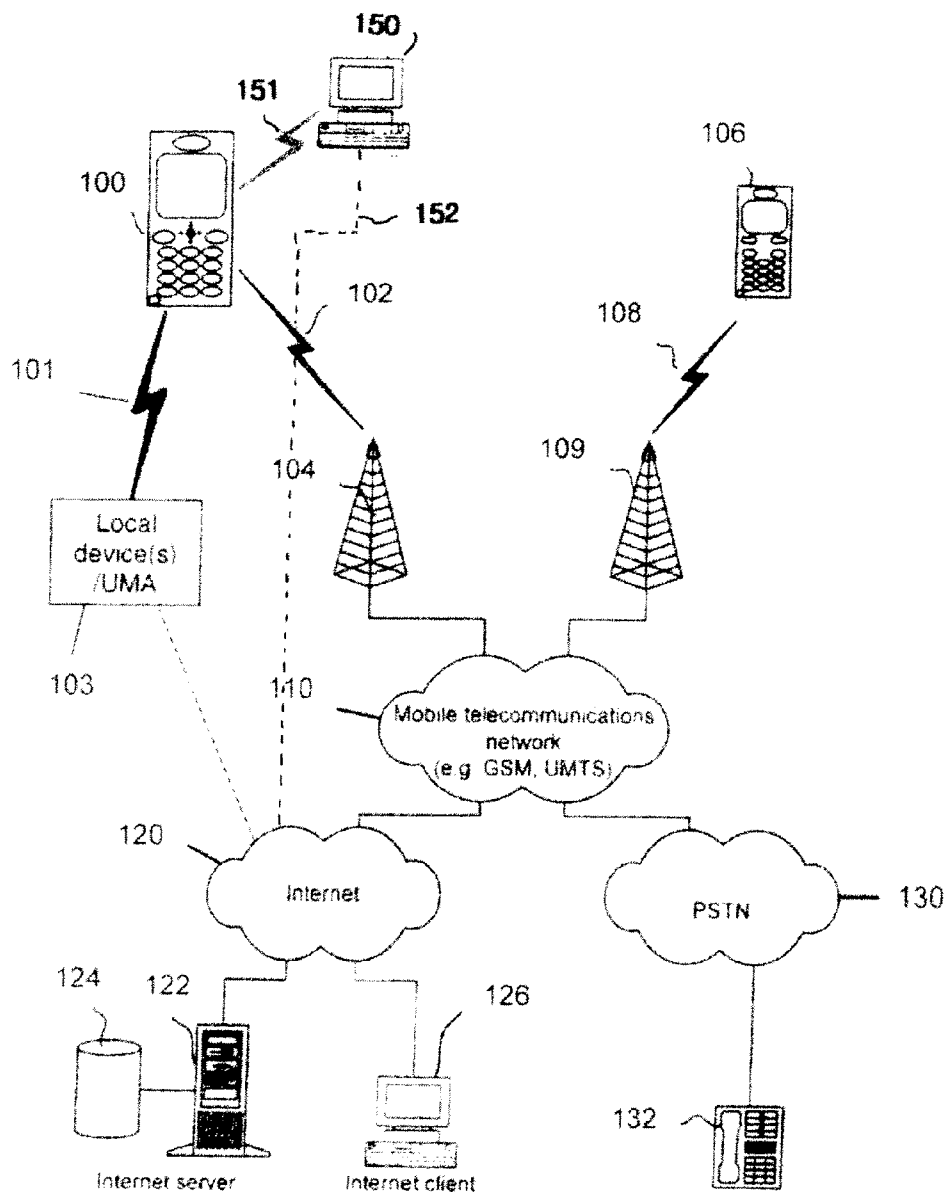
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(19) **United States**(12) **Patent Application Publication**
Sivakumar(10) **Pub. No.: US 2009/0110177 A1**(43) **Pub. Date: Apr. 30, 2009**(54) **DYNAMIC SECONDARY PHONE BOOK****Publication Classification**(75) Inventor: **T. Sivakumar, Tokyo (JP)**(51) **Int. Cl.**
H04M 3/42 (2006.01)(52) **U.S. Cl.** **379/218.01**(57) **ABSTRACT**

Correspondence Address:

PERMAN & GREEN**425 POST ROAD****FAIRFIELD, CT 06824 (US)**(73) Assignee: **NOKIA CORPORATION, Espoo (FI)**(21) Appl. No.: **11/931,649**(22) Filed: **Oct. 31, 2007**

A mobile communication device is equipped with a dynamic local directory into which contact information from a local telephone directory may be downloaded on a temporary basis. The local telephone directory resides on a local communication network and may be accessed by the mobile communication device. The downloaded data is purged automatically after preset limits are reached. The dynamic local telephone directory on the mobile communication device is continuously changing depending on the location.



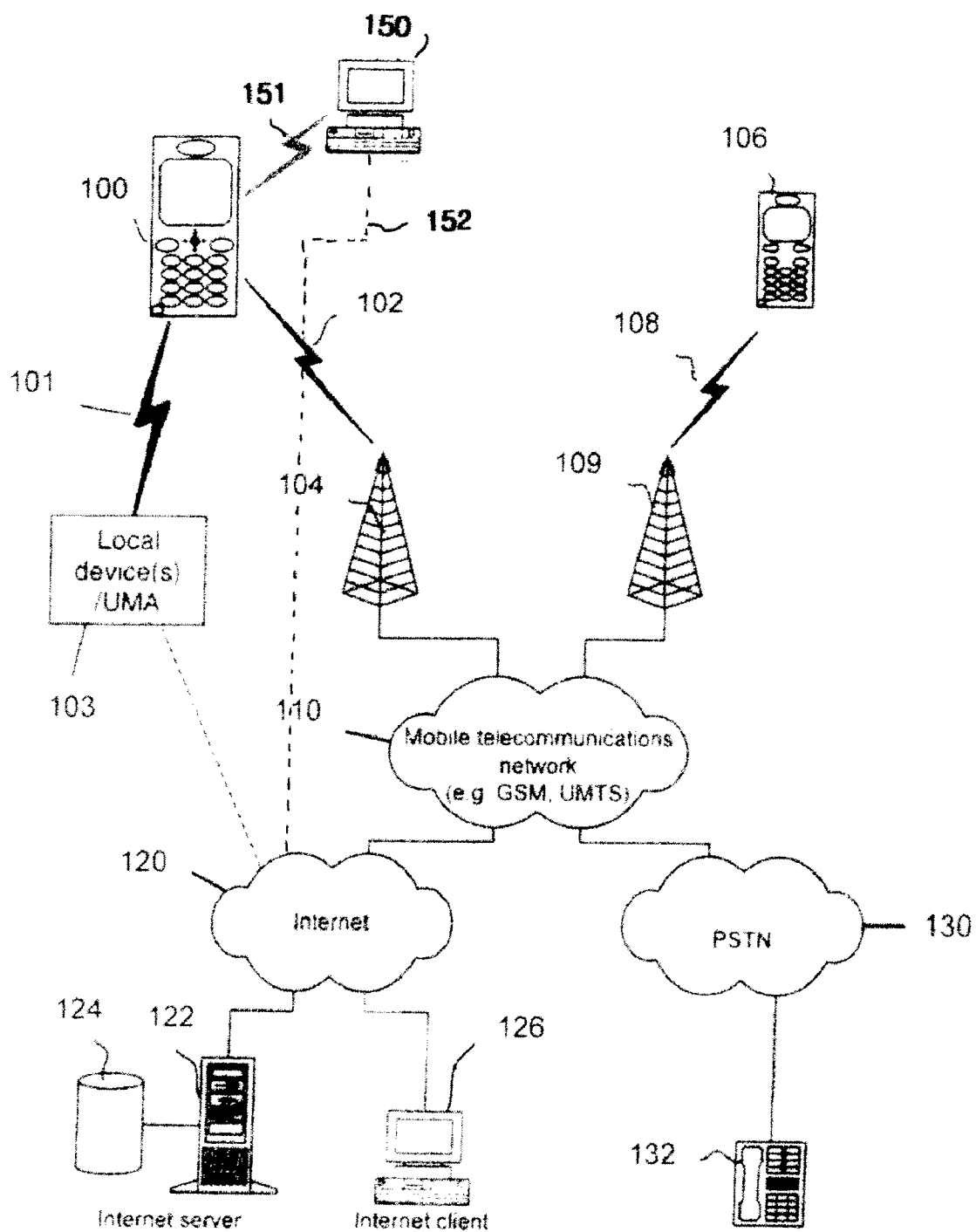


FIG. 1

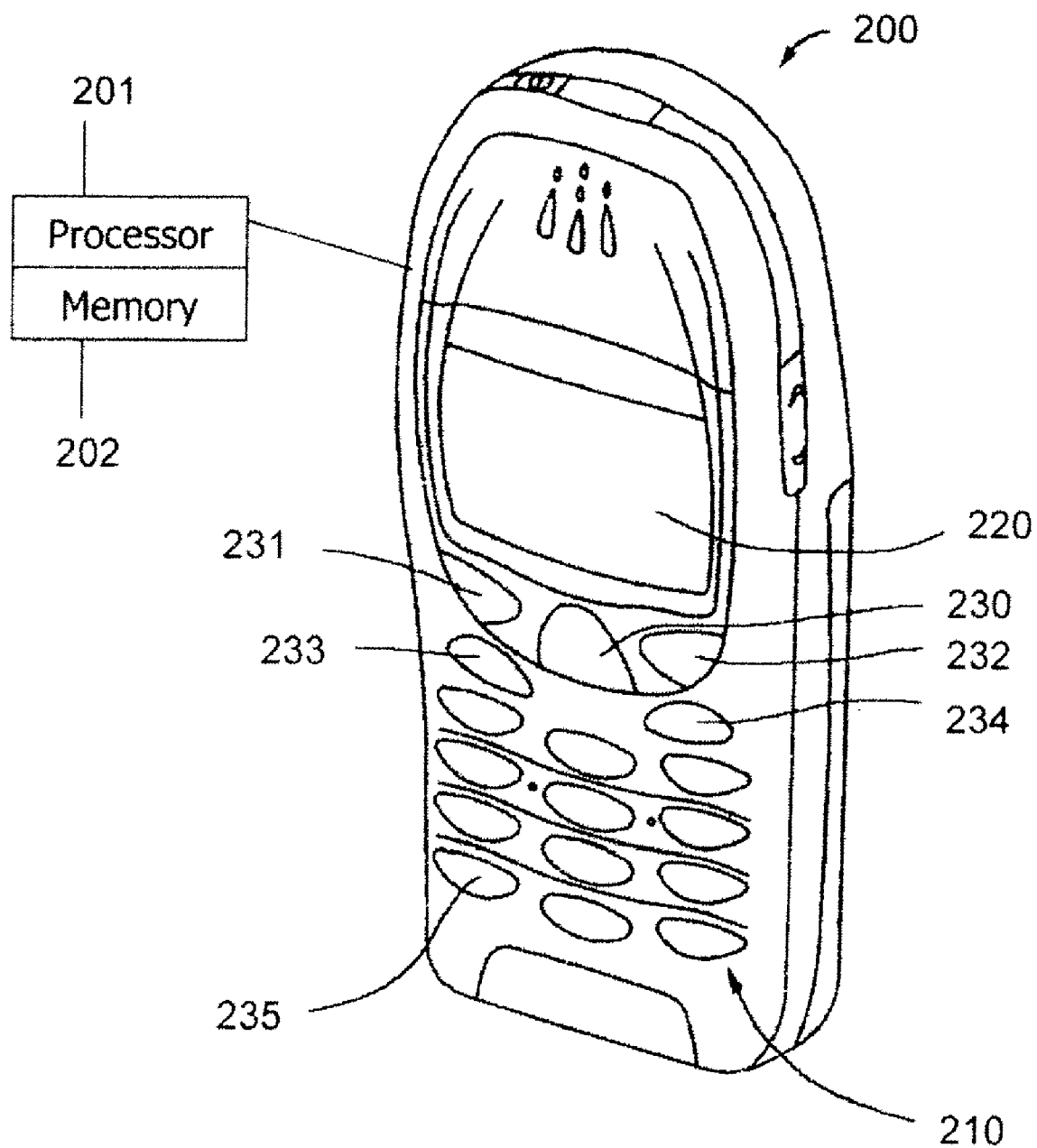


FIG. 2A

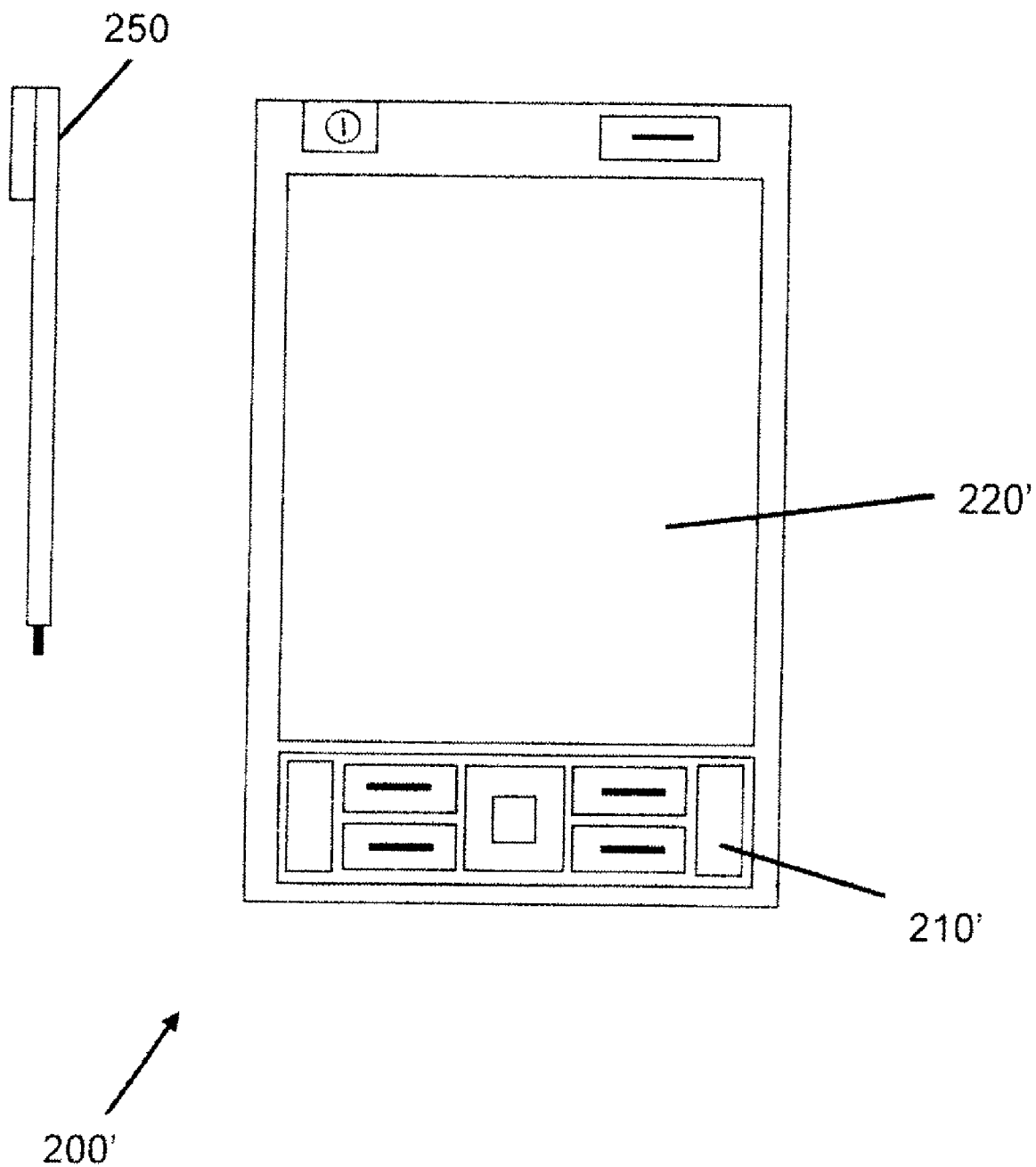


FIG. 2B

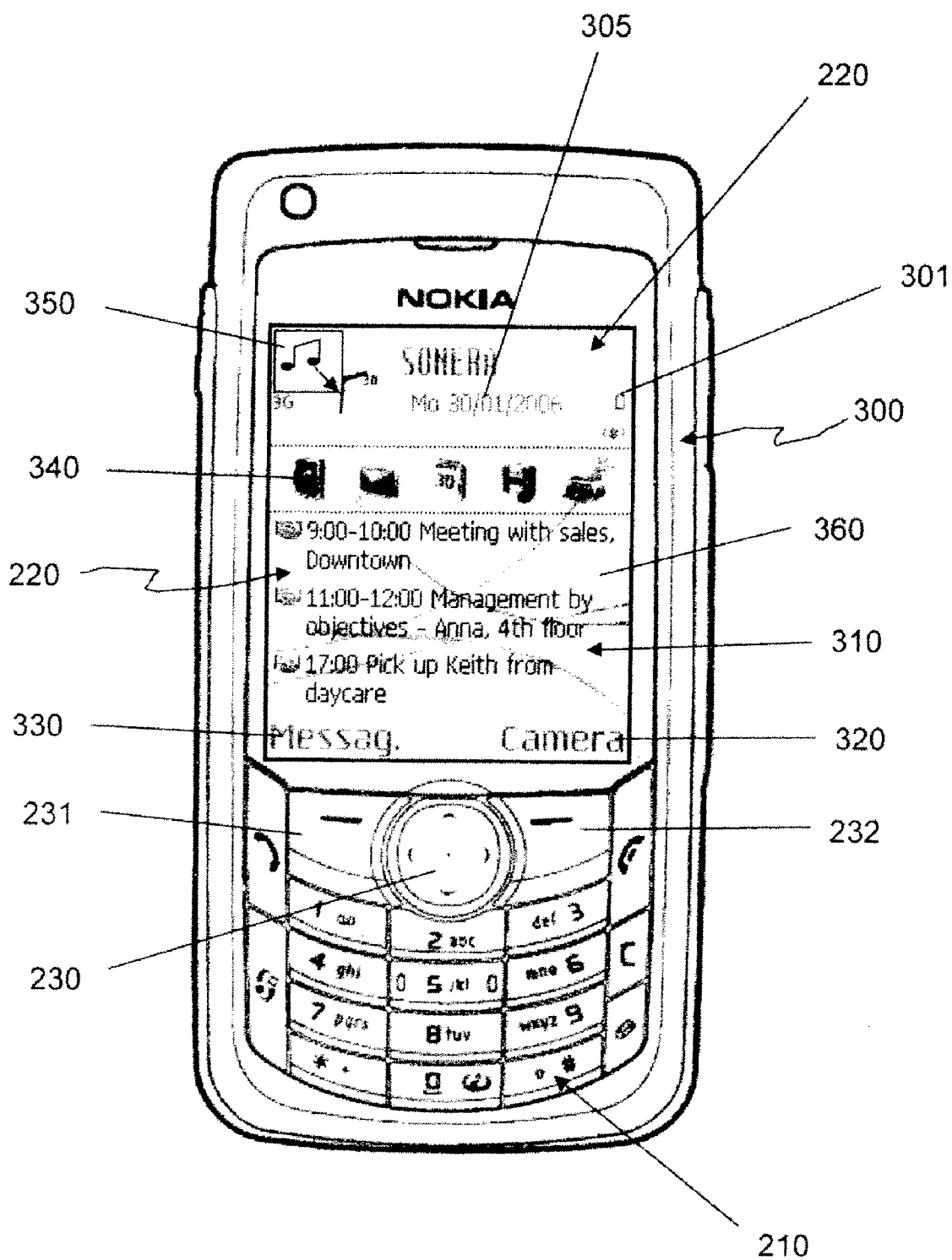


FIG. 3

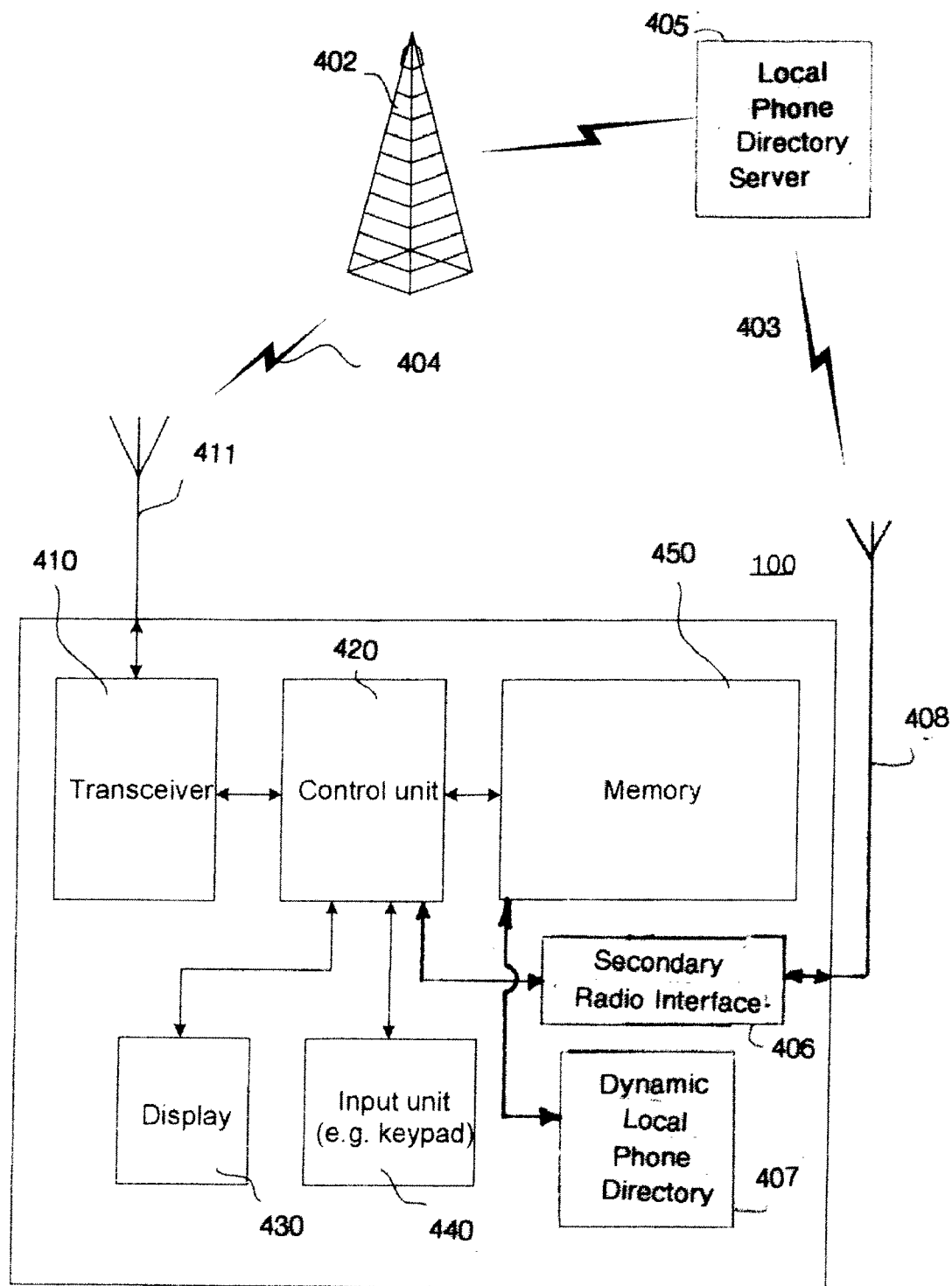


Figure 4

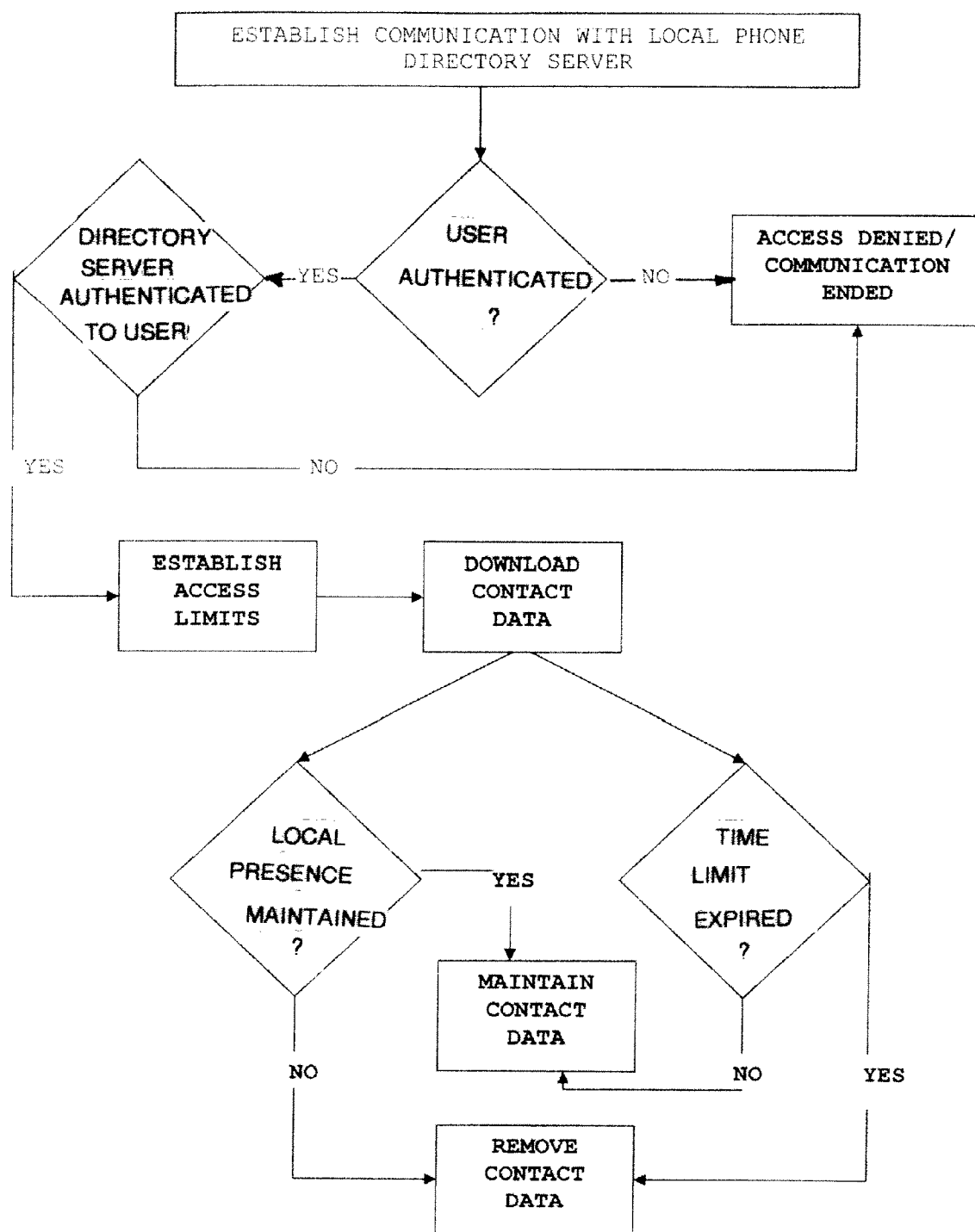


FIGURE 5

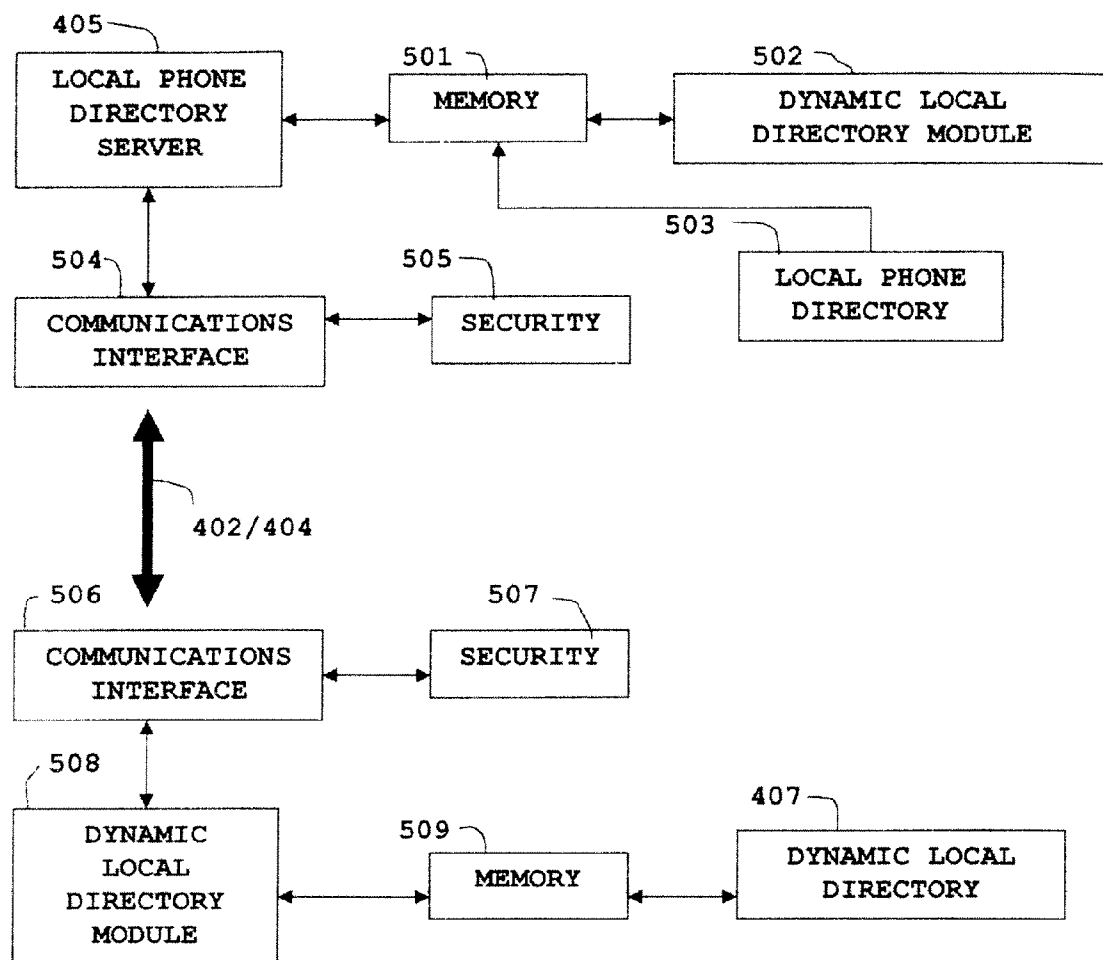


FIGURE 6

DYNAMIC SECONDARY PHONE BOOK**BACKGROUND****[0001]** 1. Field

[0002] The disclosed embodiments generally relate to communications by a mobile device using a locally accessible phone directory and in particular to accessing contact information for a specific location, business entity, network, or the like.

[0003] 2. Brief Description of Related Developments

[0004] Phone directories and contact information stored on a mobile telephone are limited by useable memory and the need to continuously add and update numbers. Although this may be accomplished by downloading from available data bases located on a personal computer, network server or other source, it becomes cumbersome when there is a need for local contact data that is temporary. For example, a sales executive visiting the head office, needs to have access to contact details for important people in the office. Similarly, a patient in a hospital needs to have access of important contacts to access services, make appointments, check on bills, etc.

[0005] In the current state of the art, users need to manually pull the details of the contacts and feed them to an address book or other contact application on the mobile device. Later these entries will need to be deleted when the user finds that he/she no longer needs these contact details to avoid overwhelming available memory.

[0006] The problem to which this application is directed is different from the dynamic phonebook entries that might be automatically be updated based on available data sources. For example, phone numbers for taxi service, pizza service, or some other local services which users widely expect to be available, but the details are location dependent. In these cases it is possible to define a dynamic phonebook entry that could be automatically updated by communicating with a local operator, or local service provider when visiting or anticipating a visit to a new or infrequently visited locale, business, facility, or network, but would be automatically deleted after a period of time or when the user is no longer in the relevant locality.

[0007] It would be advantageous to provide a mobile communications device with the ability to access a local phone directory to obtain contact information related to a particular location. In an embodiment of this application, a phonebook is provided that is different from location to location. Its utility for the user is limited by the location, and the time duration of the visit or need. For example, hospital phone book may be useful only if somebody is staying at the hospital or has business with the hospital and therefore would expire after a period of the time, during the stay or business dealings. Therefore this local phone book is dynamic and limited by the location and the time of the need.

[0008] It would be also advantageous that this dynamic local phone directory incorporate a secure access. Local phone book data would not be transferred to a user without authentication, and also such temporary users would not be given access to all the information. For example, a client visiting an office might be allowed to have access to the phone book entries of his host(s), reception, helpdesk, or some other relevant people, but not to all the information in the phone

book. Similarly a user would need to authenticate the service, and set the limits of the need in scope and duration.

SUMMARY

[0009] According to one aspect of this application, a communication network is provided with a server, which at least in part is constructed to store a local phone directory having contact information pertinent to the network location. A communications interface is equipped to allow incoming calls for the purpose of accessing the local directory. A mobile communication device is adapted to establish a communication link with the server and provide the server with the necessary identification as an authorized user of the local phone directory. After the link is established and authentication is accomplished, the user of the mobile communication device may obtain contact data from the local phone directory while in the locality or for a predetermined limited time period.

[0010] In another aspect of this application, a user's mobile communications device may be automatically contacted by a local network and the user provided with the opportunity to acquire local contact information. This can be prompted by sensing the location of the user equipment (UE) and initiating a link via wlan, bluetooth, ultrawide band, WiFi, WiMax, referred to as secondary local communications. The user could authenticate and accept or reject the offer of local contact data.

[0011] In another aspect of this application, the local communications network server includes an accessible local telephone directory with contact information for the associated business, organization, school, hospital, building, or other facility or locale with associated local directory of contact information. The local telephone directory includes a communications interface that provides a portal to the directory for users visiting the locale. A user would provide identification sufficient to authenticate the request for access and then would be permitted to download the contact information. The network server would then provide the communication interface to allow the user to access the local network using the contact information and thereby become a virtual internal phone.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The foregoing aspects and other features of the embodiments are explained in the following description, with reference to the accompanying drawings, in which:

[0013] FIG. 1 shows a schematic illustration of a cellular telecommunication system, as an example of an environment in which aspects of the embodiments may be applied;

[0014] FIG. 2a shows a perspective view of one embodiment of a mobile communication device in which aspects of the disclosed embodiments may be applied;

[0015] FIG. 2b shows a perspective view of another embodiment of a mobile communication device in which aspects of the disclosed embodiments may be applied;

[0016] FIG. 3 shows a user interface for an embodiment of a mobile communication device in which aspects of the disclosed embodiments may be applied;

[0017] FIG. 4 is a block diagram of the mobile communications device of FIG. 3 associated with a local network;

[0018] FIG. 5 is a flow diagram of a method in which aspects of the disclosed embodiments may be applied;

[0019] FIG. 6 is a block diagram illustrating the general architecture of the exemplary local system of FIG. 4.

DETAILED DESCRIPTION OF THE EMBODIMENT(S)

[0020] FIG. 1 is a schematic illustration of a cellular telecommunications system, as an example, of an environment in which a communications device 100 incorporating features of an exemplary embodiment may be applied. Although the embodiments disclosed will be described with reference to the drawings, it should be understood that they may take many alternate forms. In addition, any suitable size, shape, type of elements or combination of components could be used.

[0021] In the telecommunication system of FIG. 1, various telecommunications services such as cellular voice calls, www/wap browsing, cellular video calls, data calls, facsimile transmissions, music transmissions, still image transmission, video transmissions, electronic message transmissions and electronic commerce may be performed between the mobile terminal 100 and other devices, such as another mobile terminal 106, a stationary telephone 132, a personal computer 151 or an internet server 122. It is to be noted that for different embodiments of the mobile terminal 100 and in different situations, some of the telecommunications services indicated above may or may not be available. The aspects of the invention are not limited to any particular set of services in this respect.

[0022] The mobile terminals 100, 106 may be connected to a mobile telecommunications network 110 through radio frequency (RF) links 102, 108 via base stations 104, 109. The mobile telecommunications network 110 may be in compliance with any commercially available mobile telecommunications standard such as GSM, UMTS, D-AMPS, CDMA2000, FOMA and TD-SCDMA.

[0023] The mobile telecommunications network 110 may be operatively connected to a wide area network 120, which may be the internet or a part thereof. An internet server 122 has data storage 124 and is connected to the wide area network 120, as is an internet client computer 126. The server 122 may host a www/hap server capable of serving www/hap content to the mobile terminal 100.

[0024] A public switched telephone network (PSTN) 130 may be connected to the mobile telecommunications network 110 in a familiar manner. Various telephone terminals, including the stationary telephone 132, may be connected to the PSTN 130.

[0025] The mobile terminal 100 is also capable of communicating locally via a local link 101 or 151 to one or more local devices 103 or 150. The local links 101 or 151 may be any suitable type of link with a limited range, such as for example Bluetooth, a Universal Serial Bus (USB) link, a wireless Universal Serial Bus (WUSB) link, an IEEE 802.11 wireless local area network (WLAN) link, an RS-232 serial link, etc. The local devices 103 can, for example, be various sensors that can communicate measurement values to the mobile terminal 100 over the local link 101. The above examples are not intended to be limiting, and any suitable type of link may be utilized. The local devices 103 may be antennas and supporting equipment forming a WLAN implementing Worldwide Interoperability for Microwave Access (WiMAX, IEEE 802.16), WiFi (IEEE 802.11x) or other communication protocols. The WLAN may be connected to the internet. The mobile terminal 100 may thus have multi-radio capability for

connecting wirelessly using mobile communications network 110, WLAN or both. Communication with the mobile telecommunications network 110 may also be implemented using WiFi, WiMax, or any other suitable protocols, and such communication may utilize unlicensed portions of the radio spectrum (e.g. unlicensed mobile access (UMA)).

[0026] As shown in FIG. 1, a computer device 151, for example, a personal computer (PC), laptop computer or other computer device capable of executing a variety of applications, is connected to mobile communication terminal 100 by a local link 151, as described above. In other alternate embodiments, the computer device 150 may be a tablet computer, a laptop or desktop computer, a television or television set top box or any other suitable device capable of driving a display and having supporting electronics, such as central processing unit 411 and memory 414. Computer device 150 may also be connected via broadband, cable, PSTN or other means of communication to Internet server 122. The system illustrated may be adapted to facilitate the functions of the disclosed embodiments described below.

[0027] One embodiment 200 of a terminal 100 is illustrated in more detail in FIG. 2A. The terminal or mobile communications device 200 may have a keypad 210 and a display 220. The keypad 210 may include any suitable user input devices such as, for example, a multi-function/scroll key 230, soft keys 231, 232, a call key 233 and end call key 234 and alphanumeric keys 235. The display 220 may be any suitable display, such as for example, a touch screen display or graphical user interface. The display may be integral to the device 200 or the display may be a peripheral display connected to the device 200. A pointing device, such as for example, a stylus, pen or simply the user's finger may be used with the display 220. In alternate embodiments any suitable pointing device may be used. In other alternate embodiments, the display may be a conventional display. The device 200 may also include other suitable features such as, for example, a camera, loud speaker, connectivity port or tactile feedback features. The mobile communications device may have a processor 201 connected to the display for processing user inputs and displaying information on the display 220. A memory 202 may be connected to the processor 201 for storing any suitable information and/or applications associated with the mobile communications device 200 such as phone book entries, calendar entries, etc.

[0028] In one embodiment, the device 100, may be for example, a PDA style device 200' illustrated in FIG. 2B. The PDA 200' may have a keypad 210', a touch screen display 220' and a pointing device 250 for use on the touch screen display 220'. The exemplary embodiments herein will be described with reference to the mobile communications device 100 for exemplary purposes only with the understanding that the embodiments could be applied equally to any suitable mobile device incorporating a display, processor, memory with supporting software or hardware and a mobile communication capability.

[0029] FIG. 3 illustrates a user interface 300 of the type that may be useful in the mobile communication device 100. The user interface may include display 220. The display 220 of the device 100 may include an application section 310, soft key functions 320, 330, an application bar 340, a battery indicator 301, the date 305 and any other suitable information or items. The application bar 340 may allow a user to select an application stored in the device. For example, as can be seen in FIG. 3, the application bar 340 may include a phone book,

email or other messaging application, a calendar, video player, printing function and any other suitable applications. The user may use the scroll or navigation key **230** to scroll through and select an application from the application bar **340**. In alternate embodiments the applications may be scrolled through and selected in any suitable manner such as, for example, via a menu of the device or with a stylus interacting with a touch screen display.

[0030] In the example of FIG. **3** the calendar function is selected for presentation on the display **220**. The user's calendar entries may be presented in the application section for viewing or modification by the user. In this example, the application section **310**, soft key functions **320**, **330**, an application bar **340**, a battery indicator **301**, the date **305** will collectively be referred to herein as the native application **360** (e.g. the native application is the display screen that is presented on the display before the user activates a transparent application functionality of the device as will be described in greater detail below). In alternate embodiments, the native application may be any suitable portion of the display screen including any suitable application that is running on the device.

[0031] FIG. **4** is a schematic block diagram of a mobile telecommunication terminal **100** within a local communications network according to an exemplary embodiment of the present invention. A transceiver **410** is used for communicating with a base station **402** via an antenna **411**. The base station **402** may be in communication via a local communications network (not shown) to a local phone directory server **405** via link **404**. Communication with local phone directory server **405** could also be established by a secondary radio interface **406**, such as blue tooth, infrared, or other means via antenna **408** and link **403**. As indicated in FIG. **1** the communications may also be established through other means, e.g. a public switched telephone network (PSTN). The terminal **100** and the network in which the terminal is operating are generally adapted to support IP traffic, for example, WLAN, BT, UWB, Wifi, WiMax, IP-Pass-through and other wireless or wired interfaces for communication.

[0032] Within mobile communication device **100**, a control unit **420** is coupled to the transceiver **410**. The control unit **420** may comprise signal processing circuitry in order to process e.g. voice data and message data (e.g. SMS or MMS) from a user of the mobile telecommunication terminal **100** and provide the transceiver **410** with the processed data for transmission to the base station **402** or other destinations. Likewise, the control unit **420** may comprise signal processing circuitry for processing data received from the other telecommunication terminals in order to provide the user of the mobile telecommunication terminal **100** with e.g. audio, image, video or message data. Alternatively (not shown) some or all of the signal processing functionality may be provided by specialized circuitry in the mobile telecommunication terminal **100**.

[0033] The control unit **420** is coupled to a display **430** for providing a user of the mobile telecommunication terminal **100** with visual data regarding e.g. a specific call in progress, telecommunication numbers stored in the mobile telecommunication terminal **100**, signal strength of the wireless communication links **403** and **404**, messages received from other mobile telecommunication terminals, etc.

[0034] The control unit **420** is moreover coupled to an input unit **440**, which may be in the form of a keyboard/keypad; an on-screen touch-sensitive keyboard; a navigation wheel or

joystick for scrolling and selecting items, digits and/or characters shown on the display **430**; etc.

[0035] A memory **450** is connected to the control unit **420**. The memory **450** may be a single memory or many different memories implemented on different chips, alone or together with other electronic circuitry, by means of different technologies (such as RAM, ROM, EPROM, EEPROM, Flash, etc) which all are accessible by the control unit **420**.

[0036] In the exemplary embodiment of FIG. **4**, the user equipment, i.e. mobile communication device **100** includes a dynamic local phone directory software module **407** stored in or in cooperation with memory **450**. The software module **407** is executed by control unit **420** in conjunction with memory **450** to establish communication with a network located at a particular facility in which the user of mobile communication device **100** is present. This could be at a business, manufacturing plant, hospital, chamber of commerce or other location where a local contact directory database is made available. The local contact database would include a software module that would complement the function of software module **407** and provide the interface for the user to communicate, authenticate, set up, and download the contact data that is temporarily needed to conduct business, utilize a service, or generally network with local personnel and businesses.

[0037] In one embodiment of this invention, as shown in FIG. **6**, the system of this invention includes the local communications network server **500**, which could be any one of a number of the entities shown in FIG. **1** and be comprised of a wide variety of computers and processors linked for use with respect to a particular locale. As part of, or operatively associated with the local network server **500**, there is a local phone directory network server **405** that stores and operates a database containing a local telephone directory **503**. Directory **503** contains contact information for the associated business, organization, school, town, hospital, building, or other facility or locale. The contact information could include phone numbers, email addresses, screen names and other information. The local telephone directory server **405** includes a communications interface **504** that provides a portal to the directory for users visiting the locale and desiring temporary access to contact information.

[0038] A security module **505** is associated with the communications interface to provide a screening function that would record a request for access to the directory, including an identification of the user, and the particular communications device for the purposes of authenticating the request. In some instances, it is envisioned that a subscription style service may be provided with cooperatively responsive dynamic local software modules **502** and **508** present on the local directory server. With a subscription style service the user would apply for access in advance and provide the necessary security information to allow local phone directory server to verify the subscription. The might be provided by a communications service provider as part of a package of features.

[0039] Therefore the network side of the system would include local phone directory server **405** having a memory module **501** in which is stored the local phone directory database and application software **502** for operating the dynamic local directory feature. The user equipment **100** would also involve a communication interface **506** with appropriate security functions **507** that provide for information to be transmitted to the local phone directory server **405** for authentication and also permit a certain level of authenti-

cation by the user equipment **100** from the local phone directory server **405**. Once cleared the communication link **403/404** may be established and contact data downloaded to dynamic local directory **407** in memory **509** that is part of communication device **100**. Dynamic local directory module **508** would provide the operation instructions for the processor **201** of UE **100**.

[0040] Dynamic local directory modules **502** and **508** are designed to provide the cooperating parts of the system with necessary instructions to execute the dynamic directory feature. In one embodiment, the modules **502** and **508** would provide a structure for the download of data. As part of this structure, the contact information downloaded would be automatically deleted when the user equipment moves out of the local or a predetermined time limit expires. The deletion could also be deleted manually by the user. This allows for the stripping of obsolete contact data and restores memory capacity to allow further temporary downloads of local contact information from other local directories.

[0041] In an embodiment of this invention as shown in FIG. **5**, the user equipment **100** would be carried into a facility, for example, a business or office within which the user wishes to conduct sales or other contact activities. Using UE **100**, the user seeks to establish a link (**600**) with the local phone directory server associated with the internal communications network of the business. After a reciprocal authentication process is performed and accepted (**610**), a link is established between UE **100** and the local directory server **405**. If authentication cannot be accomplished than access is denied and the communication is ended (**680**).

[0042] Before any data is downloaded the status of the user, i.e. subscriber, remote employee, visitor, etc. is obtained and access limits are set accordingly (**620**). In one embodiment the limits are set using a presence and/or time criteria, this could be prescribed by the subscription, by the user, or by the local directory server according to the user's status. The data is then downloaded (**630**) to the dynamic local directory **407** of the UE **100** and in this embodiment will be set to be removed (**650**) after a predetermined period, that could be hours, days, weeks or what is appropriate to the circumstances, has expired (**640**). In addition, a proximity limitation may be set and then the contact data would be removed after the user and user equipment **100** is removed from the locale (**660**). It is a feature of the dynamic local phone directory software, that the local contact data obtained would be automatically purged when it is no longer needed. The dynamic local directory is continuously changing with time and location.

[0043] In one embodiment the contact information, would be pushed down from the local directory server **405**. In this instance the communication link would be initiated by the local server **405** upon receiving information that indicates the presence of UE **100** within a target location. Authentication and downloading would occur in the same manner as in steps **610** to **680**.

[0044] In another embodiment, the downloaded data would include access information and codes necessary to allow operation of the UE **100** as an internal communication device within the local network. In effect the UE **100** would become a fully functioning local phone in the local network for the duration of a visit.

[0045] It should be understood that the foregoing description is only illustrative of the embodiments. Various alternatives and modifications can be devised by those skilled in the

art without departing from the embodiments. Accordingly, the disclosed embodiments are intended to embrace all such alternatives, modifications and variances that fall within the scope of the appended claims.

1. A method comprising:

using a mobile communication device establishing a communication link with a local communication network, said network having a directory of contact information pertaining to a particular locale;
authenticating the mobile communication device at the local communication network and setting access limits;
downloading local contact information into a dynamic local directory on the mobile communication device;
and

removing the downloaded local contact information from the dynamic local directory, when the access limits are exceeded.

2. The method of claim **1** wherein said removal is initiated by a user of the mobile communications device when the access limits are exceeded.

3. The method of claim **1** wherein the removal is automatic when the access limits are exceeded.

4. The method of claim **1** wherein the access limits are set based on the proximity of the mobile communication device and the local contact information is removed when the mobile communication is moved beyond the proximity limit.

5. The method of claim **1** wherein the access limits are set based on a time period beginning with the downloading of the local contact information and the local contact information is removed when the time period expires.

6. The method of claim **1** wherein the establishment of the communication link is initiated by the local communication network when said network obtains information that the mobile communication device is within a target area.

7. The method of claim **1** wherein the local contact information is a phone number, a screen name or an email address.

8. The method of claim wherein the local communication network is associated with a business facility.

9. The method of claim **8** further comprising: downloading data and codes to provide the mobile communication device with the ability to operate as an internal phone of the business facility.

10. The method according to claim **1** wherein the communication link is a secondary radio link.

11. The method according to claim **10** wherein the secondary radio link is a wireless local area network, blue tooth, ultrawide band, Wifi or WiMax.

12. A mobile communication device comprising:

a processor for executing the functions of the communication device;

a transceiver for establishing a communication link with a local communication network, said local communication network having a local directory of contact information;

a memory for storing a dynamic local directory of contact information; and

wherein the processor causes the transceiver to establish a communication link with the local communication network and transmits information to the local communications network for authenticating the mobile communication device; and further wherein upon acceptance of the communication link, the local communication network provides access to the local directory and allows contact information to be downloaded to the dynamic

local directory with access limits, said downloaded contact information being removed from the dynamic local directory when the access limits are exceeded.

13. The mobile communications device of claim **12** wherein said removal is initiated by a user of the mobile communications device when the access limits are exceeded.

14. The mobile communications device of claim **12** wherein the removal is automatic when the access limits are exceeded.

15. The mobile communications device of claim **12** wherein the access limits are set based on the proximity of the mobile communication device and the local contact information is removed when the mobile communication is moved beyond the proximity limit.

16. The mobile communications device of claim **12** wherein the access limits are set based on a time period beginning with the downloading of the local contact information and the local contact information is removed when the time period expires.

17. The mobile communications device of claim **12** wherein the establishment of the communication link is initiated by the local communication network when said network obtains information that the mobile communication device is within a target area.

18. The mobile communications device of claim **12** wherein the local contact information is a phone number, a screen name or an email address.

19. The mobile communications device of claim **12** wherein the local communication network is associated with a business facility.

20. The mobile communications device of claim **19** further comprising: downloading data and codes to provide the mobile communication device with the ability to operate as a virtual internal phone of the business facility.

21. The mobile communications device of claim **12** wherein the communication link is a secondary radio link.

22. The mobile communications device of claim **21** wherein the secondary radio link is a wireless local area network, blue tooth, ultrawide band, Wifi or WiMax.

23. A system for providing local contact information to a mobile communication device comprising:

- a local communication network having a local directory server operatively associated therewith;
- a communications interface operatively associated with the local communication network for enabling communication with the local directory server;
- a memory operatively associated with the local directory server and having a directory of the local contact information stored therein;

a first dynamic local directory module comprising application software for execution by the local directory server;

a transceiver operatively associated with the mobile communication device;

a processor for controlling the functions of the mobile communication device;

a memory operatively associated with the processor and having a dynamic directory for storing the local contact information;

a second dynamic local directory module comprising application software for execution by the processor; and

wherein the processor causes the transceiver to establish a communication link with the local communication network and transmits information to the local communications network for authenticating the mobile communication device; and further wherein upon acceptance of the communication link, the local communication network provides access to the local directory and allows the local contact information to be downloaded to the dynamic local directory with access limits, said downloaded contact information being removed from the dynamic local directory when the access limits are exceeded.

24. A computer program product comprising:

a computer useable medium having computer readable code means embodied therein for causing a computer to establish a communication connection with a local communication network via a mobile communication device, the computer readable code means in the computer program product comprising:

computer readable program code means for causing the mobile communication device to establish a communication link with the local communication network, said network having a directory of contact information pertaining to a particular locale;

computer readable program code means for causing the local communication network to authenticate the mobile communication device at the local communication network and set access limits;

computer readable program code means for causing the mobile communication device to download local contact information into a dynamic local directory on the mobile communication device; and

computer readable program code means for causing the downloaded local contact information to be removed from the dynamic local directory, when the access limits are exceeded.

* * * * *