Claims	
	server software, both from Microsoft, Redmond, Wash. U.S.A. Bly ’944 at [0050] Web server 30, application server 32, and database server 34 define a multi-tiered computing environment configured to achieve and implement the functionality to be described in greater detail hereinafter. It should be understood that alternate architectures may be employed, achieving the same functionality, yet remain within the spirit and scope of the present invention. Bly ’944 at [0051] System 20 organizes asset information into several logical groups. Market database 36, shown diagrammatically in FIG. 1, is configured for storing a plurality of asset profiles, associated with a corresponding plurality of assets, destined for disposal on an electronic market. Contemplated transaction types include sale, rental and lease. The asset profile includes two parts: asset specification data and a bid definition. The asset specification data includes a variety of details about the asset, as well as its maintenance history. The bid definition outlines the parameters associated with the above-described commercial transactions contemplated for the asset. Market database 36 is illustrated as a logically separate database, although it should be understood that market database 36, in alternative embodiments, may be implemented together on the same physical hardware as the global asset database 38. Market database 36 is configured for rapid retrieval of asset information, as desired to facilitate the electronic commerce functionality of electronic system 20. Bly ’944 at [0052] Fleet database 40 is configured to store asset specification data for assets contained in fleets being managed by system 20. As used herein, “fleet” is a logical grouping or association of one or more assets, which may include assets 221 , . . . , 22n being tracked and managed by system 28. A “fleet” may be either (i) a current fleet, or (ii) a simulated or “Fantasy” fleet. An existing fleet is a fleet containing assets under the control of a user, for example, through ownership or lease. A “Fantasy” fleet may contain (i) any assets in any of the user's existing fleets (“held assets”), (ii) new or used assets not held or controlled by the user such as may be available for purchase, rental, or lease from third-parties via the market, or (iii) fictional assets having a predetermined usage, and performance profile, from the preconfigured asset database 42.

Claims	
	Bly ’944 at [0059] With continued reference to FIG. 2, fleet module 48 is configured to allow members and dealers to add their current fleet information into electronic system 20 for reporting, tracking and analyzing by module 62. It should be understood that such activities provide much information regarding the status of the fleet, and upon which important business decisions can be based. Simulated fleet module 50 is configured to allow a user 23 to access, add, view, edit and delete assets in a simulated fleet. According to the invention, the “Fantasy fleet” feature allows accurate and immediate “what if” analysis, unavailable through the use of conventional systems. Current fleet module 52 allows a member or dealer to access, add, view, edit, or delete assets in one or more existing/actual fleets associated with the registered member or dealer. Bly ’944 at [0062] The “Home” button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The “MY FLEET” button 84 invokes fleet module 48, taking the user to the user's start page 66. The “FLEET BUILDER” button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The “STORE” button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access questions and answers of interest to the users of system 20. Bly ’944 at [0066] Current fleet information pane 76 comprises the interface through which a user interacts with electronic system 20 to create an actual or a current fleet, and to edit or delete a fleet. Fleet information pane 76 includes, in the illustrated embodiment, a “Create Fleet” button 98, an Edit button 100, a Delete button 102, a radio button 104, and a link 106. Selecting (i.e., “clicking”) on the “Create Fleet” button 98 causes fleet module 48 to create a new fleet record in fleet database 40. In one embodiment, the record includes a fleet name, and a location. Edit button 100, when selected by the user, invokes current fleet module 52, which is configured to allow the user to edit the fleet name and/or location of the fleet selected by radio button 104. Note that in FIG. 3, only one existing fleet (i.e., the “Denver Division”) is illustrated; however, when two or more existing fleets are displayed, each have a corresponding radio button 104

Claims	
	associated therewith, and only one of the radio buttons may be selected at a time (i.e., is darkened). The fleet having a darkened radio button is the “selected” fleet for purposes of Edit button 100, and Delete button 102. Selecting the delete button 102 causes current fleet module 52 to delete the selected fleet from database 40. In the fleet information pane 76, in the illustrated embodiment, each existing fleet under the heading “Fleet Name” is configured to operate as a link to another page generated by system 20, particularly current fleet module 52. This “linked” page provides an identification of the assets contained in the fleet. The portion of the “linked” page that shows the asset identification is illustrated in FIG. 4 (portions of the “page” have been omitted for clarity, like the Navigation pane 68, which has was already been shown in FIG. 3). Bly ’944 at [0068] FIG. 4 shows a screen output current fleet module 52, responsive to a user's selection of link 106 in FIG. 3. FIG. 4 includes an identification of the individual assets included in the “Denver Division” fleet. In an illustrated embodiment, the identification includes a listing of the following parameters for each asset: a serial number, a make, a model, a capacity (pounds), an asset type, an application rating, a usage parameter, a utilization parameter (percent), and a cost/hour (U.S. Dollars). Bly ’944 at [0071] In step 136, current fleet module 52 obtains basic asset specification data responsive to input data provided by user 23. While the particular types of information contained in the asset specification data will vary depending on the particular asset type involved, in the illustrated embodiment where the asset comprises an industrial piece of equipment, namely a forklift, the asset specification data is divided into four subgroups: “basic”, “additional”, “usage”, and “performance”. In one embodiment, the “basic” asset specification data may include an asset type (e.g., a standard forklift), a make/model designation, a serial number, a year of manufacture, a capacity (e.g., in pounds), and commentary text. In a constructed embodiment, “clicking” the “Add Asset” button causes a dialog box to be presented to the user having four tabs labeled “basic”, “additional”, “usage” and “performance”. The user moves from tab to tab, filling out respective forms, comprising input boxes and pull down menus. When complete, the user “clicks” on a “SAVE” link. The method then proceeds to step 138. Bly ’944 at [0072] In step 138, module 52 obtains “additional” asset specification data, which in the illustrated embodiment of a forklift may include a mast type (e.g., quad, standard, STD, TSU, etc.), a tire type (e.g., cushion, foam filled, non-marking, pneumatic, polyurethane, etc.), a “fuel type”, a mast height, a tilt selection, an

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	attachment description, an asset description, a condition, and an accounting system asset identification (ID) number, and a lease ID number. As will be described below, reporting and analysis module 62 generates reports that include financial parameters, on both a per-asset and a per-fleet basis (e.g., average monthly cost). Part of the cost analysis derives from how much is paid monthly to lease or rent the asset. This cost information, in one embodiment, is derived from information found in a separate accounting/leasing system (not shown), and is identified and retrieved by electronic system 20 using the accounting system asset ID number, and lease ID number, provided as “additional” asset specification data in step 138. In an alternate embodiment, where the asset being added is not an asset covered under a lease in a leasing system in electronic communication with system 20, further financial-option information will be obtained from the user for the asset being added, which may include a purchase price (including applicable depreciation information so as to enable calculation of a monthly cost amount), a lease/rental amount, a lease-life rental-term, and a residual amount for lease/rent. The method then proceeds to step 140. Bly ’944 at [0079] FIG. 6 shows a screen output generated by current fleet module 52 for a configured asset. The configured asset comprises asset specification data 154 including maintenance history data 156. In the example illustrated in the drawing, the user reaches the screen of FIG. 6 by “clicking” on link 132 in FIG. 4. Through the foregoing, a user wishing basic information (i.e., a simple identification) of the assets in the user's fleet need proceed no further than FIG. 4. However, for greater detail, including a description of the asset, the user can “drill down” by clicking on link 132 to reach FIG. 6. Screen output 152 further illustrates an “Add Maintenance Item” button 158, an Edit button 160, a Delete button 162, a plurality of radio buttons 164 and links 166, and 167. Bly ’944 at [0084] Referring now to FIG. 7, in accordance with the present invention, electronic system 20 is configured to facilitate transactions where a first user, such as a dealer, can consign assets, such as forklifts, to the electronic market established by system 20 for sale, rental, or lease. This feature allows the first user, such as the dealer, to increase asset utilization by exposure of the asset to a broader audience than just the end-user customers of that dealer. Additionally, by making assets available that a second user/dealer can rent, with a view towards sub-renting to an end-user customer, electronic system 20 in-effect provides a “virtual” rental fleet. The rental fleet is “virtual” because electronic system 20 enables the second user/dealer to provide equipment to his end-user customer that he does not own.

Claims	
	Bly ’944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile 182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment, generating the asset specification data may be performed by executing the “add asset” method described and illustrated in connection with FIG. 5. Bly ’944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly ’944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry of dates, and pricing, where appropriate. Bly ’944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36.

Claims	
	Bly ’944 at [0101] First, in a create and define feature, the asset specification data (including maintenance history data), as well as the bid definition are made by the first user directly out of market module 56. That is, when a first user, such as a dealer, wishes to post a piece of equipment on the electronic market, the first user, after logging in, initially selects the “STORE” button 88 (FIG. 3) from the user's start page 66, which invokes market module 56. Market module 56, as one of its available functions, would directly allow configuration of an asset (i.e., input of asset specification data including maintenance history data, as well as the bid definition). When completed, the asset is stored in the market database. Bly ’944 at [0102] Second, if the user wishes to post an asset on the electronic market, but the asset does not presently “electrically” exist in one of the user's fleets, then the user can follow the “add asset” process described above in connection with FIG. 5. Once the asset is created “electrically”, the user then “clicks” the “Add to Market” button. Bly ’944 at [0137] In summary, subsystem 300 works as follows. A database is configured and information associated with a plurality of assets 22 is stored in the database. Subsystem 300 analyzes the information in accordance with a set of pre-defined conditions. When a pre-defined condition is met, the subsystem recommends asset disposition using a hierarchy of disposition options, and the conditions and the options are selected to reduce expense and to maximize the return on investment for the asset user. The hierarchy of options are typically manually checked and confirmed, and a rejection of the hierarchy of options generates feedback with the system modifying as appropriate the availability of future options. Barkan ’859 at [0112]–[0113] To achieve a cost reduction according to the present invention, MicroCells are to be possibly purchased and installed in private residences in exchange for incentives to the resident. These incentives might include economic incentives, new services for the resident such as cordless phone without range limit. For example, while using cellular services payment may be executed, or a cut from the revenues that are generated to the operator through the usage of these MicroCells may be transferred to the said purchaser. The MicroCell may use the home facilities, similarly to the way a cordless phone does it. Barkan ’859 at [0253]–[0254] To answer the issue of interference between microcells, The microcell network can use the mobile

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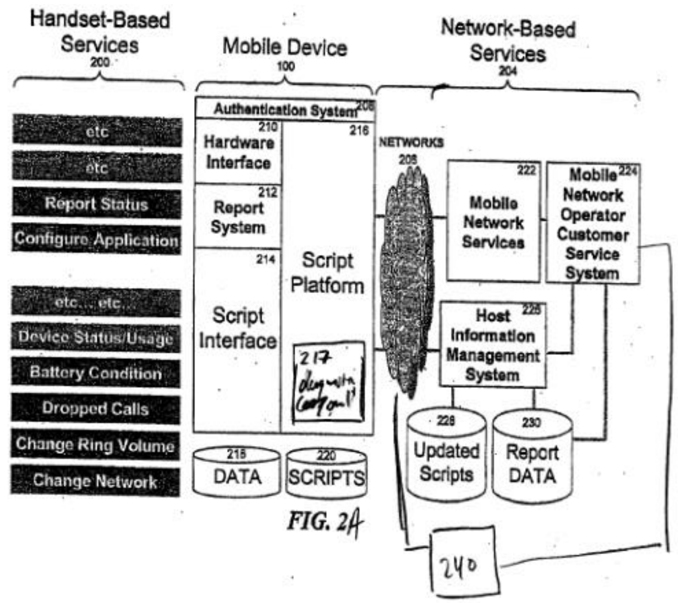
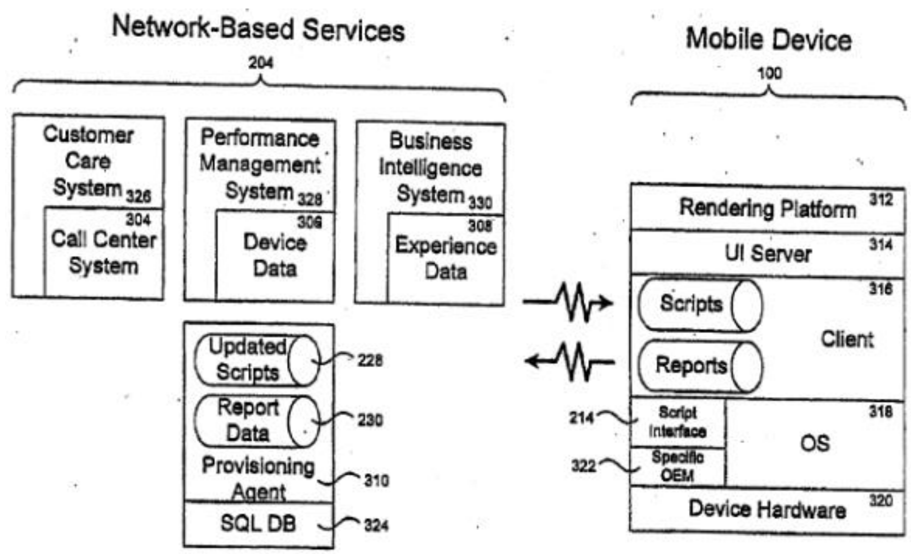
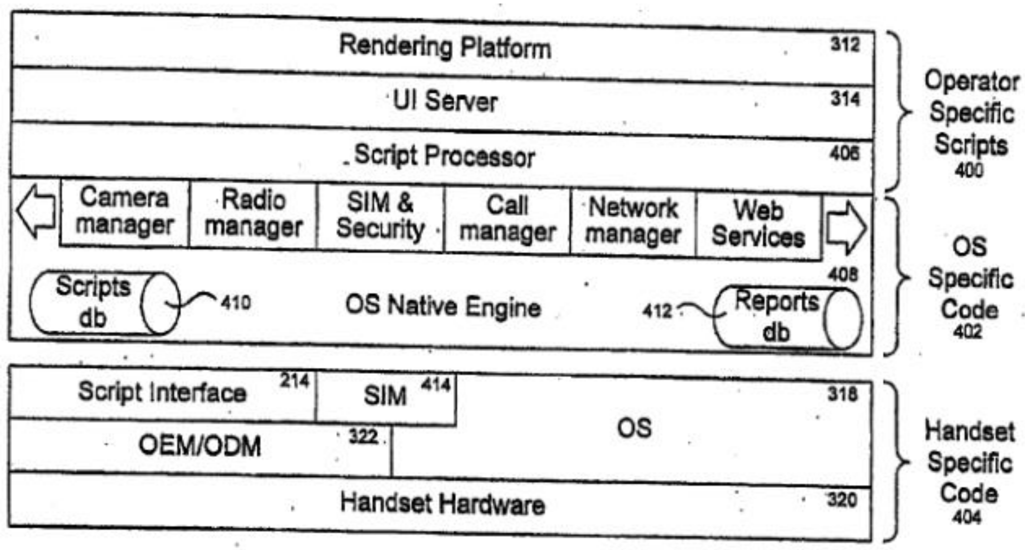
	stations as monitors to the possible interactions. Mobile station is capable of listening to frequencies given by the cell that serves them, and report back the strength of the received signal. Such measurements are designed for handovers, however they can be used to test the interface by microcells. When user location is known, it enables to get valuable information of the RF propagation of each and every microcell. Barkan ’859 at [0271]–[0272] While engaged in a conversation, the mobile station scans beacon frequencies of neighboring cell in case it will have to switch cells. The frequencies to be scanned are provided to the mobile station by the MSC controlling the cell. The MSC is not aware of the actual deployment of the MicroCells and of their beacon frequencies. For this reason, the MCCIU directs the IU1 to replace the frequency list provided by the MSC by a list that includes frequencies of both GSM cells and MicroCells beacon frequencies in the area. This procedure is used whether the cell conducting the call is a GSM cell or a MicroCell. The mobile station uses the replaced list to perform pre-synchronization with the neighboring cells. The mobile station measures signal level and reception quality of cell having beacon frequency that is included in the list. The results are averaged and transmitted to the BTS through the SACCH (Slow Associated Control Channel) channel. The information ends up at the BSC that makes the decision whether to switch cells (handover) and to what target cell the call is to be transferred. Barkan ’859 at [0353] In one embodiment of a billing method, the centers 31 are also responsible for price setting, as determined by an operator there. The information regarding prices of use of the net and the additional, private base stations, is disseminated as digital documents encrypted so as to prevent tampering with. Barkan ’859 at [0354]–[0355] The centers 31 are also responsible for tracking down malfunctions in the cellular network. If a base station would not respond or would not operate correctly, that information is brought to the attention of the center by related parties. The center will disseminate that information, to help user form communication links with reliable channels and base stations only. The new centers may initiate calls to the various base stations, to verify their correct operation. Thus, the new cellular centers correlate and guide the operation of the users in the net, in real time. Barkan ’859 at [0357]–[0368] The new center 31 coordinates the operation of the new base stations like 41 and 43 as illustrated. The duties of the cellular centers 31 include, among others: a) Network integration and planning

Claims	
	b) Implementing a price policy. c) Network operability. d) Manager of phone locator. (In case of incoming calls). Detailed Description: a) The Cellular center 3 knows the current physical location of all add-on base stations, and is aware of the status of each base station (i.e. is available or not available, optionally processing a call etc.). b) The cellular center is possibly responsible for the price policy. It determines and publishes the cost for each operation over the network. The updated information may be transferred over an Internet, or may be available to add-on base stations. The information may be dispersed between units in the network. In each transaction, the parties thereto will check the date of each price list. The more updated price list will be transferred to the other party. Thus, the new price list or policy will gradually expand throughout the network. c) The cellular center is responsible to actively check, once in a while, the availability of base stations and their operability (see if they work properly). d) One of the main tasks of the cellular center is to give the function: when given a "cellular phone number", it is able to return the IP address of a base station, that has radio contact with it. Alternately, it may return a message that the phone is in the "out of coverage area". Barkan '859 at [0369]–[0371] The new system and method provides means for paying to the owner of the add-on base station for his/her services. This provides the incentive for acquiring and operating these base stations. Encrypted sessions can be used. The base station includes means for accepting a payment and for displaying to the user information relating to the payments received. Using encryption and digital documents, it is possible to reliably implement the payment method as detailed, while protecting from impostors or others who may present false payment means. This may help prevent stealing of calls, that is a problem in present systems. Barkan '859 at [0373]–[0376] A possible method of billing is by way of money or tokens. Digital documents may be used that correspond to cash money or to a credit or right to use the network at someone's expense, or may represent phone tokens having a specific monetary value each. These documents may be encrypted or signed so as to allow the owner of the base station to receive payment for services rendered. The phone may download tokens or money from the center or from a plastic card or a smart card or by other means. These payment means may be stored in the phone for subsequent use. When originating a call, or otherwise as stated in the cellular center policy, the phone would send tokens to the base stations in the way to the other phone. In this way he pays for the session on—line and in real

Claims	
	time. The center can profit since for a certain amount of money it will give a certain amount of tokens (and take its profit). Base stations receive payment, and can later redeem the tokens from the cellular center back to money, or receive new tokens for their owner instead, for the owner's use in his/her communications over their cellular phone. Barkan ’859 at [0390]–[0393] Cellular systems are easier to install in sparsely populated areas. It is more difficult to install cellular base stations in towns or other highly populated areas, where there are the problems cited above. The present invention helps solving the problem of cellular installation and achieves best performance in the densely populated areas that were difficult to address in the past. The very population that may have opposed to the cellular net, are now helping the setting up of the new cellular network. According to the new concept, small cells are thus created in cities or other populated areas. The maintenance cost is greatly reduced. The system operator is no longer responsible for the maintenance of a multitude of base stations located in a highly populated urban area. Rather, each owner of a private base station is interested to keep his/her equipment in working order. If there is a problem, the owner will see to repairs or a replacement. In a preferred embodiment, simple and low cost base stations are used, that are expendable—when a malfunction is detected in a base station, the unit is discarded and replaced with a new one. The new add-on base station, together with the system and method for its effective integration in the existing cellular system, can help achieve a more cost-effective, gradual expansion of cellular networks. Barkan ’859 at [0428]–[0431] Let us assume that a mobile phone has a link with a first base station. It may happen, during the conversation, that the phone detects that it receives the first base station at a low power, that is at a power lower than a predefined threshold. In that case, a program in the phone may run a background search for an alternate base station. If it finds a second base station at a higher received power, then the phone will ask it to continue the call. It will send packets from the new station, and try to inform the old station of the change. Alternately, the new base station can inform the old base station of the transfer of the call to it. The other party's base station is informed by the phone or by the base station of the new IP address of new base station. Thus the link is disconnected from the first base station and a new connection is established with the second base station, to improve the quality of the link. It is assumed that a higher received power indicates a link with an improved communication quality.

Claims	
	Roundtree '997 at Figure 2A 

Claims	
	Roundtree ’997 at Figure 3  FIG. 3

Claims	
	Roundtree ’997 at Figure 4  *FIG. 4* Roundtree ’997 at [0018]–[0022] The handset-based services 200 may include executable software, software configurations, hardware configurations and controls, and handset operating system interfaces. As disclosed herein, executable software may include, without limitation, any software program stored on the mobile device or associated memory device, both permanently and temporarily connected via hardware or wireless connectivity. The mobile device 100 may include an authentication system 208 (e.g., via a SIM), a hardware interface 210, a report system 212, a script interface 214, a script platform 216, data 218, scripts 220, and a device management component 217. The network-based services and/or components 204 may include a network or networks 206, mobile network services 222, a mobile network operator customer service system 224, a host information management system 226, updated scripts 228, report data 230 and device management component 240. The components of the mobile device 100 and the network-based services 204 will be described below. The components within the mobile device 100 allow the device to integrate both handset-based services 200 and network-based services 204. The authentication system 208 can implement SIM (Subscriber Identity Module) card-based or standalone authentication to meet network requirements for desired levels of security. Authenticating a system to meet network requirements may not be required but is often recommended.

Claims	
	The hardware interface 210 may retrieve hardware interface elements required for interfacing with network or phone-based customer support services. Examples of hardware interface elements include changing volume, changing frequency, retrieving SIM (Subscriber Identity Module) ID, connection status from the SIM or radio hardware, and others. The report system 212 may collect and forward the data reported by the mobile device to the network 206. The report system 212 can also encrypt the handset identification information to provide increased security. The information can be encoded so that only the host information management system 226 can decipher the handset identification information. The script interface 214 serves as a standard application programming interface for customer support services. More specifically, the script interface 214 provides an interface between scripts 220 and the various hardware-specific and executable, program-specific functions. The script interface 214 allows a single customer service script to be deployed across multiple operating systems and hardware configurations. In addition, the script interface 214 includes a standard API (Application Programming Interface) for both the hardware/OS side and the script interface. The script platform 216 can mix and match calls through the script interface to acquire information, to change or correct settings on the phone, and to perform additional functions as described below. The script platform 216 authenticates, runs, and updates all scripts 220, manages reporting updates and changes, communicates with the host information management system 226, communicates with the GUI (Graphical User Interface), and manages customer surveys and interviews. The host information management system 226 can push a notification to the script platform 216 via USSD (Unstructured Supplementary Services Data), SMS (Short Message Service), IP (Internet Protocol), or any other network connectivity that the mobile device supports. The script platform 216 can run the scripts 220 after authentication, and the scripts 220 can be authenticated to the network 206 or to the phone. Roundtree ’997 at [0023]–[0024] The components within the network-based services 204 allow the mobile device 100 to communicate with and to retrieve data from the network 206. The network-based services 204 may include wired and wireless systems. The mobile network services 222 may consist of one or more systems including billing, CRM (Customer Relationship Management), provisioning, and others. Furthermore, mobile network services 222 are able to return data calls made by mobile devices via standard network protocols (e.g., IP, DTMF (Dual-Tone Multi-Frequency), SMS, USSD, etc.). The mobile network operator customer service system 224 may also consist of one or more systems relating to customer service, including billing, CRM, provisioning, and others. The host information management system 226 controls interactions between the mobile device and the host customer support system. The host information management system 226 can transmit updates to the mobile device. The mobile device typically employs a unique handset ID or serial number, and a mobile phone number. The report data 230 provides storage for report information gathered from the mobile device. The updated

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	scripts 228 consist of scripts that the host customer support system provides to the mobile device. The updated scripts 228 can be managed and versioned as desired by the host information management system 226, can be targeted at specific subscribers or groups of subscribers, and can include requests for reports and customer interview surveys. Roundtree ’997 at [0025]–[0027] The device management component 240 may communicate with the mobile device 100, such as via a diagnostic component within the script platform 216. FIG. 2B illustrates a component architecture for implementing diagnostic management methods as network-based services 204. The device management component 240 includes an actions database 241 that contains one or more actionable scripts, a message component 242 capable of receiving messages from the mobile device 100, translating or identifying data from within the messages, and transmitting messages back to the mobile device 100. The component 240 may also include a customer service component 243 that interacts with other customer service functions provided by the network based services 204. For example, the customer service component 243 may request information from the mobile network operator customer service system 224, or may provide information to system 224. The component 240 may include other additional components or modules 244, such as components that contain user specific or device specific data, components that contain configuration updates and settings, and so on. FIG. 3 illustrates a system architecture for the network-based services 204 and the mobile device 100. The network-based services 204 include a call center system 304, device data 306, subscriber experience data 308, and a provisioning agent 310. The call center system 304 may be part of a customer care system 326, the device data 306 may be part of a performance management system 328, and the subscriber experience data 308 may be part of a business intelligence system 330. The call center system 304 can manage settings remotely and can collect data OTA (over the air) from the mobile device 100 without asking the subscriber for permission. The call center system 304 can also automatically collect device data (e.g., handset ID and mobile phone number) 306 and subscriber experience data (e.g., the nature of the customer service problems) 308 from the mobile device 100. The device data 306 and the subscriber experience data 308 may be integrated into network-based services or used standalone. The provisioning agent 310 interacts with the updated scripts 228 and report data 230. The provisioning agent collects report data 230 associated with the device data 306 and subscriber experience data 308 from the mobile device 100. The provisioning agent also corrects subscriber problems in real-time by transmitting appropriate scripts to the mobile device 100. The transmission of scripts to, and the collection of data from, the mobile device 100 may be hosted within the network or externally. In addition, the updated scripts 228 and the report data 306 may be stored in an SQL (Structured Query Language) database 324.

Claims	
	Roundtree ’997 at [0028] The mobile device 100 may include a rendering platform 312 (e.g., implemented in C++), an optional UI (User Interface) server 314, a client 316, and a script interface 214. The client 316 generates reports containing subscriber data and transmits the reports to the network-based services 204. The client 316 receives scripts 320 from the network-based services 204 that can correct subscriber problems. The script interface 214 allows a single script to be executed by multiple operating systems and hardware configurations. In addition, the mobile device 100 may also include an OS (Operating System) 318, specific OEM (Original Equipment Manufacturer) 322, and device hardware 320. In general, the mobile device scripts or applications may be customized via a European Computer Manufacture's Association (ECMA) compliant scripting language such as JavaScript. Such software can be installed by the manufacturer, or after manufacturing, such as over the air, particularly with open OS-based devices. For proprietary OS-based devices, a small kernel can be installed at the time of manufacturing or flashed onto the device at a later time, and then the full client application can be installed on the mobile device over the air. Roundtree ’997 at [0031] As described herein, the mobile device includes one or more scripts that locally perform diagnostic or configuration management on the device to gather data regarding the configuration, operation, and/or functionality of the device. The scripts may be loaded to the mobile device when the mobile device is fabricated, or may be loaded over the air (OTA), (such as when initiated from a call center agent desktop computer). The scripts may be automatically initiated by the mobile device, manually initiated by a user of the mobile device, and/or remotely initiated by a customer care agent. The diagnostic or configuration scripts are launched on the mobile device to resolve problems encountered by the user. In some cases, the diagnostic or configuration scripts may be proactively launched when other scripts or applications are running on the device. For example, the scripts can be included within already running applications, such as the customer care applications and/or tutorial/guide applications discussed herein and in the related applications. The mobile device collects, via the running applications, data or information that can be used to proactively resolve possible configuration problems or errors. For example, the system uses the scripts to monitor the device, such as to monitor the configuration of the device. The scripts, which may reside within the memory of the device, within the SIM of the device, and so on, may initiate, trigger and/or launch device-management functions or actions that assist in correcting problems or updating settings or functions of the device

Claims	
	Roundtree ’997 at [0033]–[0035] There are many ways in which the system identifies a problem with the mobile device. For example, in step 512, a running application identifies a problem with the configuration of the mobile device. The running application may be a guide application providing a tutorial to a user of available services and functions provided by the device or may be a customer care application that acts to diagnose help requests initiated by a user by intercepting calls and/or messages to a customer care center. The running application can automatically identify the configuration of the mobile device without input from a user or customer care agent. A user may also identify a problem with the mobile device, as shown in step 514. For example, when the user attempts to connect to a wireless network and is unsuccessful, the system may present a number of options to be selected by the user that define a possible problem. The system presents, via a graphical user interface or via a audio user interface, one or more choices that describe the problem faced by the user. In this example, the user interface may present options such as “Are you having a problem connecting to the internet?” or “Are you having a problem connecting to a wireless network?” Based on receiving input from the user about an encountered problem, the system can diagnose and/or determine any configuration errors or problems without relying on the user to attempt to solve the problem his or herself. A customer service agent may also identify a problem with the mobile device, as shown in step 516. For example, a user may call a customer service center related to a provider of services for the user when the user encounters a problem. The customer service agent, upon receiving information from the user or from the mobile device (such as during an over the air diagnosis of the mobile device), may then be able to identify a problem with the device. Roundtree ’997 at [0037]–[0038] In step 530, the device management server receives the message from the mobile device. Depending on the type of the message, the server may translate the message, or may route the message to an appropriate location for further processing. In step 540, the system performs a device management action at the remote server. Some examples of device management actions include provisioning of new applications, provisioning of application upgrades (such as upgrades required to fix bugs, to fix security flaws, to add new features, and so on), personalization and customization of a mobile device, monitoring a device, repairing a device, and so on. For example, the system creates a message to be sent back to the mobile device that includes a configuration file used to fix a security flaw in the mobile device. Further details regarding how and when received messages trigger device management actions will be described with respect to FIG. 6 below. A message is then sent from the device management server back to the mobile device. In step 550, the mobile device receives the message from the device management server, and, in step 560, updates the configuration of the mobile device. For example, a mobile device may have an application running that monitors the data connection of the

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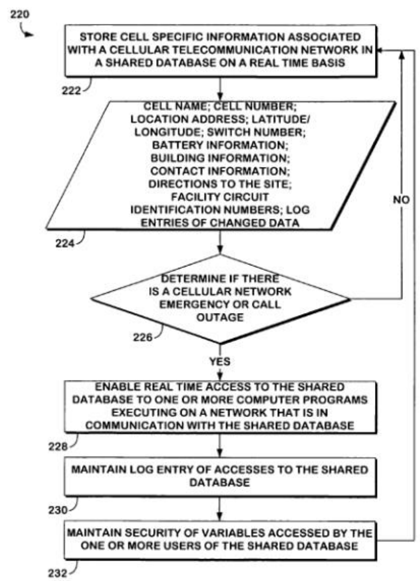
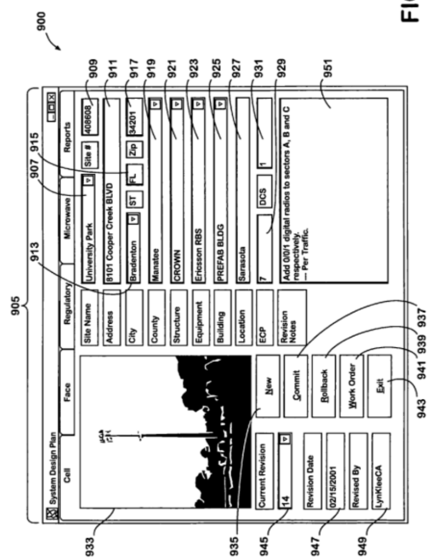
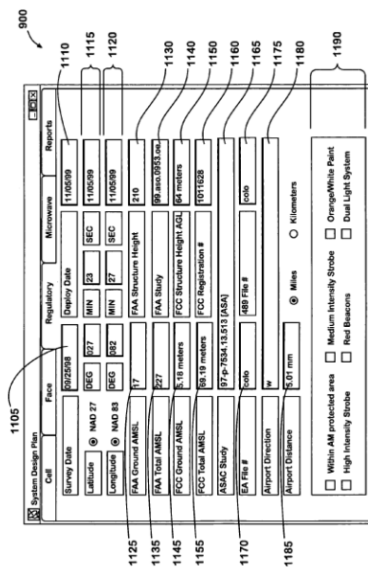
	mobile device. This application may be a separate application or script, or may be part of a customer care or guide application. The application may determine that the connectivity is faulty due to improperly configured access point names (APNs). Instead of the user attempting to diagnose the source of the problem or call a customer service agent to attempt and diagnose the source of the problem, the mobile device is capable of automatically fixing the problem. Upon determining the APNs are improperly configured, the device may send a predetermined SMS to a remote server at a predetermined number. At the server, the receipt of the SMS triggers a device management action to run on the server, causing the proper APN setting to be identified and then transmitted to the device. Thus, in some examples the system enables a mobile device to recognize a problem at the mobile device, request a solution, and automatically fix the problem without user intervention or without alerting the user. Boehmke '997 at Figure 4  FIG. 4

Claims	
	Boehmke '997 at Figure 6  FIG.6

Claims	
	Boehmke ’997 at Figure 8  FIG.8

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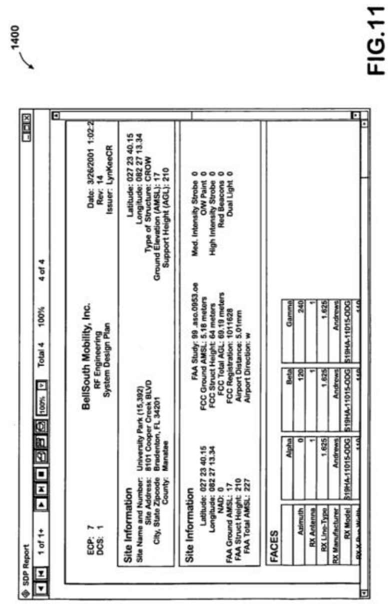
	Boehmke ’997 at Figure 11  Boehmke ’997 at 1:54–2:7 In different embodiments, the invention comprises a system, method and apparatus for maintaining cellular telephone network site information. A distributed database management system may provide a user with several items of real-time information regarding a cellular telephone network site such as: cell name, cell number, location code, address, latitude/longitude, switch number, battery information (e.g., type, manufacturer, model) for all strings, building information (e.g., building and tower type, gate codes, generator information), contact information (e.g., fire, police, landlord etc.), directions to the site, facility circuit identification numbers and log entries for audits of changed data. In one embodiment, the user can be provided with emergency data associated with the telecommunication network. A common database is provided for storing the information from various entities within an organization responsible for maintaining the cellular telephone network site. Once the information is stored in a common database, it can be made available to users associated with the various entities as well as to various other computer software programs residing on the distributed system. Boehmke ’997 at 3:10–59 The distributed information system for data and processes in accordance with one embodiment of the

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	invention includes one or more databases and processes, such as computer software programs, that share a common database. In one embodiment, the distributed information system for data and processes can utilize a structured query language (SQL) common database for providing a distributed database management system. For example, a MICROSOFT SQL™ server can be used to provide a common database function whereby a plurality of general-purpose computers in communication with the SQL server can carry out the manipulation of data stored on the SQL server while the SQL server performs other operations associated with the distributed database management system. Those skilled in the art will appreciate that the SQL server can be coupled to or be in communication with one or more storage devices for storing data or computer software programs. In accordance with one embodiment of the invention, any changes that are made to a particular set of data by the one or more computer software programs in one process, or by one or more users, are reflected into and are accessible by other computer software programs within the distributed information system on a real-time basis. Referring now to FIG. 1, where one embodiment of one set of components that can be used to carry out the system, method and apparatus is illustrated in diagram form. In one embodiment, the system components comprising the distributed information system 10 include an application server 12, a shared server 14, a database server 16, a general-purpose computer 18 and a workstation 26. The application server 12 provides access to one or more computer software programs 20 stored therein or stored in a database 22 in communication with the application server 12. Further in one embodiment, the application server 12 is in communication with one or more other components of the other distributed information system 10, such as the shared server 14, the database server 16, the general-purpose computer 18 and the workstation 26, for example. The one or more system components also can communicate with each other via well-known communications hardware and software. Still further in one embodiment, the one or more system components can be interconnected in a network 24 configuration in accordance with various well-known network topologies. For example, the components of the distributed information system 10 can be interconnected in a bus topology, ring topology, a star topology or combinations thereof. Those skilled in the art will appreciate that any one of these network topologies, or combinations thereof, can provide an adequate implementation of the system, method and apparatus. Boehmke ’997 at 6:59–7:67 Referring now to FIG. 4, where one embodiment of the distributed information system 10 is illustrated which can be utilized as part of a telecommunication distributed database management system 56. In one embodiment, the general-purpose computer 18 can be in communication with one or more other general-purpose computers configured and adapted as the database server 16 component of the telecommunication distributed database management system 56. The database server 16 can be configured as a distributed database management server for creating, maintaining and viewing database data. Those skilled in the art will appreciate that, in addition to the data, the database 22″ can also include one or more computer

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	software programs 20 therein. In one embodiment, the database server 16 of the telecommunication distributed database management system 56 can utilize a structured query language (SQL) database for creating, viewing and maintaining database data. MICROSOFT, ORACLE, GUPTA, INFORMIX, POWERSOFT, ORACLE and SYBASE can all supply SQL databases, for example. Accordingly, the database server 16 can implement an SQL database server such that one or more general-purpose computers 18, workstations 26 or other servers can access and manipulate the data stored in the database 22″ that is accessible by the database server 16. In addition, the database server 16 can manage and coordinate the data stored in the database 22 while also performing calculations locally. For example, as discussed above, the database server 16 can be comprised of a general-purpose computer 18 or workstation 26 that includes one or more central processing units 52 for executing instructions according to one or more software programs 20 and a memory 54 for storing such instructions. The database server 16 also can be configured and adapted to perform additional functions and execute additional algorithms in addition to manipulating data within the database 22″. For example, in one embodiment, the database server 16 can execute instructions of a software program 20 for carrying out tasks such as managing the storage and retrieval of database 22″ data, generating reports, displaying data, transmitting data to one or more peripheral devices such as printers 38, plotters, facsimiles, modems 36 and other similar devices. In addition, in one embodiment, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as transmitting database data or specific reports to one or more other general-purpose computers 18 or workstations 26 that are in communication therewith. Further, in one embodiment, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as communicating database 22″ data or reports to one or more other computer software programs 20 whose instructions are executed on other general-purpose computers across the telecommunication distributed database management system 56. In addition, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as sending database data or reports to a network address or electronic mail (e-mail) address in response to a query or in response to a predetermined set of conditions. Still further in one embodiment, the database server 16, or for example any one of the one or more general-purpose computers 18 in communication with the network 24, can execute instructions of a software program 20 for carrying out the function of broadcasting a wireless signal to be received by one or more users carrying a wireless device or to be received by other devices having incorporated therein a device in response to a predetermined set of conditions. Those skilled in the art will appreciate that the wireless device can be, for example, a pager receiving a paging signal. Those skilled in the art will recognize that the above-enumerated tasks to be performed by the database server 16 can be performed by other components within

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	the telecommunication distributed database management system 56. Also, such tasks are illustrative in nature and are not intended to limit the scope of the invention. Boehmke ’997 at 8:17–30 Referring now to FIG. 4, where one embodiment of a logic flow diagram 220 for obtaining real-time information associated with a telecommunication network 25 is illustrated in block diagram form. At block 222, cell site 86 specific information associated with a telecommunication network 25 is stored in a shared database 22 on a real-time basis. For example, at block 224, a list of the type of cell site 86 specific information is listed. The cell site 86 specific information illustrated in block 224 includes the cell name, the cell number, the location code, the address, the latitude/longitude, the switch number, the battery information, the building information, the contact information, directions to the site, the facility circuit identification numbers and log entries of any changed data, for example. Boehmke ’997 at 10:41–54 One embodiment of the distributed database management system 56 can provide a user with several items of information regarding a cellular telephone network site. For example, the user can be provided with real-time information associated with a telecommunication network such as: cell name, cell number, location code, address, latitude/longitude, switch number, battery information (e.g., type, manufacturer, model) for all strings, building information (e.g., building and tower type, gate codes, generator information), contact information (e.g., fire, police, landlord etc.), directions to the site, facility circuit identification numbers and log entries for audits of changed data. In one embodiment, the user can be provided with emergency data associated with the telecommunication network. Boehmke ’997 at 11:9–48 If the user selects cell numbering, a cell number will be provided. Furthermore, the user can look for a particular site by selecting that option or clicking on an icon displayed on a system 56 output device. Accordingly, the system 56 will provide the user with the name of the cell site, the number of the cell site, the location code of the cell site, the last time the code was modified, the company number, the switch 58 that the cell site is located in, who the responsible field engineer is, address, city, state, zip, latitude, longitude and the facility information associated with that cell site. Those skilled in the art will appreciate that “facilities” are provided to make a connection between the cell site and the switch 58 for various data links, such that the switch 58 can communicate with the cell site 86. Moreover, the system will provide the user with information that can be retrieved from other computer software programs 20, for example a facility management program. Those skilled in the art will appreciate that the above list is not exhaustive and should not be considered as limiting the invention. Those skilled in the art will appreciate that the

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	information can be initially populated in a table 100 from a common table 100 that is shared by all the computer software programs throughout the system 56. For example, if the user selects to review generator or battery information of a particular cell site 86, the system 56 will provide the user with information associated with the generator and the battery. One embodiment of the system 56 provides the user with a string for identifying a 24-volt battery including the battery type, the battery manufacturer, the battery model number, the number of active cells there are and where they are physically located. The same information can be provided in a string for identifying a 48-volt battery. If the user selects to review building information of a particular cell site 86, the system will provide the telephone information, the building type, the company number, the tower type, whether there is a gate at the tower, the gate key, if there is a gate key, and if there is, whether there is a gate code. In addition, the system can provide different types of information about the generator, fuel loads and the like. Boehmke ’997 at 11:49–67 If the user selects to review contact information relating to a particular cell site 86, the system will provide police, fire, water, Federal Aviation Administration (FAA), gas company, landlord and electric company contact information, the meter number, the account and various other pieces of contact information. In addition, the system can provide the name of the RF Engineer, the name of the Cell Manager and the like. In addition, the system provides logging and tracking of data associated with a particular cell site 86 in case there is ever a need to roll back the data. Moreover, a complete history of a particular cell site 86 can be provided to the user. The information discussed above is by no means exhaustive. For example, the system can provide additional pieces of information associated with a particular cell site 86 such as maintenance of routine history, the last time the generator was run, the last time the generator was inspected, when the warranty will expire and the like. Therefore, from one software program 20, the user can obtain a variety of information about a particular site. Boehmke ’997 at 12:44–65 Referring now to FIG. 5, an illustration of a user accessing a system design plan software application 20 via the distributed database management system 56 will be described. The system design plan software application may display much of the information described above for a particular cellular telecommunications network site. The system, method and apparatus provide a user with information regarding the maintenance of cellular telecommunications network sites across a geographic region on a real-time basis. The distributed information system main menu 800 includes a plurality of region fields 805. The user may select one of these region fields 805 to access different functionality for a particular region. For example, as illustrated in FIG. 8, the user has selected the West Florida region field. After

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	selecting one of the region fields 805, a drop down menu 810 is displayed to the user. To access the system design plan software application 20, the user selects drop down menu selection 815 entitled SDP (System Design Plan). After selecting the SDP software application 20 via the drop down menu selection 815, the SDP software application 20 displays a SDP main menu 900 to the user as illustrated in FIG. 6. Boehmke ’997 at 12:66–13:9 Referring now to FIG. 6, the SDP main menu 900 comprises a plurality of tabs 905 that provide access to different information about cellular telecommunications network sites within the selected region field. For example, as illustrated in FIG. 6, the tabs 905 include a cell tab, a face tab, a regulatory tab, a microwave tab and a reports tab. Each of these tabs, when selected, causes different information regarding a cellular telephone network to be displayed to the user. For example, as illustrated in FIG. 9, when the cell tab is selected, location information and other information regarding a particular cellular site is presented to the user. Boehmke ’997 at 13:10–20 Referring to FIG. 6, when the cell tab is selected, the system design plan software application may display information such as a site name 907, a site number 909, an address 911 of the cell site, a city 913, state 915 and zip code 917 of the cell site, the county 919 of the cell site, the structure 921 of the cell site (such as the type of tower), the equipment 923 deployed at the cell site, the building type 925 of the cell site, the location 927 of the cell site, the electronic control processor (ECP) 929 of the cell site, and the digital cellular switch (DCS) 931 of the cell site. A photograph 933 of the cell site may also be displayed. Boehmke ’997 at 13:64–14:8 Referring now to FIG. 8, when the regulatory tab is selected, particular regulatory information regarding a cell site may be displayed such as information used for FAA/FCC filings. In one embodiment of the invention, the regulatory information includes a survey date 1105, a deploy date 1110, the latitude of the cell site 1115, the longitude of the cell site 1120, FAA ground AMSL 1125, FAA structure height 1130, FAA total AMSL 1135, FAA study 1140, FCC ground AMSL 1145, FCC structure height AGL 1150, FCC total height AGL 1155, FCC registration number 1160, ASAC study 1165, EA file number 1170, 489 file number 1175, airport direction 1180, and airport distance 1185.

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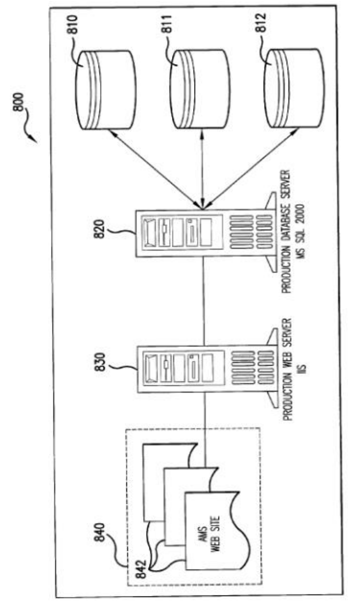
	Dawson ’953 at Figure 8  FIG.8 Dawson ’953 at [0019] In its broadest sense, the invention is a system and method for organizing the information necessary for an enterprise offering wireless services. This information relates to all aspects of the business and includes information pertaining to portfolios of roof rights (as used herein, “roof rights” refers to a legal right to install a wireless infrastructure, which is typically, but not necessarily, installed on the roof a building) held by the wireless service provider and roof rights that can be obtained by the wireless service provider, commissions, inventories and locations of wireless infrastructure equipment, engineering data, leases, contacts, and other types of information. Dawson ’953 at [0021] The process begins with marketing data 110, which is a list of sites that has been identified as containing potential customers. As used herein, the term site refers to a location at which a wireless infrastructure may be installed. Typically, but not necessarily, a site refers to a single building. However, there are instances in which a site is different from a building. For example, in some buildings that include an addition, it is cheaper and/or easier to install two separate wireless infrastructures rather than attempting to service the entire building with a single infrastructure as running cables between the original building

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	and the addition may be difficult. The information used to identify the list of sites can come from a variety of sources, including responses to mass-mailed advertisements from potential customers, sales leads, the fact that a site not currently being served by the wireless service provider is owned and/or operated by the same owner as another site to which services are provided and various other sources. Dawson ’953 at [0022] In the preferred embodiment, the invention is site-centric in that the site is used as the primary method of data organization. Thus, a site rather than a specific customer, is what appears on the marketing data list even though only a single potential customer from that site (which may include several other, distinct potential customers) has indicated interest in the wireless service provider's service offerings. This is not to say that data concerning individual customers is not maintained; rather, it is primarily grouped and accessed by site. Dawson ’953 at [0024] The user interface 200 also includes a site identification field 204, a site address field 206, a field 208 indicating the number of tenants, and a sales volume field 210. Other fields 212 and 214 indicate the closest base station to the site and the distance to the site from that base station, respectively. Notes pertaining to real estate aspects of the site, such as the name of the landlord and/or management company for the site, permit requirements for the site, and/or, if known, the cost of obtaining roof rights, are maintained in field 216. Field 218 allows the real estate group user to indicate the real estate friendliness of the site. Possible choices in some embodiments are “in review,” “accepted” and “reject.” The user presses the save button 220 when the appropriate indication as to real estate friendliness has been made. Dawson ’953 at [0026] Referring now back to FIG. 1, in addition to the determination of real estate friendliness at step 112, a determination as to whether a serviceable signal can be provided to the site is made at step 116. In preferred embodiments, this determination is made using commercially available programs sold under the trademarks deciBel Planner (Marconi Corporation) and MapInfo (MapInfo Corporation); however, other tools could be used in other embodiments of the invention. Generally speaking, the deciBel Planner program integrates electromagnetic wave propagation models that interface with a MapInfo spatially-enabled terrain database. The terrain databases can be obtained from commercial entities such as MapInfo Corp. that perform fly-overs of a desired area to obtain photographs and terrain information for the desired area. An example of a screen output 300 from the deciBel Planner program is shown in FIG. 3. The screen output includes a photograph 302 of an urban area including a potential site in the form of a

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	building 310. The screen output 300 includes color coded (with the colors representing signal strength) representations of a coverage area 312 over the building 310 as well as other coverage areas 313. The coverage area 312 over the building 310 signifies that the building 310 is serviceable by the wireless service provider's network and that an antenna for a wireless infrastructure may be placed in the coverage area 312 on the roof of the building 310. Dawson ’953 at [0027] Also shown in FIG. 3 is the address 314 of the building 310. In one embodiment the address information was obtained by sending out a person with a handheld GPS (global position sensor) device and recording GPS coordinates for potential sites. Once the deciBel planner has been initially configured (including entering the location of the wireless service provider's hubs, specification of hub transmitting power and required signal strength, and preparing the terrain/picture database), the only input that is required to obtain an output such as the screen output 300 is the specification of a desired latitude/longitude. By preparing a database of site addresses and associated GPS coordinates, it becomes possible to obtain the output screen 300 of FIG. 3 by simply specifying the address and using the aforementioned database to translate the address into latitude and longitude coordinates. In some embodiments, the deciBel planner is integrated with the other portions of the program such that an address can be specified to the deciBel planner by simply clicking on it; in other embodiments, the deciBel planner is a stand-alone application and a user is required to manually enter the address into the deciBel planner and an indication as to whether a serviceable signal can be supplied to the site must be entered manually at step 116. Dawson ’953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. Dawson ’953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. As indicated by the user field 405, the home page requires the sales group user to log in, both to protect the confidentiality of the sales data and to allow the system to track actions performed by each user. The home page 400 includes a plurality of links 410 to other information and system resources, as well as a number of information fields 420, 430. The home page 400 also includes a ‘My Buildings’ button that allows the sales group member (which may be a regional sales manager or account executive) to view sites that have been assigned to that member. A ‘My Buildings With No AEs’ button allows a regional sales manager user to view only those sites to which no account executive has yet been assigned. Finally, window 460 allows sites to be selected on the basis of the account executive to which the site is assigned and/or applicable geographical

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	market (e.g., city). Dawson ’953 at [0031] When sites are selected via either of the site buttons 440 or 450 or via the window 460, they are presented to the user in a sites window 500 as shown in FIG. 5. The sites window 500 includes a field 510 that identifies the site identification number, a field 520 that identifies the site name, fields 522, 524, 526 that identify the address of the site, a field 530 that identifies the base station, or hub, through which the site is connected to the wireless service provider's network, a field 540 that identifies the number of tenants at the site, a field 550 that identifies any current sales promotions directed toward a site, and fields 560 and 570 that identify the account executive and regional sales manager to which the site has been assigned. Another field 580 indicates the site status: On Net (meaning a wireless infrastructure has been installed and the site is in communication with the service provider's network), Leased (meaning that a lease for the site has been signed and the process of installing a wireless infrastructure is underway); Target (indicating that the site has been approved by engineering and is real estate friendly), Coverage Optimization, and Reject. A Customers field 590 serves as a link to a list of current customers at the site. Some of the fields in the window 500 also include links to further information. For example, clicking on the number of tenants field 540 will produce a tenants window 600 that provides information for all tenants at the associated site. This information may be used for, among other things, producing a mailing list for a site-specific sales promotion. Dawson ’953 at [0032] FIG. 7 is a screen shot of a site information web page 700 illustrating another site-centric information display. The web page 700 includes a site basics tab 710, a customers tab 720, a leases tab 730, a dB Planner tab 740 and a files tab 750. Selecting the site basics tab 710 calls up the window 712, which displays various information relative to a site, such as the site address, real estate information related to the site, and an identification of the nearest and next-nearest base station (hub) to the site. Selecting the customers tab results in the display of a list of customers for the site. Selecting the leases tab will provide images of lease documents pertaining to legal rights for the site. Selecting the dB Planner tab will result in the display of a propagation model image for the site such as the image 300 of FIG. 3. Finally, selecting the Files tab will result in a display of any other miscellaneous files associated with the site. Dawson ’953 at [0033] FIG. 8 is a hardware diagram of a system 800 according to one embodiment of the present invention. The system 800 comprises a plurality of storage devices 810-812 that store the various databases (e.g., the

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	information used by the deciBel Planner application, site information, etc.) used by the system 800. The storage devices 810-812 are connected to a database server 820 (in preferred embodiments, the storage devices 810-812 are physically located inside the server 820). The database server 820 is connected to a web server 830. The web server 830 is connectable to a display device 840 (such as a personal computer with a web browser) for providing various web pages 780, such as the pages illustrated in FIGS. 2-7, to users of the system. It should be understood that the system 800 is exemplary only and that any number of modifications (e.g., replacing either server 820, 830 with a cluster of servers; implementing the system on a single physical device) are possible. Dawson ’953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson ’953 at claim 1 A method for classifying a potential customer for a wireless communications service comprising the steps of: identifying a site in a target area the target area including portions that are currently served by a wireless communications service provider and portions that are not currently served by the wireless communications service provider, the site having associated therewith at least one potential customer; accepting, from a user, an indication as to whether legal rights to provide or gain access to a wireless infrastructure for the site can be or have been obtained; accepting, from a user, an indication as to whether the site is in a portion of the target area that can be served by the wireless communications service provider; assigning a priority classification to the site if the site is in a portion of the target area that can be served by the wireless communications provider and the legal rights for the building can be or have been obtained; and

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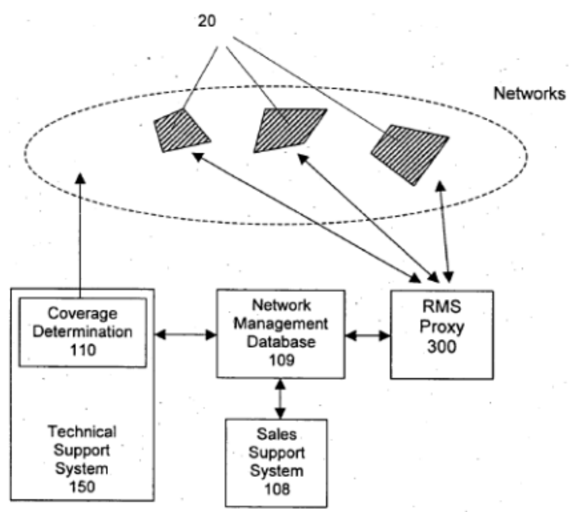
	classifying potential customers at the site as priority potential customers of the site is classifies as a priority site. Dawson ’953 at claim 6 6. A system for managing data for a wireless service provider, the system comprising: a storage device for storing a database, the database comprising information pertaining to a plurality of sites, each of the sites having associated therewith at least one potential customer; a processor connected to the storage device, the processor configured to perform the steps of accepting, from a user, an indication as to whether legal rights to provide or gain access to a wireless infrastructure for a site can be or have been obtained; accepting, from a user, an indication as to whether the site is in a portion of the target area that can be served by the wireless communications service provider; assigning a priority classification to the site if the site is in a portion of the target area that can be served by the wireless communications provider and the legal rights for the building can be or have been obtained; and classifying a potential customer associated with the site as a priority potential customer if a priority classification has been assigned to the site. Korpela ’484 at Figure 2  Fig. 2

Claims	
	Korpela ’484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Korpela ’484 at [0043] Furthermore, a Technical Support System (TSS) 150 is provided for connecting to the network management database 109 to access coordinate and performance data of the installed and/or planned wireless routers. Using the locations of the routers and some performance data (e.g. transmit power, antenna installation height or the like), a coverage determination functionality or unit 110 of the TSS 150 calculates the combined coverage area of the wireless routers. The calculation can be based on a concept of finding points having a line of sight to at least one of the other wireless routers. This concept may thus be a viewshed concept or any other suitable concept for determining a coverage of a wireless connection. In particular, the dynamical coverage area calculation may be based on a viewshed analysis of a three-dimensional map including building heights and statistical information about the existing network. Korpela ’484 at [0045]–[0053] The information retrievable from the network management database 109 may consist for example of all or some of the following parts: a) Line-of-sight to existing network nodes (wireless routers) within a high link speed coverage area; b) line-of-sight to existing network nodes (wireless routers) within a low link speed coverage area; c) line-of-sight to planned network nodes (routers); d) planned coverage areas, i.e. detailed location of wireless routers which are missing for the time being but where network coverage is to be built; e) line-of-sight sensitivity to antenna height (this information can be used to compensate for errors in map

Claims	
	material like missing trees), tolerance in antenna location and estimated quality of the link; f) likely antenna radiation directions as deduced from other links in the area (e.g. to compensate for antennas located on one side of the building); g) availability of other technologies to connect the user (e.g. to create a fixed line connection if for some reason the wireless router connection against the calculated predictions cannot be created); h) the capacity of the existing airhoods (i.e. cluster of subscriber routers in a neighbourhood, controlled by an Air Operating System, wherein the connections from the subscriber routers in the airhood to an Internet access point are organized via a single or multiple airheads)). Korpela ’484 at [0054] In the coverage determination unit 110, a combined network coverage of the wireless mesh network is calculated. This may be achieved by calculating geographical polygons 20 indicating geographical areas having a line-of-sight connection to at least one wireless router. The combined coverage areas 20 of the wireless network are constantly changing as new network nodes (e.g. wireless routers) are installed. Since the node locations depend on the customer's purchase decisions preplanning the network coverage area is not possible. Instead, it is important to be able to analyze what is the coverage at any given point in time to plan network changes, to understand how good is the coverage on a particular target area, and to make marketing and other business decisions. Korpela ’484 at [0062]–[0063] The automatically measured information about possible links improves the accuracy of the coverage area. Line-of-sight calculation results based on map data and measured information about all available links each wireless router 10 can detect are combined automatically. The calculation of the cumulated or combined coverage area can then be based on the viewshed concept and the link statistics. In this case, the geographical areas can be further differentiated by the number of neighbouring routers that can be accessed in each area. Korpela ’484 at [0066] Due to the continuously changing network environment, consistency among plans in different phases and ability to use performance data collected from already implemented parts of the network is essential. For expansion planning all the existing network data must be always available. This process is essential as the network coverage is extended by each router in the network and as the routers are customer equipment there are continuous changes in the network. The following network planning process guarantees the network service availability.

Claims	
	Korpela ’484 at [0080] In a subsequent implementation phase S203, the candidate locations that have been identified in the master plan phase S202 gradually become actual. As the actual locations depend on the buying behaviour of the consumers in the area, the actual locations are typically different from the planned ones. Therefore it is essential to use the up-to-date data that is collected from the network by the RMS proxy 300. The master plan gradually becomes an implementation plan which supports the mass roll-out. Aufricht ’781 at [0042] Fleet management for centrally administering information in a handheld network environment that includes, but is not limited to, user data, user groups, group channels, channel data, personal channels, commercial channels, user accounts, corporate account, software groupings, personal information management, form delivery, form management, device configuration, device databases, device contents, and devices parameters. Aufricht ’781 at [0049] The sync operation of the invention includes various synchronization processes that can collect information from the Internet to a server, and to the client. In embodiments, the usage of the term “sync” refers to the overall operation of connecting a client to a server for the exchange, interaction, creation, and removal of data. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory Available storage space Screen size User profile(s) Color depth

Claims	
	Applications on device Buttons on-device Data markers (e.g., cookies, tokens) Preferences Fonts Font specifications Sync type Synchronization types Supported data types Supported mime types Connection/Network profile Aufricht ’781 at [0102] The server 104 includes an administration module 122, a database module 126, a user interface 130, a web synchronization module 124, a server extension module 156, a fleet management module 154, a notification module 132, and a server communication module 114. Other embodiments of server 104 may include a subset of these modules, and/or may include additional modules. Aufricht ’781 at [0104] The database module 126 controls access to databases associated with the server 104. The database module 126 maintains information relevant to the clients 108, as well as information relevant to the modules contained in the server 104. The database module 126 manages information on the collection of channels maintained by server 104. These and additional functions performed by the database module 126 are described in co-pending application entitled “System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices,” Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht ’781 at [0105] The user interface 130 is, in an embodiment, a graphical user interface (GUI) that enables users and clients 108 to access functions and modules offered by the server 104. More generally, the user interface 130 within server 104 provides access to server 104 and the modules and resources contained therein. Aufricht ’781 at [0106] The invention supports various server web sites that are available through any communication medium,

Claims	
	such as but not limited to the Internet, intranets, direct dial up links, etc. The UI 130 enables such web sites. Aufricht '781 at [0109] fleet management module 154 performs functions associated with fleets of clients 108, which are groups of clients 108. For example, fleet management module 154 may perform global or mass operations on groups (fleets) of clients 108, such as loading or updating an application on groups (fleets) of clients 108. Another example of a mass operation is retrieval of information on clients 108 in a fleet, such as the free memory in clients 108 in a fleet (this would help an organization determine if its clients 108 need a memory upgrade). These and additional functions performed by the fleet management module 154 are described in co-pending application entitled "System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices," Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht '781 at [0110] The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API. Aufricht '781 at [0111] For example, the web synchronization module 124 and the fleet management module 154 (as well as other types of synchronization modules, not shown in FIG. 1A) may interact with databases on the server 104 via the database module 126 by going through the server extension module 156. The web synchronization module 124 and the fleet management module 154 may not be able to interact directly with the database module 126 for a number of reasons. For example, they may support different data formats, or simply "speak different languages." However, they can interact via the server extension module 156 as well as other server modules as long as they conform to the API of the server extension module 156. This is true of any modules in the server 104, or that interact with the server 104. Aufricht '781 at [0112] Server communication module 114 enables communication between the server 104 and entities external to the server 104, such as clients 108, adapters 118, providers 128, work stations, etc. The server 104

Claims	
	communicates with these entities via communication mediums 120, which may be any type of wireless or wired communication using any protocol. It is noted that multiple server communication modules 114 may execute in a single server 104. For example, in one embodiment, server communication module 114 is a TCP/IP stack. In another embodiment, server communication module 114 is a secure socket layer stack or a compression stack. The invention is not limited to any implementation examples discussed herein. These and additional functions performed by the server communication module 114 are described in co-pending application entitled "System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices," Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht '781 at [0114] An alternative representation of server 104 is shown in FIG. 1B. FIG. 1B illustrates, for example, that messages from entities outside of server 104 are received by server extension interface/module 156 via server communications modules 114. Generally, such messages represent requests for the server 104 to perform various functions. The server extension module 156 conceptually operates as a dispatcher who routes such messages to other modules contained in the server 104, such as web synchronization module 124 (who handles requests to synchronize with web content), notification module 132, fleet management module 154 (who handles fleet related requests), and/or third party modules 155 (such as other synchronization modules). Thus, the invention supports modules 155 generated by third parties to perform various functions. Such modules 155 "plug-in" to the server 104 via the server extension module 156. Aufricht '781 at [0147] The data processing unit 103A may also include an interface 103J which may receive objects (such as data, applications, software, images, etc.) from external entities 103N via any communication mediums including wired and wireless communication mediums. In such cases, the objects 103L are transported between external entities 103N and interface 103J via signals 103K, 103M. In other words, such signals 103K, 103M include or represent control logic for enabling a processor or computer to perform functions of the invention. According to embodiments of the invention, such signals 103K, 103M are also considered to be computer program products, and the invention is directed to such computer program products. Geranio '871 at Abstract An integrated property database and search engine for matching properties with buyers has a computer that includes a master database and a search engine. The master database includes a property for sale

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>

database and a buyer's database. The property for sale database includes a property identification, a property location, and a property price. The buyers database includes a buyer's identification, a location of interest, and an offer price. A request is sent to the buyer for ascertaining information to be contained in the buyers database. An inquiry is sent to ascertain information to be contained in the property for sale database. A search engine is used to identify properties in the property for sale database that have a property location within the location of interest for a buyer, and have a property price that is equal to or lower than the offer price.

Geranio ’871 at Figure 1

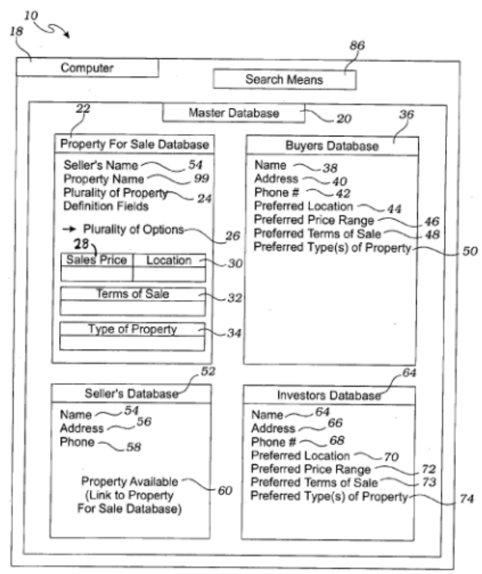


Fig. 1

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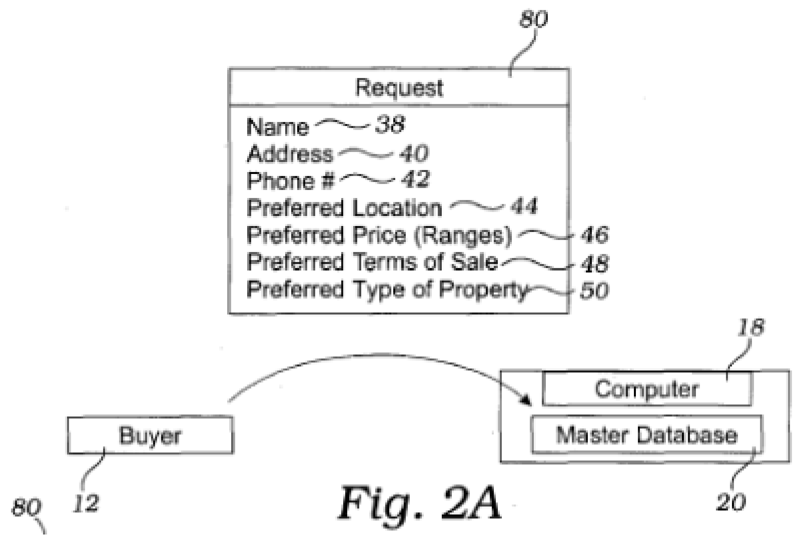
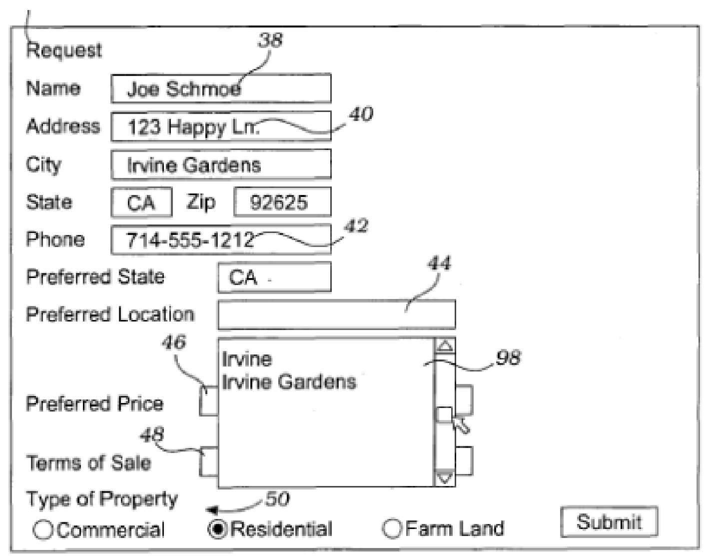
Claims	
	Geranio ’871 at Figure 2A  *Fig. 2A* Geranio ’871 at Figure 2B  *Fig. 2B*

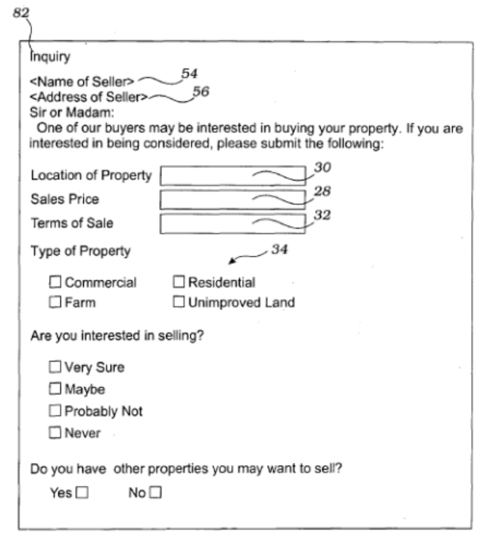
<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>Geranio ’871 at Figure 3B


Fig. 3B</td></tr>
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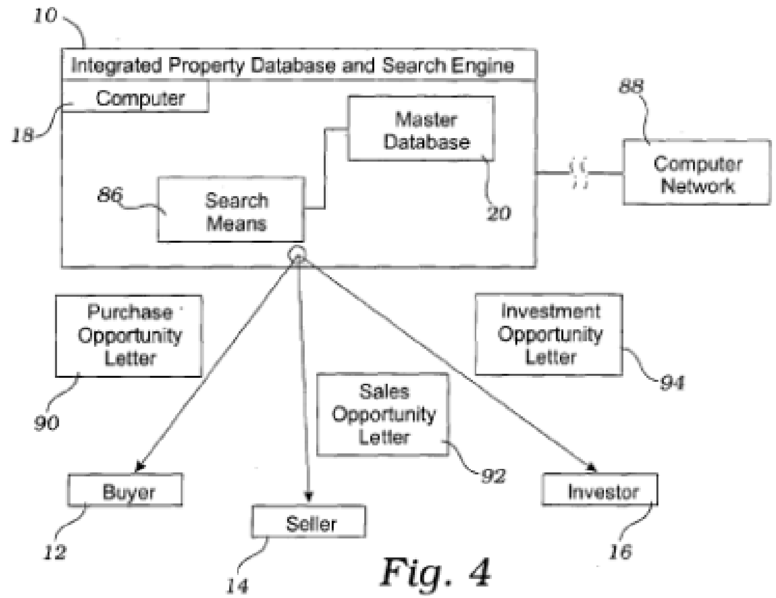
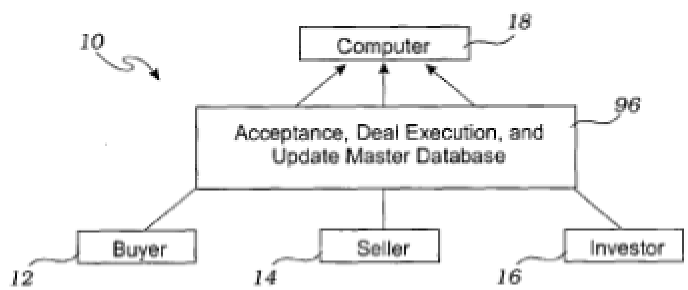
Claims	
	Geranio '871 at Figure 4  Fig. 4 Geranio '871 at Figure 5  Fig. 5 Geranio '871 at [0013] The present invention provides an integrated property database and search engine for matching properties with buyers. The integrated property database and search engine is executed on a computer having a master database and a search means. The master database includes a property for sale database and a buyer's database. The property for sale database has a plurality of property definition fields that include a

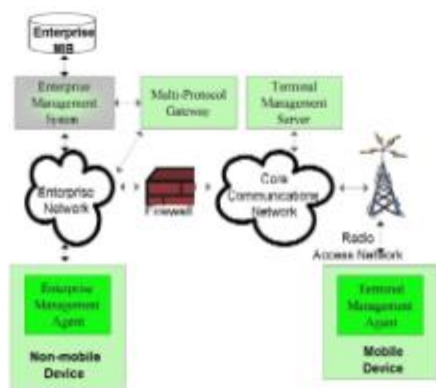
Claims	
	property identification, a property location, and a property price. The buyers database has a plurality of buyers definition fields that include a buyer's identification, a location of interest, and an offer price. The integrated property database and search engine further includes a means for generating and transmitting a plurality of requests to the buyers for ascertaining information to be contained in the buyers database; a means for generating and transmitting a plurality of inquiries to the properties for ascertaining information to be contained in the property for sale database; a means for incorporating information from the plurality of requests into the buyers database, and for incorporating information from the plurality of inquiries into the property for sale database; and a search means for identifying properties in the property for sale database that have a property location within the location of interest for a buyer, and have a property price that is equal to or lower than the offer price. Geranio ’871 at [0028] As shown in FIG. 1, the integrated property database and search engine 10 is executed on a computer 18 that includes a master database 20 and a search means 86. The master database 20 includes a property for sale database 22 and may also include a buyers 12 database, a sellers 14 database, and an investors 16 database. The property for sale database 22 has a plurality of property definition fields 24, each of the property definition fields having a plurality of options 26. The plurality of property definition fields 24 may include a sales price 28, a location 30, and terms of the sale. The plurality of options 26 for the sales price 28 could include any dollar amount, or could be rounded to the nearest 10 or 100 dollars. The plurality of options 26 for the location 30 could be by state, region, county, area code, or by custom region, or any other scheme that suits the needs of the buyers 12 and sellers 14. Geranio ’871 at [0035] The integrated property database and search engine 10 further includes a means for generating and transmitting a plurality of requests 80 to the buyers 12 for ascertaining information to be contained in the buyers database 36. As shown in FIG. 2A, in one embodiment the request 80 is a form that is adapted to be completed by the buyer 12 and submitted for entry into the computer 18. Geranio ’871 at [0036] The request 80, an example of which is shown in FIG. 2B, may have been printed and mailed or faxed, or it may be a form that is electronically generated and emailed to the buyer 12, or the buyer 12 may have accessed the request 80 via the computer network 88 (shown in FIG. 4). In another embodiment, the request 80 may be completed by a real estate specialist (not shown) during a phone consultation with the buyer 12. The request 80 enables the buyer 12 to select one of the plurality of options 26 for each of the

Claims	
	plurality of property definition fields 24. In an electronic format, the request 80 could include a drop down menu 98 of options; and in paper format, the request 80 may include pre-printed responses that the buyer 12 circles or checks; or the request 80 may be a paper that includes blanks that are filled in by hand. Geranio ’871 at [0037] The integrated property database and search engine 10 further includes a means for incorporating information from the plurality of requests 80 into the buyers database. Foe example, the buyer 12 may mail, fax, email, or otherwise transmit the request 80 to an office associated with the computer 18 for data entry or direct integration into the master database 20. In another embodiment, the request 80 may be completed over the phone, when the seller 14 is speaking with a property specialist, who can take the necessary information over the phone and input the information directly into the master database 20. Those skilled in the art can devise many methods of scanning or otherwise entering the data into the computer 18. Geranio ’871 at [0041] As discussed above, the integrated property database and search engine 10 includes a means for incorporating information from the requests 80 into the buyers database 36, and for incorporating information from the inquiries 82 into the property for sale database 22. This can include directly entering data into the master database 20, scanning the data in using technology known in the art, or having the interested parties enter the information directly over the computer network 88. Sharma ’925 at Abstract An illustrative method provides information to a user on wireless communication coverage. A wireless availability server receives a user request for coverage information where the request includes specific geographic location data provided by the user. A determination is made if the location data is in the form of latitude and longitude coordinates. Upon a determination that the location data is not in the form of latitude and longitude coordinates, the location data is converted into corresponding latitude and longitude coordinates. A query is made to a database containing wireless coverage data based on the latitude and longitude coordinates. A response to the query contains wireless coverage information for the latitude and longitude coordinates. A reply is transmitted to the user responding to the user request where the reply contains the wireless coverage information.

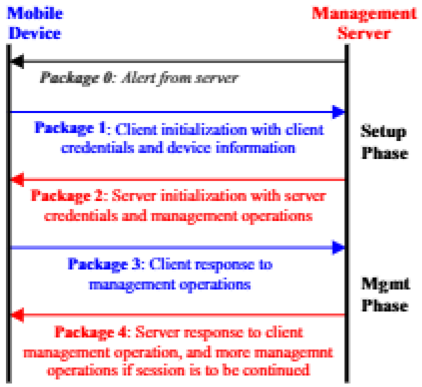
Claims	
	Sharma ’925 at [0021] The Internet 28 supports communications with a variety of information providers. Maps and travel services are available to Internet users from a variety of providers. One such provider utilizes a URL host site that includes map/travel server 46 and an associated database 48 that stores a variety of map, highway and other geographic related information that can be retrieved in response to inquiries from users received by the server 46. Maps showing roadways and other geographic landmarks, as well as aerial views that can be scaled to show areas of interest can be accessed by users. Users typically select areas of interest by inputting a street address, city, state and/or ZIP code. Assuming a specific address in an urban setting is known by the user, such an input provides a reasonably specific geographic location as a target query. However, in a rural environment it becomes increasingly harder to identify a specific geographic location, e.g. a particular rest stop along a rural section of an interstate highway. Sharma ’925 at [0022] Most if not all wireless communication providers provide some information to subscribers by Internet access. For example, one such provider utilizes a URL host site that includes a wireless carrier server 50 and an associated database 52. This communication provider stores service coverage information in the database 52. This information may be provided in response to a query by user in the form of the map typically showing colored regions designated by the communication provider where coverage is provided. However, such information is generally limited in terms of the granularity made available to the user. For example, a circular areas or a series of intersecting circular areas may be shown in which it is to be assumed that coverage is provided throughout these areas. However, a specific geographic location even within such a designated circular area may have poor or no coverage due to any number of factors adversely impacting RF signal propagation between a handset at the specific geographic location and the cellular base station antenna designed to cover of that region. Alternatively, a wireless communication provider may elect to provide a map showing the location of its base stations and leave the areas of service coverage to the user's interpretation. In yet another method, the communication provider, especially for smaller communities or towns, may provide a list of cities or towns for which service is stated to be provided. None of these methods provided by communication carriers provide sufficient granularity (geographic specificity) to permit a user to determine with any certainty whether service is actually available at specific geographical locations, especially those in more rural locations. Sharma ’925 at [0023] In accordance with an illustrative embodiment of the present invention, a wireless availability server 54 with an associated database 56 is coupled to the Internet 28 and serves as a URL host that receives user

Claims	
	queries requesting communication service coverage information at specific geographic locations as provided by one or more communication service providers. Based on information obtained from servers 46 and 50, as well as from information contained in its database 56, the wireless availability server 54 provides a response to the user's query as to communication service coverage at the specific geographic location(s) and/or along a travel route defined in the user's query. Details concerning functioning of the wireless availability server 54 are provided below. Depending upon the particular application and permission having been received from the proprietors of servers 46 and 50, wireless availability server 54 may obtain direct access to information contained in databases 48 and 52 as indicated by the dashed line paths, i.e. access to these databases other than by transmitting a query by the Internet to their respective servers. Some or all of the information contained in databases 48 and 52 could be stored or temporally cached in database 56 for faster access. Sharma ’925 at [0025] FIG. 4 shows steps of an illustrated method in accordance with an embodiment of present invention in which users can obtain information about whether wireless coverage exists for a specific location. Although this method is explained with reference to FIG. 1, it will be apparent that other architectures and configurations of apparatus could be utilized to perform these steps. In accordance with step 60, a user logs onto wireless availability server 54. The user may communicate with the server over a wireline communication channel such as by desktop computing apparatus 34 or by a wireless communication channel that supports a wireless enabled laptop computer, PDA, data enabled cellular telephone, or other types of wireless handsets. Although the Internet 28 is shown as supporting communications with the wireless availability server 54, it will be apparent that other types of communication networks could be utilized to transport communications between the wireless availability server and users. In this example it will be assumed that the user employs the desktop computing apparatus 34 to communicate through the Internet 28 with the wireless availability server 54 which serves as a host for URL queries addressed to it. Sharma ’925 at [0026] In step 62 the user inputs information based on a request for geographic information from the server displayed on his screen. A request may include, for example, multiple input boxes for receiving alphanumeric characters entered by the user that identify specific locations, e.g. addresses or geographic coordinates. Alternatively, the request may comprise a map, which preferably can be scaled to obtain the desired degree of granularity, permitting the user to select specific locations of interest such as by clicking on the corresponding locations of the map. Or the request may include latitude and longitude information such as determined by a built-in GPS receiver to specify a current or previously stored location. In step 64

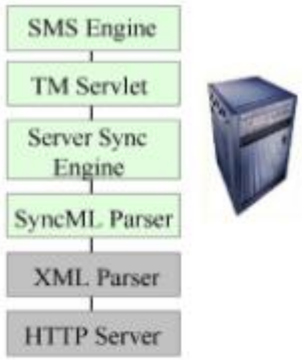
Claims	
	the user may also identify the user's communication carrier, a particular communication carrier of interest, or request that all communication carriers serving the specific locations of interest be considered. Sharma ’925 at [0029] A NO determination by step 66 or completion of step 68 results in continued processing in accordance with step 70. The latitude/longitude coordinates of the specific locations specified by the user are utilized to query one or more communication coverage databases. If available in database 56, this information can be most efficiently and directly retrieved by server 54. Alternatively, server 54 may generate a query transmitted by the Internet to the server, e.g. wireless carrier server 50 hosting database 52, to obtain coverage information concerning the specific location (s), or if permission has been granted and communication channels are available, the server 54 made directly access the database 52 such as indicated by the dashed lines coupled to server 54 in FIG. 1. Depending upon the granularity of information made available by the wireless carriers, it may be necessary to compile and store separate coverage information such as in database 56 for specific geographic locations identified by latitude/longitude coordinates. Such information can be compiled by empirical testing such as by determining signal strengths available at specific latitude and longitude coordinates for wireless carriers either by professional engineering signal strength studies or by obtaining such information from reports provided by users of the various wireless carriers indicating signal strength readings/communication quality at specific locations. Sharma ’925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each

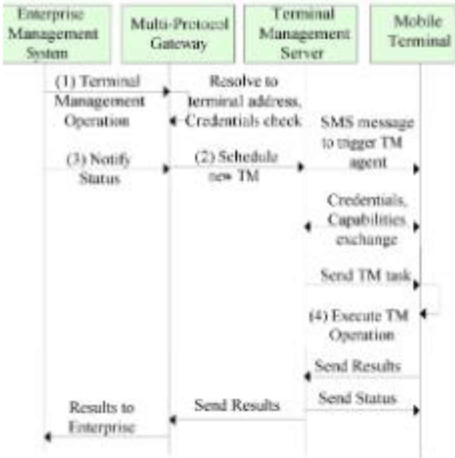
Claims	
	displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76. Sharma ’925 at [0033] FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well. Adwankar 2004 at Figure 1  Figure 1 The Universal Manager Architecture

Claims	
	Adwankar 2004 at 3 A mobile device has a terminal management (TM) agent that is customized for its capabilities. The terminal management agent has access to firmware specific details and can perform management operations such as getting or setting configuration data, software image installation, and fault and security management. The TM agent talks with a TM server using a protocol that the device can support. For example a mobile device that supports only Short Message Service (SMS), management actions and results/responses are sent over SMS between TM agent and TM server. Adwankar 2004 at 3–4 SNMP is the IETF standard for operations and maintenance protocol for the Internet. SNMP is based on the manager/agent model consisting of a manager, an agent, a database of management information, managed objects and the network protocol. The manager and agent use MIB and a relatively small set of commands or protocol operations (e.g. GET, SET) to exchange information through SNMP PDUs. The MIB is organized as a tree structure with individual variables, such as point status or description, being represented as leaves on the branches. The SNMP data model defines an object identifier (OID) that is used to distinguish each variable uniquely in the MIB and in SNMP messages. For example, OID 1.3.6.1.2.1.1.1.0 is associated with MIB variable system description. The SNMP data modeling language is a subset of Abstract Syntax Notation Number One (ASN.1), defined as SMIv2. SNMP uses ASN.1 BER encoding as the data representation. SNMP is commonly implemented over Transport Control Protocol (TCP) or User Datagram Protocol (UDP) transport layers.

Claims	
	Adwankar 2004 at Figure 2  Figure 2 SyncML Protocol Phases Adwankar 2004 at 5 As shown in Figure 2 the SyncML-DM is a 2-phase protocol consisting of a setup phase for authentication and device information exchange, followed by a management phase that can be repeated multiple times to support complex manager-to-mobile sessions. A management session may also start with Packet 0 (the trigger), where the trigger may be out-of-band depending on the environment. Adwankar 2004 at 7 The terminal management agent occupies only 110 KB space on a terminal. Shown in Figure 5 is a GSM terminal used for the implementation. We chose J2ME [18] as the platform-independent application development environment, as it provides User Interface and HTTP connection APIs. We chose Tiny XML [21] as the XML parser as it is around 10 K in size. It is also SAX-based [22] and hence, memory efficient.

Claims	
	Adwankar 2004 at Figure 5  Figure 5 Terminal Management agent Adwankar 2004 at 7 The SyncML parser was written on top of the XML parser. The SyncML parser parses the SyncML package received by the J2ME Midlet over HTTP. The result of parsing is a set of management actions that need to be performed on the device. Since we had access to the firmware code of a GSM terminal, we wrote closed classes that in turn made Java Native method calls to firmware. The terminal management agent has two types of mechanisms for starting a TM Midlet. In one mechanism the TM agent has a socket connection in receive mode. On receiving a UDP message, it will check the body of the UDP message and will launch the TM Midlet. For phones, where this mechanism was not possible, we used SMS mechanism to trigger the TM Midlet.

Claims	
	Adwankar 2004 at Figure 6  Figure 6 Terminal Management Server Adwankar 2004 at 7 The Terminal management server shown in Figure 6 is a conventional HTTP Web Server with a Servlet Engine [23]. It receives SyncML messages sent over HTTP, parses them and extracts a set of results and status indicators of the management operations. These results are then sent to the multi-protocol gateway. The SMS Engine is basically a Java mail based mechanism to create a SMTP message. This mechanism was used to trigger the TM Midlet of the phone. For devices other than phones, the server, upon receiving a management action, sends periodic UDP messages to TM agent. Along with security information this UDP packet contains the IP address that the TM Agent will connect back for SyncML exchanges. Adwankar 2004 at 8 Figure 7 shows a sequence of exchanges between various components of the Universal Manager. These sequences of steps are explained below.

Claims	
	Adwankar 2004 at Figure 7  Figure 7 Flow of operations Adwankar 2004 at 8 (1) Terminal Management Operation For a terminal management action, such as the querying of the manufacturer name of a GSM terminal, the enterprise management system is unaware of the presence of such a terminal and either of the following operations takes place. 1. The enterprise management system based on additional information such as IMEI decides to route management action to multi-protocol gateway, or 2. Multi-protocol gateway advertises addressability to that IMEI as a certain IP address and terminal management action takes place on this proxy IP address. In either case the enterprise management system routes the SNMP PDU for the corresponding management action to the Multi-Protocol Gateway instead of sending the SNMP PDU directly to the wireless device. The SNMP PDU’s host and port are set to the host and port (in our case 15003) that the Multi-Protocol Gateway is listening on as opposed to the host and port of the wireless device. The SNMP Packet thus sent contains the Operation Name (e.g. Get, Get Next, Set), the OID to be queried, (optionally IMEI of the GSM terminal and the value of the OID if it is a Set Operation), SNMP credentials and a request ID of the SNMP Packet. Figure 8 shows the result of querying the Object ID “./DevInfo/Man” of a mobile device from the enterprise management system. The result that is the manufacturer name is shown in the result panel.

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>

Adwankar 2004 at Figure 8

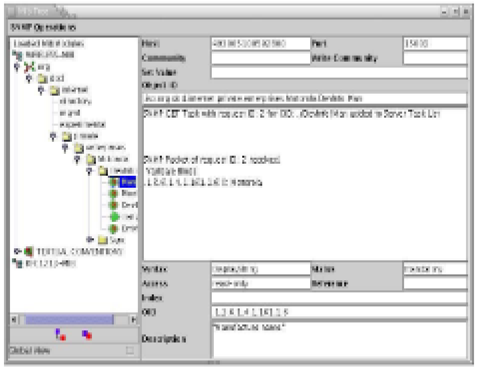


Figure 8 Management of mobile device using the Universal Manager

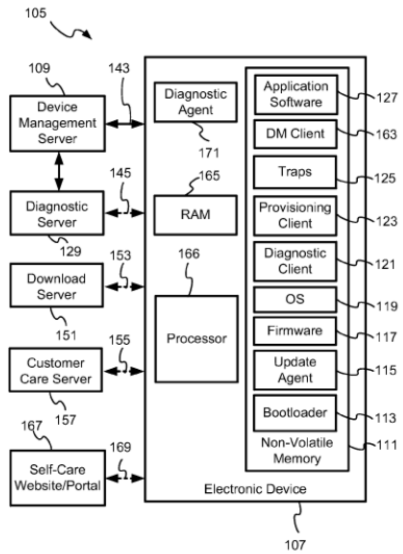
Adwankar 2004 at Figure 10 part 1

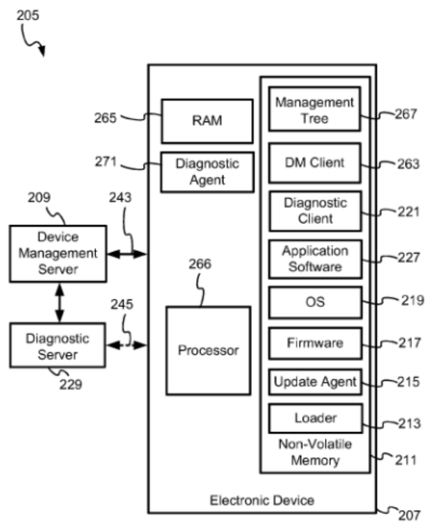
```
WIRELESS-MIB DEFINITIONS ::= BEGIN
IMPORTS MODULE-IDENTITY,
            OBJECT-TYPE, Integer32,
            enterprises
            FROM SNMPv2-SMI
            DisplayString, PhysAddress
            FROM SNMPv2-TC;

WIRELSS-MIB MODULE-IDENTITY
     LAST-UPDATED "200310200000Z"
     ORGANIZATION "Motorola"
     CONTACT-INFO  "Sandeep Adwankar... "
     DESCRIPTION
        "This MIB module defines a MIB which
         provides mechanisms to perform SNMP
         management operations on mobile devices."
         ::= { enterprises xxx }

DevInfo     OBJECT IDENTIFIER
         ::= { WIRELESS-MIB 1 }
DevDetail OBJECT IDENTIFIER
         ::= { WIRELESS-MIB 2 }
Ext    OBJECT IDENTIFIER ::= { DevDetail 1 }
```

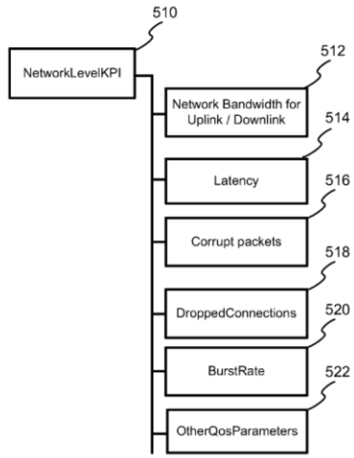
</td></tr>
</table>

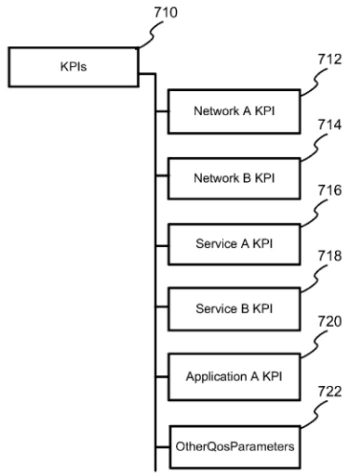
Claims	
	Adwankar 2004 at Figure 10 part 2

```
WAP    OBJECT IDENTIFIER ::= { Ext 2 }

-- the DevInfo group

Man    OBJECT-TYPE
       SYNTAX        DisplayString (SIZE (0..255))
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION   "Manufacture name."
       ::= { DevInfo 1 }
Mod    OBJECT-TYPE
       SYNTAX        DisplayString (SIZE (0..255))
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION "Model name."
        ::= { DevInfo 2 }
DevID  OBJECT-TYPE
       SYNTAX        DisplayString (SIZE (0..255))
       MAX-ACCESS    read-only
       STATUS        current
       DESCRIPTION "Device serial number."
        ::= { DevInfo 3 }

-- the DevDetail group

OEM    OBJECT-TYPE
        SYNTAX       DisplayString (SIZE (0..255))
        MAX-ACCESS       read-only
        STATUS       current
        DESCRIPTION "Specify OEM of the
                     device (e.g., Motorola)."
        ::= { DevDetail 1 }
FwV       OBJECT-TYPE
        SYNTAX       DisplayString (SIZE (0..255))
        MAX-ACCESS       read-only
        STATUS       current
        DESCRIPTION
              "Firmware version."
        ::= { DevDetail 2 }

-- the WAP group

Defaultwebsession OBJECT-TYPE
        SYNTAX        DisplayString (SIZE (0..255))
        MAX-ACCESS    read-write
        STATUS       current
        DESCRIPTION
              "Set default web session on phone."
        ::= { WAP 1 }
...
END
```

Claims	
	Rao '815 at Figure 1  FIG. 1

Claims	
	Rao ’815 at Figure 2  FIG. 2

Claims	
	Rao '815 at Figure 5  FIG. 5

Claims	
	Rao ’815 at Figure 7  FIG. 7 Rao ’815 at [0017] As shown in the illustration of FIG. 1, the network 105 in one representative embodiment of the present invention comprises the electronic device 107, a device management (DM) server 109, a self-care website/portal 167, a diagnostic server 129, a customer care server 157, and a download server 151. In one representative embodiment of the present invention, the diagnostic server 129 is an application which receives, processes, and stores/presents the information obtained from the electronic device 107 in an easily readable fashion. The diagnostic server 129 may comprise a personal computer (PC) used by a user to accept collected tracing information from the electronic device 107 through a USB connection, a Bluetooth® connection or via an secure digital format (SD) card (e.g., when a wireless data service for over-the-air (OTA) transfer of data is unavailable). A representative embodiment of the present invention may also comprise other application servers. The electronic device 107 of FIG. 1 is able to communicate with the DM server 109, the download server 151, the customer care server 157, the self-care website/portal 167, and the diagnostic server 129 via communication paths 143, 153, 155, 169, and 145, respectively. Although the communication paths 143, 153, 155, 169, 145 are illustrated as being separate paths between the electronic device 107 and their respective servers, this is only for purpose of illustration, and is not a specific limitation of a representative embodiment of the present invention. The communication paths 143, 153, 155, 169, 145 may be combined into one or more paths that may comprise

Claims	
	any of the wired or wireless networks previously mention above, including point-to-point and/or broadcast, wired or wireless communication paths such as, for example, a local area network, a public switched telephone network, a wireless personal, local or wide area network, and a cellular or paging network, to name only a few possibilities. Although not shown in the illustration of FIG. 1, the electronic device 107 also comprises interfaces used to communicate over the communications paths 143, 153, 155, 169, and 145, which have been omitted from the illustration solely to improve clarity to aid in understanding the figure. Rao ’815 at [0020] As shown in FIG. 1, the electronic device 107 may comprise a diagnostic client 121 that facilitates remote diagnosis. The diagnostic client 121 may have been installed at the time of manufacture of the electronic device 107, or be downloaded at a later time using a wired or wireless link of the electronic device 107. The electronic device 107 may also comprise a diagnostic agent 171 that runs on the electronic device 107 when required by conditions, or on a continuing basis to perform monitoring, and which manages and collects tracing information for transmission to a server such as, for example, diagnostic server 129 using a cellular data network part of communication path 145. The electronic device 107 of FIG. 1 also comprises a traps client 125 that facilitates the setting of traps and retrieving of collected information. The term “trap” may be used herein to refer to an action taken outside of operation of the electronic device for its intended use, by executable code in the electronic device 107 (e.g., the traps client 125) when one or more specified conditions are met. Traps can be used to collect data such as errors, faults encountered while operating the mobile device 107, network performance data, and call setup data, to name just a few examples. Such conditions may be remotely defined by, for example, messages sent by a server such as the diagnostic server 121 or DM server 109, for example. In one representative embodiment of the present invention, the traps client 125 and the diagnostic agent 171 are combined into one embedded diagnostic client component capable of supporting traps as well as collecting diagnostic data and configuration information for eventual transfer to the diagnostic server 129 or the customer care server 157. Rao ’815 at [0029] As described briefly above, the network 105 of FIG. 1 is able to conduct remote diagnostics on the electronic device 107. This is desirable when a user of the electronic device 107 experiences operational issues that he/she cannot resolve. Some operational anomalies may be resolve by analysis of settings in the electronic device 107, which may be retrieved by the customer care server 155 and/or the diagnostic server 129, for example. In some situations, a customer care representative may employ a representative embodiment of the present invention to download and install executable code in the electronic device 107,

Claims	
	to actively monitor applications and diagnose problems. Rao ’815 at [0033] In a representative embodiment of the present invention, a server such as, for example, the DM server 209 or diagnostic server 229 accesses one or more management objects (MOs) representing key performance indicators in a management tree, such as the management tree 267, to determine the performance or operating behavior of one or more layers of a communication protocol used in supporting an application on the electronic device 207. For example, different layers of functionality of a communication protocol in an electronic device such as a network layer, a service layer, and an application layer may each have its own set of key performance indicator (KPI) values. Rao ’815 at [0049] In some representative embodiments of the present invention, each bearer-specific NetworkLevelKPI MO 510 comprises a collection of nodes such as those shown in FIG. 5. The content of the first of these illustrated nodes, Network Bandwidth for Uplink/Downlink 512, comprises information identifying the amount of network bandwidth currently in use by the electronic device using the associated bearer. The context of the next node, Latency 514, enables a remote server to determine the delay or latency currently being experienced by content exchanged via the associated bearer. The CorruptPackets node 516 may be retrieved to access a measure of the number of corrupted packets received by the electronic device when using the associated bearer. The DroppedConnection node 518 shows a frequency/count of connections that are unintentionally dropped or lost following establishment. The BurstRate node 520 contains a measure of the data rate for burst rate traffic, and the OtherQoSParameters node 522 may contain other quality of service measures and parameters that may be verified when retrieved from the electronic device 207 and compared with a network subscriber information database, to verify correct settings in the electronic device 207. Rao ’815 at [0050] FIG. 6 is a block diagram illustrating an exemplary arrangement of the application level, service level, and network level management objects within the hierarchy of a management tree of an electronic device such as, for example, the management tree 267 of the electronic device 207 of FIG. 2, of management objects for key performance indicators contained in an application level MO, ApplicationLevelKPI MO 610, a service level MO, ServiceLevelKPI MO 612, and a network level MO, NetworkLevelKPI MO 614, in accordance with a representative embodiment of the present invention. As FIG. 6 shows, in some representative embodiments of the present invention, a management object comprising a collection of

Claims	
	application level key performance indicators such as, for example, the ApplicationLevelKPI MO 610, has as one element a management object comprising a collection of service level key performance indicators, illustrated in FIG. 6 as the ServiceLevelKPI MO 612. In addition, the management object containing the collection of service level key performance indicators, ServiceLevelKPI MO 612, has as one of its elements a management object comprising a collection of network level key performance indicators, NetworkLevelKPI MO 614. It should be noted that although illustration of FIG. 6 shows only one management object containing service level key performance indicators as an element of the ApplicationLevelKPI MO 610, and only one management object containing network level key performance indicators as an element of the ServiceLevelKPI MO 614, these are not specific limitations of an embodiment of the present invention. Applications that involve the use of multiple services may have multiple management objects for service level key performance indicators, one for each service. Similarly, each management object for service level key performance indicators may have multiple management objects comprising network level key performance indicators, one for each bearer network used. Rao ’815 at [0051] FIG. 7 is a block diagram illustrating another exemplary arrangement of management objects of key performance indicators within the hierarchy of a management tree of an electronic device such as, for example, the management tree 267 of the electronic device 207 of FIG. 2, in accordance with a representative embodiment of the present invention. As shown in the illustration of FIG. 7, in some representative embodiments of the present invention, a management object such as the KPIs MO 710 comprises a root node of a collection of nodes containing all key performance indicators. In various representative embodiments, such a collection could be organized as a logical tree. As shown in FIG. 7, collection of nodes of the KPIs MO 710 contains node Network A KPI 712 and node Network B KPI 714, which contain network-level key performance indicators for Network A and Network B, respectively. For each network, a KPI may be retrieved when needed from the Network A KPI 712 MO node and the Network B KPI 714 MO node. The collection of nodes of the KPIs MO 710 also comprises nodes Service A KPI 716 and Service B KPI 718, which contain service-level key performance indicators for Service A and Service B, respectively. Each service may provide its own KPI information, such as broadcast service, streaming audio service, etc. The example of FIG. 7 also illustrates that the KPIs MO 710 has as one of its element a node Application A KPI 720 that contains application-level key performance indicators. In a representative embodiment of the present invention, each application such as, for example, a broadcast client application MobiTV or a DVB-H client may provide its own KPIs that may be retrieved via a DM client and an associated management object. A representative embodiment of the present invention may

Claims	
	also comprise a quality of service (QoS) parameters node, OtherQoSParameters 722. Rao ’815 at [0053] In a representative embodiment of the present invention, a network level KPI may comprise bearer-specific content, and an electronic device such as the electronic device 207 of FIG. 2, for example, may support multiple networks (i.e., bearers) at the same time. For example, the electronic device 207 may support a variety of networks such as a General Public Radio Service (GPRS) network, an SPRS network, a wireless local area network (WLAN), to name only a few examples. In one representative embodiment of the present invention, each network supported by the electronic device 207 has its own KPIs, and management objects supporting access to such KPIs by a remote server such as the device management server 209 and diagnostic server 229 of FIG. 2, or the customer care server 157 of FIG. 1, for example. Rao ’815 at [0054] In a representative embodiment of the present invention, each software application in an electronic device (e.g., the application software 127 in the electronic device 107) may enable retrieval of its KPIs, via a device management (DM) client such as the DM client 263 of FIG. 2. For example, one representative embodiment of the present invention may support registration of an application's KPI node (i.e., a management object (MO) having the KPIs of the application as elements of the MO) with a DM client such as the DM client 263 of FIG. 2. Another representative embodiment of the present invention may employ an application manager to effect registration of an application with the DM client 263 of FIG. 2, or with a registry in the electronic device 207. Such registration may, for example, be performed as part of the installation of the application onto the electronic device during an update of software/firmware of the electronic device 207. For example, installation of a new software application (e.g., application software 227 of FIG. 2) may comprise not only adding new program code to memory in the electronic device 207 for the functionality of the application, but may also comprise the addition/creation of new management objects for the key performance indicators of the software application, any program code and/or data needed to permit the collection of the data of the key performance indicators for the software application, and any program code and/or data for making the key performance indicator values/content accessible via the associated management object(s). In a representative embodiment of the present invention, the update information for updating the software/firmware of the electronic device may include, for example, program code for suitable software/firmware components such as drivers, functions, routines, dynamic link libraries, and application program interfaces to permit the application to provide or expose KPI values/contents via the elements/nodes of the management object of the application. In a similar fashion, support for new services and networks may add new management objects, program code and data that

Claims	
	enables access to service level and network level KPIs for the added service(s) and network(s). Stenton ’260 at [0016]–[0017] The growing proliferation of wireless local area networks 3 especially within urban environments, airports, train stations and the like, means that there is growing coverage allowing connection of mobile communication devices to wireless LANs 3. Preferably, the wireless LANs are IEEE 802.11a, 802.11b or 802.11e wireless LANs. The wireless LANs 3 may be entirely independent of one another or be owned by businesses or individuals within a location and may be primarily intended for use of those businesses or individuals. However, the wireless LANs 3 may each be connected over a private data network 9 (virtual private network) to the Internet 10 for connection to services but also for administration and billing purposes to a wireless Internet service provider 11. Stenton ’260 at [0018] In this embodiment of the present invention, the wireless Internet service provider 11 may own, or control access to, or be able to authorise access by third parties to the wireless LANs 3 meeting the wireless Internet service provider's quality of service and security criteria. The wireless LANs 3 therefore make up a matrix of wireless LANs 3 offering considerable coverage. The controlling function of the wireless Internet service provider allows mobile communication devices 7 equipped with wireless LAN cards or chip sets 12 to communicate with wireless LANs 3 and via the private data network 9 provided by the wireless LAN 3 to communicate with remote servers or other service providers accessible over the Internet or the like. Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11 and transmitted to the cellular telecommunications network 2 operator. Lim ’402 at [0013] The present invention relates to a remote diagnosis system of a mobile communication terminal and an operating method thereof and, more specifically, to a remote diagnosis system of a mobile communication terminal and an operating method thereof, wherein the remote diagnosis system is connected to a remote

Claims	
	diagnosis server when the mobile communication terminal malfunctions or needs help for a specific function and is diagnosed with failure by a simple operation. Lim ’402 at [0019] DISCLOSURE Technical Problem Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a system and a method for remotely diagnosing a mobile communication terminal, which are connected to a remote diagnosis server according to a wireless communication method to remotely diagnose information on malfunction of the mobile communication terminal and whether the mobile communication terminal has a malfunction even with a simple operation and to check a result thereof. Lim ’402 at [0021] In addition, the method for operating a remote diagnosis system of a mobile communication terminal according to the present invention comprises: a first step of performing a remote diagnosis program to access a remote diagnosis server; a second step of transmitting operation data of the mobile communication terminal to the remote diagnosis server to diagnose whether a failure has occurred through a data search for an operation and a function of the corresponding mobile communication terminal; and a third step of receiving diagnosis result data of the mobile communication terminal. Lim ’402 at [0023] As shown in FIG. 1, a remote diagnosis system of a mobile communication terminal according to the present invention includes: a remote diagnosis server 20 which receives operation data of a connected mobile communication terminal to diagnose whether a failure has occurred and transmits a help message such as a coping method; and a mobile communication terminal 10 which is connected to the remote diagnosis server 20 through a wireless communication module according to pre-stored connection information to diagnose whether a failure has occurred. Lim ’402 at [0025] The original dog diagnosis server 20 receives operation data of the mobile communication terminal 10, determines whether a failure has occurred according to each operation state of the mobile communication terminal 10, and transmits information about the failure to the mobile communication terminal 10.

Claims	
	Lim ’402 at [0026] In addition, the remote diagnosis verser 20 receives a reception destination for the diagnosis result from the mobile communication terminal 10 and transmits the result to the mobile communication terminal or the service center 30 of the mobile communication terminal 10. Lim ’402 at [0027]–[0028] In this case, the service center 30 is a service center operated by a business operator or a manufacturer of the mobile communication terminal, and when the mobile communication terminal fails, the service center 30 is repaired. That is, the remote diagnosis server 20 transmits the diagnosis result to the mobile communication terminal 10 or the service center 30 according to the data received from the server-connected mobile communication terminal 10, so that the user can check the state of the mobile communication terminal 10, and when the result is transmitted to the service center 30, the service center 30 receives the state of the mobile communication terminal 10 so that the mobile communication terminal 10 can be repaired. Lim ’402 at [0041]–[0042] When a menu for accessing the remote diagnosis server 20 is called, the remote diagnosis processing unit 11a reads access information from the remote diagnosis setting unit 12a and accesses the remote diagnosis server 20 through the wireless communication module 13a. In addition, the remote diagnosis processing unit 11a transmits operation data related to a malfunction or an abnormal phenomenon of the mobile communication terminal 10 to the remote diagnosis server 20 with respect to a service to be diagnosed after accessing the remote diagnosis server 20. Lim ’402 at [0047] Meanwhile, as illustrated in FIG. 3, the remote diagnosis server 20 includes a communication module 23 configured to transmit and receive data to and from the external mobile communication terminal 10 connected through a wired/wireless method, a remote diagnosis database 22 configured to store data on the operation of each mobile communication terminal in order to diagnose a failure, and a server control unit 21 configured to receive operation data of the mobile communication terminal 10 connected through the communication module 23 and determine whether a failure has occurred based on the remote diagnosis database 22. Lim ’402 at [0062]–[0063] The mobile communications terminal selectively inputs the service item to be diagnosed and the remote diagnosis server receiving a message this is proceed the corresponding service. (S4, S12)

Claims	
	The remote diagnosis server receives operation data of the mobile communications terminal and data about the function of the corresponding mobile communications terminal and operation are searched based on the , terminal information. Chmaytelli ’453 at [0032] FIG. 1 illustrates a block diagram of one exemplary embodiment of a wireless system 100 in accordance with at least one embodiment of the invention. System 100 can contain client devices, such as cellular telephone 102, in communication across a wireless network 104 with at least one application download server 106 that selectively transmits software applications and components to wireless devices across a wireless communication portal or other data access to the wireless network 104. As shown here, the wireless (client) device can be a cellular telephone 102, a personal digital assistant 108, a pager 110, which is shown here as a two-way text pager, or even a separate computer platform 112 that has a wireless communication portal. The embodiments of the invention can thus be realized on any form of client device including a wireless communication portal or having wireless communication capabilities, including without limitation, wireless modems, PCMCIA cards, personal computers, access terminals, telephones, or any combination or sub-combination thereo Chmaytelli ’453 at [0033] The application download server 106 is shown here on a network 116 with other computer elements in communication with the wireless network 104. There can be a stand-alone server 122, and each server can provide separate services and processes to the client devices 102, 108, 110, 112 across the wireless network 104. There is preferably also at least one stored application database 118 that holds the software applications that are downloadable by the wireless devices 102, 108, 110, 112. However, those skilled in the art will appreciate that the configuration illustrated in FIG. 1 is merely exemplary. Accordingly, embodiments of the invention can include one or more servers that can each perform all the described functions and contain all necessary hardware and software, or can contain only selected functionality. Chmaytelli ’453 at [0034] In FIG. 2, a block diagram is shown that more fully illustrates system 100, including the components of the wireless network 104 and interrelation of the elements of the exemplary embodiments of the invention. System 100 is merely exemplary and can include any system that allows remote client devices, such as wireless client computing devices 102, 108, 110, 112 to communicate over-the-air between and among each other and/or between and among components connected via a wireless network 104, including, without limitation, wireless network carriers and/or servers. The application download server 106 and the stored application database 118, along with any other servers such as ad dispatch server 130

Claims	
	which are used to provide cellular telecommunication services, communicate with a carrier network 200, through a data link, such as the Internet, a secure LAN, WAN, or other network. In the embodiment shown, a server 120 can include the application download server 106, ad dispatch server 130 and the stored application database 118. However, these servers can also be independent devices. The ad dispatch server 130 can provide additional ad services based on the configuration of each of the client devices 102, 108, 110, 112. Chmaytelli ’453 at [0080] Alternatively, in another embodiment of the invention, an ad contains location information that can be used to define a geographic area. Client devices within the targeted area (i.e., the defined geographic area) can be identified from the location information stored on a server in the carrier network. For example, a CAM enabled client device can periodically report the location of the client device or execute an application to provide location data to a remote server that can calculate the location of the client device. The stored location information can be a table, for example, containing longitude and latitude coordinates for each client device. When an ad is generated containing location information to define a geographic area of interest (e.g., longitude and latitude coordinates of four points defining a rectangular area), a server can use the stored client location information to identify the client devices in the targeted area. Then the ad can be sent to the client devices that are identified. Although the ad location information does not have to be transmitted to the client device in this embodiment, the location information can still be used by the CAM system on the client device for inbox maintenance (e.g., to delete messages when the client device is out of the targeted area) as discussed above. Alternatively, if the client device location is monitored at a remote server, then the ad generation system can generate another message that directs the CAM system on the client device to delete the previously sent ad when the client device location is outside the targeted area. Additionally, a message that directs the CAM system on the client device to delete a specific previously sent ad can be event-based, such as deleting a promotional ad once all available promotional items are sold. Accordingly, this aspect can be used regardless of whether the client device location data is maintained locally or remotely. Chmaytelli ’453 at [0085] FIG. 8B is a flowchart illustrating a method for identifying client devices based on the geographic area defined by the location data in the ad. In block 822, the targeted geographic area is determined using the location data contained in the ad. As discussed above, this determination can be performed at the client device, a server on the carrier network, and/or other remote server. The client device location information is accessed, in block 824. Once again this can be performed at the client device, a server on the carrier

Claims	
	network, and/ or other remote server, as previously discussed. Further, accessing the data can include any of the methods discussed herein (e.g., accessing previously stored geographic position data in the client device or on a server remote to the client device, initiating a location API resident on the client device to obtain the location of the client device (e.g., using gpsOne®), and the like). Then, in block 826, the geographic position of the client device can be compared with the targeted area to determine if the client device is within the targeted area. Likewise, this determination can be performed at the client device, a server on the carrier network, and/ or other remote server, as previously discussed. Zellner ’749 at 4:17–26 The present invention also contemplates an unblocking option where the user may access on Internet a website for one or more service promoters to “unblock” disclosure of the user's identity and/or location information. In alternative embodiments, various identity-blocking and location-blocking services may “unblock” transmission of respective identity and/or location information when the user (or the mobile subscriber) dials an emergency phone number (e.g., “911”) or indicates a desire to access an emergency service provider (e.g., a fire station, a hospital, or the police). Zellner ’749 at 6:33–51 In addition to the determination of the MS's location, the service provider 16 may also ascertain the identity of the mobile subscriber through, for example, the cell phone data (e.g., the mobile identification number or MIN) received by the SP 16 (e.g., through a mobile switching center operated by the SP 16) when the SP 16 authenticates the cell phone 10 as part of the cell phone registration process as is known in the art. The identity of the mobile subscriber (e.g., the subscriber's name, address, contact phone number, employment status, etc.), along with the associated MIN, may already have been previously stored in a database (e.g., the subscriber's home location register or HLR) maintained by the SP 16. Alternatively, the mobile subscriber identity information may temporarily reside in a visitor location register (VLR) associated with the serving MSC (mobile switching center) for a roaming MS. Such identity information may be obtained by the SP 16, for example, when the MS initially signs up for the cellular service offered by the SP 16. Zellner ’749 at 14:20–41 FIG. 4 depicts an exemplary flowchart for an identity-blocking service provided by a cellular service provider (e.g., the service provider 16 in FIGS. 1 and 2). Initially, at block 70, the cellular service provider 16 may periodically receive (or track) the location information for the cell phone 10 using one of the methods mentioned hereinbefore. Here, the location information can be considered to be “in the network.”

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	Alternatively, the location information may be "in the cell phone" as discussed hereinbefore. For example, a cell phone with a built-in location identifier (e.g., the cell phone 10 with the built-in GPS receiver 56 as shown in FIG. 3) may transmit its location information to the wireless network 12 (and, hence, to the service provider 16) periodically, for example, every 30 seconds after the cell phone 10 is activated (or powered up) by the MS. In another embodiment, the MSC (mobile switching center) (not shown) serving the cell phone 10 may be programmed to periodically "query" the cell phone 10 to extract current location information therefrom. In both cases, the PCU 52 may be configured with appropriate software which, when executed, transmits the cell phone location information via the NIU 60 to the MSC (not shown) operated by the service provider 16. Tolz '933 at 14:2–8 Figures 3(a)-3(c) illustrate the search procedure conducted by the auction/classified ad software implementing the methodology of the invention. It is assumed that the bidder/Buyer have previously entered their address, and all vital information such as the buyers location, distance etc. are stored in the database 18c (Figure 1(a)). Further, the 18c maintains records of Sellers, their goods and services for sale/auction, and the address locations of the items for sale/auction.
1[c] updating, by action of said computer, said mobile device location information stored in said memory or database when a mobile device of said plurality of mobile devices travels from one location to another;	It was well known and routine at the time of the alleged invention for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "updating, by action of said computer, said mobile device location information stored in said memory or database when a mobile device of said plurality of mobile devices travels from one location to another." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify provisioning of an existing method of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "updating, by action of said computer, said mobile device location information stored in said memory or database when a mobile device of said plurality of mobile devices travels from one location to another" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "updating, by action of said computer, said mobile device location information stored in said memory or database when a mobile device of said plurality of mobile devices travels from one location to another" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example:

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	700-A01 U.S. Pat. Pub. No. 2007/0207800 (“Daley ’800”) 700-A02 U.S. Pat. Pub. No. 2008/0186882 (“Scherzer ’882”) 700-A03 U.S. Pat. Pub. No. 2008/0305747 (“Aaron ’747”) 700-A04 U.S. Pat. Pub. No. 2003/0216953 (“Dawson ’953”) 700-A05 U.S. Pat. Pub. No. 2007/0178911 (“Baumeister ’911”) 700-A06 U.S. Pat. Pub. No. 2007/0111748 (“Risbood ’748”) 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 (“Roundtree ’237”) 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server The Loopt, Smaato, or Digital Envoy systems. Barkan ’859 at [0253]–[0254] To answer the issue of interference between microcells, The microcell network can use the mobile stations as monitors to the possible interactions. Mobile station is capable of listening to frequencies given by the cell that serves them, and report back the strength of the received signal. Such measurements are designed for handovers, however they can be used to test the interface by microcells. When user location is known, it enables to get valuable information of the RF propagation of each and every microcell. Barkan ’859 at [0440]–[0444] There are several methods to locate a phone. 1. This can be done in a similar fashion to what is done at present. Since the cellular center knows the location of base stations, it can start a search for the phone from the last place it was known to be. 2. Otherwise, the phone could be “paged” over paging channels, and the phone would reply to the nearest base station, and this reply would be forwarded by that base station to the cellular center. 3. A phone may be required to send a beacon once in a while to the nearest base station, so that the center may know its location. 4. The network may be divided into geographical zones. A city may be a zone, for example. The phone may be required to announce the center when it crosses the boundaries of zones (Location Areas).

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	Deshpande ’933 at [0008] FIG. 1 is a diagram illustrating a communication device 10 that is located within an area 28 (e.g., a hot spot) that is serviced by multiple wireless network access service providers 12, 14, 16, 18. Each of the network access service providers has a corresponding coverage region 20, 22, 24, 26 within the area 28 in which it provides services. As illustrated, the coverage regions 20, 22, 24, 26 of the network access service providers 12, 14, 16, 18 overlap within the area 28. The communication device 10 is located in a position that is encompassed by each of the coverage regions 12, 14, 16, 18. Thus, the communication device 10 can theoretically achieve network access (e.g., to the Internet, a corporate intranet, etc.) through any one of the available providers. Each of the network access service providers 12, 14, 16, 18 will generally have one or more service offerings that users can take advantage of. These service offerings will most likely differ from provider to provider in attributes such as cost and performance. In addition, special service arrangements may exist between the user (or the user's employer) and one or more of the service providers. In one aspect of the present invention, therefore, functionality is provided within a communication device for selecting a network access service provider in a multi-provider environment. Zellner ’749 at 5:18–30 The location of the cell phone 10 may be determined periodically (i.e., at predetermined time intervals, e.g., every 30 seconds) by the wireless service provider or the cellular service provider (SP) 16. Through the arrangement shown in FIG. 1, the SP 16 may transmit user-specific or location-specific voice and/or data advertisements to the cell phone 10 as discussed hereinbelow with reference to FIG. 4. For cell phone location determination, the SP may employ one or more of the methods discussed in U.S. Pat. No. 5,512,908 (“the '908 patent”) (issued on Apr. 30, 1996) and in U.S. Pat. No. 5,625,364 (“the '364 patent) (issued on Apr. 29, 1997), both of which are incorporated herein by reference in their entireties. Bandera ’127 at 3:4–12 According to another aspect of the present invention, systems, methods and computer program products are provided for changing content within a Web page object based on changes in geographic location of a user. The Web page object is configured to monitor a user's location via a GPS. In response to determining that a user has changed geographic locations, the content within the object can be changed. In addition, content within the Web page object can be changed in response to changes in time of day. Bandera ’127 at 8:63–9:2 Referring to FIG. 6 a JAVA® applet 40 running within a mobile Web client 21 is configured to communicate with a GPS 22 so as to determine when the user moves with the mobile Web client from one

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	GPS region to another. When the JAVA® applet 40 determines that the Web client has moved to another GPS region, an HTTP request is made to a Web server 24 to refresh the applet display. Currie ’040 at 7:47–8:27 In one embodiment, the method of FIG. 2A may be used to perform automatic searches. In one embodiment, a user of the device may select or provide one or more search terms that will be repeatedly submitted as described above as the device operates. The search is repeatedly performed and the results are displayed to allow the user to view the results of those searches without having to manually perform the searches. Referring now to FIG. 2B, a method of performing automatic searches is shown according to one embodiment of the present invention. One or more search terms are received 280, either using text, or selection of predefined terms such as “gas station”, “coffee shop”, etc., or both text and selection may be employed. The search terms can employ multiple items, such as “‘coffee shop’ or ‘gas station’”, or multiple sets of search terms may be received individually. The search terms are received in step 280 as part of an automatic search registration process and may be updated at any time. The search terms are stored as part of step 280. The current date and time, location or both are identified 282, for example using GPS signals from a GPS receiver as described above. If the date and time, location, or both are different 284 by at least a threshold amount or time, distance or both, from a date and time, location or both that were retrieved in a previous iteration of step 286, described below, the method continues at step 286 and otherwise, the method continues at step 282. In one embodiment, step 282 includes waiting for a period of time to elapse before identifying the date and time and location. At step 286, the date and time, location or both are retrieved in a manner similar to that of step 282, and the date and time, location or both are stored. The search term or terms received in step 280 are provided 288 with an indication to use the current location as the target location in a search, to the method of step 2A, for example at step 214 and the method continues at step 282. Different sets of search terms can be provided as separate searches one at a time, or the different sets can be provided as a single search with an “or” operator added between each set of terms. Thus, the method of FIGS. 2A and 2B can operate simultaneously, as separate, independently running processes, with FIG. 2A initiated by FIG. 2B or by a user. As the user moves about in a car or walking or otherwise, the display will update with search results that may not have appeared before, due to the user's changed location, time elapsing, or both, without the user providing any additional user input. In one embodiment, no user input of any kind is required, as a default set of one or more search terms may be used without any user input until the user changes the search term used for the automatic search. Currie ’040 at 16:3–39 As described above, when communications interface 340 receives a search results record from server 186,

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	communications interface 340 provides the search results record to sponsor tracker 336 as well as to device search manager 326. When sponsor tracker 336 receives the search results record, sponsor tracker 336 in one embodiment discards any previously stored information and unsets any previously set timers. Sponsor tracker 336 determines whether any charge location areas are included in the results. If so, sponsor tracker 336 stores in user storage 314 the description of each charge location area, the corresponding sponsor identifier included in the results, and the date and time. Sponsor tracker 336 also sets a timer for a predetermined amount of time, for example, five minutes. When the timer expires, sponsor tracker 336 signals location identifier 320 and resets the timer for another five minutes. When location identifier 320 receives a signal from sponsor tracker 336, location identifier 320 determines the latitude and longitude coordinates of the current location and provides the coordinates to sponsor tracker 336. Sponsor tracker 336 compares the coordinates received from location identifier 320 to the stored charge location area or areas. If sponsor tracker 336 determines that the current location lies within a charge location area, sponsor tracker 336 provides the sponsor identifier corresponding to that charge location area to server 186 via communication interface 340. In one embodiment, sponsor tracker 336 also retrieves the device identifier from user storage 314, and sponsor tracker 336 provides this device identifier along with any sponsor identifier provided to server 186. In one embodiment, sponsor tracker 336 continues to reset the timer; therefore, sponsor tracker 336 continues to periodically signal location identifier 320 and to compare the current coordinates with the stored charge location areas. If the current time is more than a threshold amount of time, for example three or eight hours, after the time stored in an entry containing such charge location areas, sponsor tracker 336 deletes the entry in user storage 314. Fan ’922 at 3:5–40 The mobile unit of the present invention allows a user to report its position and to obtain travel-related information over a data network. Travel-related information includes information such as directions to a destination (e.g., a gas station, a hotel, or a restaurant), or traffic conditions in the immediate vicinities of concern. For example, using a GPS receiver, mobile unit 1 receives a positioning signal that contains code sequences from GPS satellite constellation 8 and converts the code sequences into pseudo-range information. When the operator of the mobile unit wishes to request travel-related information, a query is sent in an outbound data package, which includes the operator's query, the pseudo-ranges and a time-stamp indicating the time the pseudo-ranges were obtained. (In this detailed description, an outbound data package refers to a data package transmitted from a mobile unit.) A history showing the most recent positions of mobile unit 1 may also be included in the outbound data package. In this embodiment, data processing station 18 keeps track of the time since the last update. The outbound data package is then transmitted by mobile unit 1's transmitter over wireless link 23 to a service connection 10 on data network 27, which relays the outbound data package to data processing station 18. Alternatively, instead of sending pseudo-ranges as described above, mobile unit 1 obtains a “measured” position by applying a

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	triangulation technique on the pseudo-ranges. This measured position of mobile unit 1 is then included in an outbound data package. The outbound data package also includes a position update request or query, together with the pseudo-ranges or the measured position. Mobile unit 1 reports its position either automatically, according to a predetermined schedule, or upon a command manually entered by an operator into the mobile unit. Wireless communication between mobile unit 1 and data network 27 can be accomplished, for example, using a cellular digital packet data (CDPD) modem or via satellite. Noble '559 at 16:6–18:3 In a preferred embodiment of the present invention, the promotional information is arranged in terms of the geographical location(s) of the merchants who offer the goods and services to which the promotional information relates. At step 481, the user is permitted to specify a web page listing promotional information that is limited to a particular geographical area of the offering merchants, as the home or log-in web page from which to start the promotional information delivery service. Figure 5a shows a block diagram of the relevant portions of the mobile unit 501 and the server 507. The mobile unit 501 may include a memory 501. Memory 502 stores the mobile unit software component (MUSW) 504, and a list of triggering events 503. In this example, the MUSW 504 updates the location of the mobile unit 501 and sends the updated location of the mobile unit to the server 508 via the signal path 505. The MUSW 504 according to this embodiment also determines if any of the triggering events have occurred, and, if so, sends a trigger signal to the server upon an occurrence of a triggering event via the signal path 505. In response to the trigger signal, the server 507, examines the trigger event type and selects the relevant promotional information based on the user profile 508. Figure 5b shows an alternative embodiment of the mobile unit 501a and the server 507a. Figure 5b shows the triggering event being stored at the server 407a rather at the mobile unit 501a. The mobile unit 501a sends an update of the location of the mobile unit 501a to the server 507a via the signal path 505a, which may be across the various networks and gateways as previously described. The server 507a monitors for an occurrence of any of the triggering events 503a, and upon such occurrence 503a, initiates a "push" of promotional information selected based on the user profile 508a. As used herein, a "push" of promotional information means the transmittal of promotional information without a specific request for such promotional information. This embodiment is preferable since the limited amount of the memory space of the mobile unit is not wasted for storing the triggering events. The MUSW 504a may be smaller in size than the MUSW 504 since it does not require the triggering event monitoring portion of the code. Figure 6 shows a flow diagram of the preferred embodiment of the mobile unit software component, MUSW 504a. The MUSW 504a detects the mobile unit being turned on in step 601. Then, in step 602, it initializes the current location of the mobile unit, and the mobile unit identification, e.g., the mobile identification number (MIN) or the like, and sets the timer (e.g., the timer 318) to expire after a

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	predetermined time duration. This time duration can be specified by the user as one of the options through the select/change option menu previously described. In steps 603 and 604, the MUSW 504a re-determines the current mobile unit location after the elapse of the specified time duration, and sends the location update signal to the server 507a via the signal path 505a. The location update signal can be any parameter from which the geographical location of the mobile unit can be obtained. In a preferred embodiment of the present invention, the location update signal comprises the identification of the cell such as the cell number in the personal communications service (PCS) network, in which the mobile unit is currently located. The location update signal may alternatively be the identity of the base station (BS) nearest to the mobile unit (MU). Noble '559 at 19:12–19 Figure 7a shows a flow diagram of an exemplary embodiment of a portion of the server involved in carrying out communication sessions with the mobile unit. In this embodiment the server periodically receives the location update from the mobile unit in step 701, and tracks the location of the mobile unit until it is determined, in step 702, that a triggering event has occurred. The server determines whether the triggering event is a calendar triggering event or a location/favorite triggering event in steps 703 and 704, respectively, and performs the steps corresponding to the determined triggering event, as explained in more detail below. Steele '084 at [0107] If the vehicle 184 moves out of the geographic area used in the original configuration and so loses signal from its local stations, several corrective possibilities may happen. The user may manually request from the multimedia device 20 a recalibration of local audio stations. The location of the vehicle 184 from the GPS receiver 110 is sent to the gateway 30 and a new set of local stations are transferred back to the device 20 from the gateway broadcaster database 194. Another possibility is that if the playing station experiences a set amount of drift, that event will automatically trigger a request for a local station recalibration. It could also request from the broadcaster database 194 at the gateway 30 a list of any other receivable stations that are currently broadcasting the same programming as the fading station. Steele '084 at [0111]–[0112] Referring first to FIG. 6, a flow chart of the update information flow of the location based advertising method of the invention is provided, where FIG. 6(A) is a first half of the flow chart, and FIG. 6(B) is a second half of the flow chart. What triggers this diagram is an update received from the user. An example of such a request would include a message received by the system 10, where the message was transmitted from the multimedia device 20. This message could be sent by the system 10, or sent automatically by the

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	device 20 or manually by the user interacting with device 20 or some other device communicating with system 10. In connection with FIG. 6, it doesn't matter how the system 10 received the message; FIG. 6 illustrates the processing of the message—the mechanics of how the message was caused to be generated, is addressed in greater detail below. The first step 500 shown in FIG. 6(A) performed by the method is to collect information relative to the user. This information can come from the message that was received from the user. For example, the information can include a user identification number associated with a remote location; location-related information, such as position, direction and speed of the user; time (this data can come internally from the system 11); and potentially other external information that the system 11 may request from the user. Examples of this additional information is described in greater detail below. System refers to the electronic system which can create or forward messages to users. In some embodiments this could be a computer, an interconnected system of computers and trans actors, or just software residing on an existing computer system. System is also used to refer to the provider of this service. Steele '084 at [0143] The location information can also be dynamic. It can change over time. This allows the vendors to pick different criteria, and different ads. The location information is associated with a particular user, so it is not a static location like zip code or area code. Rather, it is the location of this particular user at this time and over time. As mentioned above, the ad is delivered to the user when the system 11 decides to deliver it and not necessarily when the user is interested in seeing the ad.
1[d] providing access to said quality or service information stored in said memory or database to one or more end users or one or more end user communication devices or one or more carriers or third parties that provide services to said one or more end users or one or more end user communication devices or one or more carriers, or to said one or more wireless communications networks; and	It was well known and routine at the time of the alleged invention for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "providing access to said quality or service information stored in said memory or database to one or more end users or one or more end user communication devices or one or more carriers or third parties that provide services to said one or more end users or one or more end user communication devices or one or more carriers, or to said one or more wireless communications networks." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify provisioning of an existing method of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "providing access to said quality or service information stored in said memory or database to one or more end users or one or more end user communication devices or one or more carriers or third parties that provide services to said one or more end users or one or more end user communication devices or one or

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	more carriers, or to said one or more wireless communications networks" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "providing access to said quality or service information stored in said memory or database to one or more end users or one or more end user communication devices or one or more carriers or third parties that provide services to said one or more end users or one or more end user communication devices or one or more carriers, or to said one or more wireless communications networks" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 ("Daley '800") 700-A02 U.S. Pat. Pub. No. 2008/0186882 ("Scherzer '882") 700-A03 U.S. Pat. Pub. No. 2008/0305747 ("Aaron '747") 700-A04 U.S. Pat. Pub. No. 2003/0216953 ("Dawson '953") 700-A05 U.S. Pat. Pub. No. 2007/0178911 ("Baumeister '911") 700-A06 U.S. Pat. Pub. No. 2007/0111748 ("Risbood '748") 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 ("Roundtree '237") 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server

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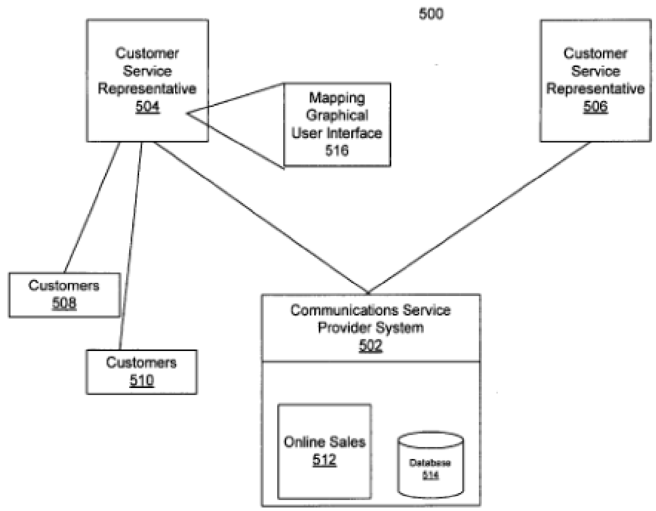
	Howarter ’897 at Figure 5 *FIG. 5*  Howarter ’897 at [0005] To provide a system and method for identifying potential customers for communications services. In one embodiment a latitude and longitude associated with an address of a potential customer may be identified. The availability of the communications services may be indicated based on the latitude and longitude. An availability map and services offers may be displayed to the potential customer. A communication service is added for the potential customer. Howarter ’897 at [0006]–[0007] Another embodiment includes a server for determining availability of communications services. The server may include a memory with a set of instructions. The server may also include a processing unit for executing the set of instructions to identify a latitude and longitude associated with an address of a potential customer of a communication service provider, indicate availability of the communication services based on the latitude and longitude, display an availability map to the potential customer, and add a communication service for the potential customer. Yet another embodiment includes a method for expanding communications resources. Multiple potential customers that are unable to receive a communication service may be identified. Latitudes and longitudes

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	associated with the address of the multiple potential customers are identified. A location for a network device is determined that may provide the communication service to a portion of the multiple potential customers based on the latitudes and longitudes. The network device is installed to provide the communication service to the portion of the multiple potential customers. The communications services are marketed to the multiple potential customers. Howarter ’897 at [0022] In one embodiment, the system map 100 may be displayed to a customer service representative (CSR) that works for the communications service provider using a data processing system, such as a desktop computer. The system map 100 may be used by the CSR to determine which services 118, 120 and 122 are available to the customer based on the customer's address and corresponding latitude and longitude coordinates. Howarter ’897 at [0027] Map 300 includes service locations 304 and 306, customers 308, 310, 312, 314, 316, and 318, network device 320, boundaries 322 and 323, potential customers 324 and 326, proposed line 328, and proposed devices 330 and 332. The map 300 may be displayed to a customer/potential customer or customer service representative by a server, through a program, or on the service provider's website in order to answer service availability questions. The map 300 may be displayed using a graphical user interface or as part of a program application or website. In one example, customers 308, 310, 312, 314, 316, and 318 may initiate contact with a customer service representative during a given day for adding, deleting, or modifying a communications service. The customers 308, 310, 312, 314, 316, and 318 may be current customers or potential customers Howarter ’897 at [0035] The embodiments of the present invention may also be used for marketing and expansion of the network infrastructure. Potential customers 324 and 326 may have previously called or contacted the communication service provider to request one or more services. The historical information stored by the communication service provider may be used to strategically expand resources to cover as many potential customers as possible. For example, communications service provider may add network device 332 to cover some of potential customers 324. The communication service provider may use the location of potential customers 324 to determine where to add a wireless WiFi broadcast tower that covers as many potential customers 324 as possible within the boundary 323.

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	Howarter ’897 at [0036] The communication service provider system may automatically suggest network expansions based on potential customers or other rules and parameters established by the communication service provider. For example, the potential customers 324 may be in a rural area and may be extremely willing to sign up for a high-speed Internet service based on the unavailability of quality Internet services in the area. The communication service provider may be unable to cover all potential customers 324, but may expand to include as many potential customers 324 as possible based on factors, such as distance limitations, competition, and perceived interest of the potential customers 324 in an expanded service. Howarter ’897 at [0037] In one embodiment, a certain number of new customers or customer inquiries regarding a potential service, which may or may not currently be available, may be thresholded and trigger the communication provider system to automatically trigger a request for a change, or an actual order for a change, in the network. Such change may include, for example, provisioning a new resource like a new switch, wireless tower, WIFi hotspot, fiber line, or any other network device, media such as communication lines, or other network resource. Likewise, such change may include changes to the network such as adjustments in power for cell towers or hotspots, directional or positional changes to network resources, turning on previously dormant fiber, or any other suitable change to improve or otherwise alter network performance. Howarter ’897 at [0041] In one embodiment, the map 300 may be revised to expand the service locations 304 and 306 based on the proposed network devices 330 and 332. The map 300 with revisions or proposed modifications may be displayed in real-time to a customer, CSR, or executive of the communication service provider in order to make decisions regarding network expansions. For example, the communications service provider may determine that once a predetermined number of potential customers 324 and 326 is reached, fixed plans for adding proposed network devices 330 and 332 may be implemented. Before the changes are made, the map 300 may be modified to show proposed expansion based on the new network resources and/or a timeline for installation. Howarter ’897 at [0042] In one embodiment, the proposed placement of a new length of fiber, new cell tower, new hot spot, power adjustment to a cell tower, or other network addition or adjustment may be automatically reflected on map 300 to show the new addition or adjustment and/or the geographic footprint impacted by the change. In

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	another embodiment, the customers falling within the impacted geographic footprint may be displayed, reported, stored, or determined. In one embodiment, customers who have generated inquiries for a requested service may be highlighted on the map 300 when an adjustment or addition would render the requested service available to the customer. In such a manner, an operator may immediately see the number of customer inquiries that would be addressed by a network adjustment or addition. In another embodiment, once a change is approved, an email, mailing or other automatic or manual notification may be initiated to the customers who have inquired letting them know that the service is available or will be available by a certain date. Howarter ’897 at [0043] A map 300 may be used to interactively determine how and when network resources should be added to best fulfill the goals and expansion of the communication service provider. The map 300 may be kept private or may be displayed publicly as a marketing tool and information tool. Howarter ’897 at [0044] FIG. 4 is an exemplary city territory map in accordance with an illustrative embodiment of the present invention. Map 400 is another embodiment of a geographic tool for illustrating service availability of a communications service provider similar to map 300 of FIG. 3. The map 400 may display roads, geographic elements, such as mountains, lakes, and rivers, neighborhoods, and other features that make the map more easily understood. The map 400 is a zoomed in or narrow view of a coverage area 402. The map 400 may be displayed to a potential customer or CSR to better illustrate communication service availability. In particular, the map 400 may be used to illustrate a network device 403, a customer A 404, a customer B 406, a straight line distance 408, a network distance 410, and a boundary 412. In another embodiment, the map 400 may also show proposed network resources and the effect that the proposed network resources may have on the availability of services for each area within the map. Howarter ’897 at [0055] The customer service representatives 504 and 506 represent the persons and/or devices providing user information to customers 508 and 510. The customer service representative 504 uses the mapping graphical user interface 516 to view the customer's geographic location by latitude and longitude, and also to determine the availability of services based on the physical location, available network devices, and other factors that may not be automatically evaluated. The mapping graphical user interface 516 may be part of the communications service provider system 502 or may be a separately executed application that allows the customer service representative 504 to determine the availability of services based on the

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	physical location of the customer, service footprints the network distance, the straight line distance, or the distance to the nearest node or access point, and other routing data. The customers 508 and 510 may communicate with the customer service representative 504 through a network connection, such as an Internet website, a chat tool, a phone line, or other communications method. In one example, the customer 508 may call the customer service representative 504 using a cellular telephone. In another example, the customer 510 may go to the webpage of the communications service provider and request a chat session with the customer service representative 504 in order to initiate communication. Howarter ’897 at [0056]–[0057] FIG. 6A is a mapping graphical user interface 600 in accordance with an illustrative embodiment of the present invention. FIGS. 6A and 6B are a particular implementation of the mapping graphical user interface 516 of FIG. 5. The mapping graphical user interface 600 may be displayed to a customer service representative on a computing device, such as a desktop computer, personal digital assistance, wireless device, or other data processing system. The mapping graphical user interface 600 may be part of a program application accessible to the customer service representative or provided from a communications service provider system. The mapping graphical user interface 600 may include any number of fields, icons, check boxes, data, or other means of displaying information and receiving user input from the customer service representative. The mapping graphical user interface 600 may include a name 602, and an address 604, for allowing the customer's information to be input into the mapping graphical user interface 600. The name 602 and address 604 may be associated with a residence or business address of the customer. For example, the name 602 and address 604 may correspond to Customer A 108 of FIG. 1. In one embodiment, the mapping graphical user interface 600 of FIG. 6A allows a customer service representative to verify availability 606, add service 608, and change or remove service 610. The verify availability 606 may allow the customer service representative to determine whether the customer has access to services such as Customer A 108 of FIG. 1. Howarter ’897 at [0058] In other embodiments, the verify availability 606 may be used to determine the customer does not have access to services such as Customer B 110 of FIG. 1. The address 604 may be converted into a latitude and longitude address that is used to determine network and straight-line distances to the nearest network device or node. In the event that the customer is available to receive the services, the customer service representative may add services 608. Alternatively, the customer service representative may change or remove services 610 in accordance with the customer's needs. In the event the customer may not receive information the name 602 and address 604 may be stored in a database, such as database 514 of FIG. 5.

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	This information may be used by the communications service provider for marketing, network expansion, or strategic planning. Howarter '897 at [0060] The registered services 614 may show an additional indicator that informs the customer service representative that the customer currently subscribes to the one or more services, such as wireless phone and data 618, satellite television 622, broadband internet, 624 and IP television 628. In addition, the mapping graphical user interface 600 may indicate the services that are not currently available, such as WiMAX 620, and cable television 626. As previously mentioned, the mapping graphical user interface 600 may be used by a customer service representative to individualize the services provided to the customer. In another embodiment, the mapping graphical user interface 600 may be displayed directly to the customer for allowing the customer to easily upgrade, modify or delete services as needed. Howarter '897 at [0063] Next, the communications service provider system indicates service footprint map, availability of services, and availability map (step 704). The different data displayed in step 704 may be used to determine the services available based on location and the footprint of the available services. The footprint map an availability map may be overlaid with the location of the customer's address to allow the customer and/or CSR to make informed decisions. The service footprint map may also include a proposed service map that may allow a user to specify whether he or she would be interested if the wireless service provider expanded to the latitude and longitude of the customer. As a result, the customer's contact information may be added to a call list or direct marketing campaign based on subsequent communications network expansions. Howarter '897 at [0068] Next, the communications service provider system retrieves and sends available services information to the customer service representative (step 802). The available services information may specify the services available to the customer based on the geographic location of the customer's residence or business location. In another embodiment, the available services information may be displayed directly to the customer through a graphical user interface. Howarter '897 at [0071]–[0072] The process begins by receiving an address on the service provider web interface (step 900). The address

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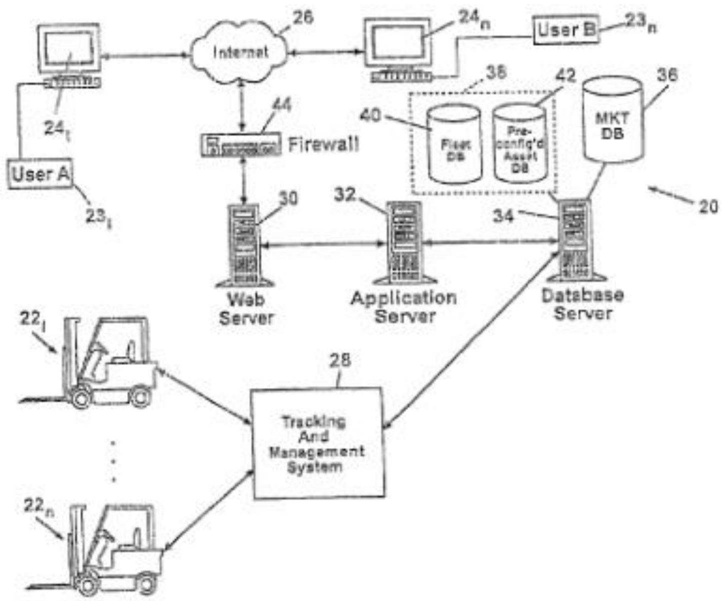
	may be entered by a user using any number of standard user input devices, such as a keyboard, mouse, keypad, touch screen, or other input/output device. Next, the customer service representative identifies the latitude and longitude (step 902). The latitude and longitude may be determined based on the address previously entered. The customer service representative displays the map location of the customer in relation to the service provider footprint (step 904). The location of the customer may be the location that relates to the address specified in step 900. For example, the address may be linked to the residence or business of the customer. Next, the customer service representative determines whether the customer is within the service provider territory (step 906). The determination may be made based on the service provider footprint displayed in step 904. If the customer is within the service provider territory, the customer service representative displays the map and available services to the customer (step 908). Next, the customer service representative determines whether to add a service (step 910). One or more services may be added in step 910, based on user input. For example, the user may verbally provide a confirmation to add a high speed Internet connection. If the customer service representative determines to add a service in step 910, the customer service representative adds the service and submits an order (step 912). Howarter ’897 at [0073] Next, the customer service representative provisions the service (step 914) with the process terminating thereafter. If the customer service representative determines not to add service, the service is not added (step 916). If the customer service representative determines the customer is not within the service provider territory in step 906, the customer service representative displays the map to the customer and a message indicating that they are outside of the service provider footprint (step 918). The information of step 918 may be displayed to the customer through a graphical user interface, or a chat tool, or verbally communicated to the customer over the telephone.

Claims	
	Bly ’944 at Figure 1  Bly ’944 at [0012] The configuration unit is responsive to input data provided by a first user of the system for generating a profile of an asset. The asset profile comprises asset specification data and a bid definition. In a preferred embodiment the bid definition outlines parameters associated with a rental transaction of the asset. The market database is configured to store a plurality of asset profiles. The market search module is configured to search the market database, based on search parameters specified by a second user, and generate an identification of assets. The bid module is configured to allow the second user to select one of the assets on which to bid. The bid module is also adapted to provide rental options to the second user, based on the bid definition for the asset. Finally, the communications interface is configured for facilitating the electronic remote access by the second user of the system. Bly ’944 at [0013] Through the foregoing, a dealer or the like is provided access to a “virtual” rental fleet of assets, some of which are not owned or controlled by the dealer. The system allows a user, such as a dealer, to satisfy the requirements of the dealer's end-user customer without having to maintain infrequently used items in the dealer's own rental fleet (which experience low utilization rates and thus return on investment.)

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	Additionally, the electronic system also allows a user, such as a dealer, who has its own under-utilized assets to consign such assets for rental by third parties, thereby allowing an increased, effective utilization rate. Bly ’944 at [0015] In a preferred embodiment, the first database is configured to store information associated with a plurality of assets, such as pieces of industrial equipment. The market search module is configured to search the first database, based on search parameters specified by the user in anticipation of at least one of a purchase, rental and lease transaction. The market search module is also adapted to generate an identification of assets in accordance with the specified search parameters. At least one of the identified assets has a description that includes maintenance history data of the asset. The communications interface is configured to facilitate electronic remote access of the system by the user, which, in one embodiment, occurs over the Internet. Bly ’944 at [0017] In a refinement of the proposed asset disposition, a subsystem is disclosed, which compares a subset of all assets within the inventive system with a series of pre-defined conditions to determine if an action needs to be taken with respect to asset disposition. If a pre-defined condition is met, the system provides a ranked hierarchy of options based on the pre-defined condition that has been met. Associated with each option is the cost of invoking it, and the reasons why it is recommended for consideration. The hierarchy of options and the option determination assumptions are optionally reviewed and then presented to the asset user for consideration. Bly ’944 at [0040] Electronic system 20 overcomes a problem identified in the Background, namely, the inability of prior systems to significantly facilitate business transactions that could increase utilization of infrequently rented assets in a user's rental fleet. Electronic system 20 includes functionality that allows users, in-effect, to consign assets on an electronic market in a manner that makes detailed information, such as maintenance history, readily available. Through the foregoing, users of system 20 having under-utilized equipment may use system 20 to “post” such equipment on the electronic market for rental, lease, or the like by other users of the system. Not only does system 20 enable some users to increase utilization of under-utilized assets, other users, (e.g., dealers) who have an occasional need for some equipment (e.g., to provide to their end-user customers), can rent or lease equipment from the market in contemplation of sub-rental or sub-lease, without having to actually own the equipment. Detailed information, such as

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	maintenance history data, allow users to make informed decisions. Equipment selection efficiency is significantly improved since it is commonplace for users such as dealers to be responsible for the maintenance of equipment they sub-rent. Well-maintained and problem free equipment will likely be in the highest demand, and draw the highest lease and rental rates. Bly ’944 at [0041] Another shortcoming set forth in the Background involves the failure to realize an assets' full value upon disposal at the end of a lease term. Conventional systems are inefficient and inconvenient for making desired information available to new owners, lessees, and renters prior to their making decisions concerning such transactions. In accordance with the present invention, electronic system 20 is configured for facilitating transactions by creating an electronic market. In particular, system 20 is configured to allow remotely located users to electronically search the market based on search parameters they specify, and obtain a detailed description of the assets, including the maintenance history data. System 20 also includes a bidding mechanism configured to allow the user to bid on the assets. The contemplated transactions can be closed electronically. Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to automatically update individual records associated with each of the assets with information received, including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled “APPARATUS AND METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS”, hereby incorporated by reference in its entirety.

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	Bly ’944 at [0056] Login 46 provides authentication functions, principally through a user ID/password approach. In one embodiment, electronic system 20 includes several classes of users: a guest class, a member class, and a dealer class. A guest is characterized as having no member privileges, but can view assets available in market database 36, as well as other public areas of electronic system 20. A member has an enhanced set of privileges. A member may create an actual fleet, and/or a simulated fleet, may conduct searches of the assets contained in the members existing and/or simulated fleets, may search market database 36 and bid on selected assets, run reports and conduct analyses, as well as place assets in market database 36 for disposal. A dealer has access to the features available to members, but in addition, has access to a set of dealer tools generally unavailable to members, as discussed further below. Finally, electronic system 20 provides for an administrative class of users having heightened, administrative rights and privileges, for example to perform maintenance or reconfigure system 20. Bly ’944 at [0062] The “Home” button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The “MY FLEET” button 84 invokes fleet module 48, taking the user to the user's start page 66. The “FLEET BUILDER” button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The “STORE” button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access questions and answers of interest to the users of system 20. Bly ’944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile 182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment,

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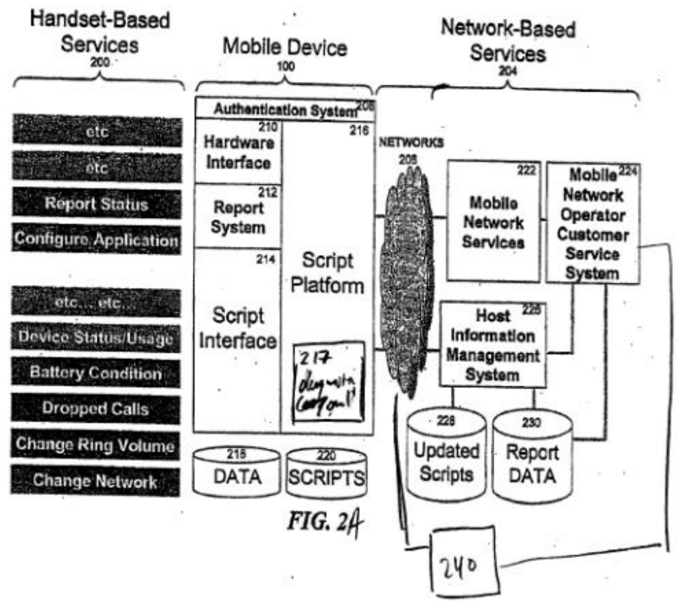
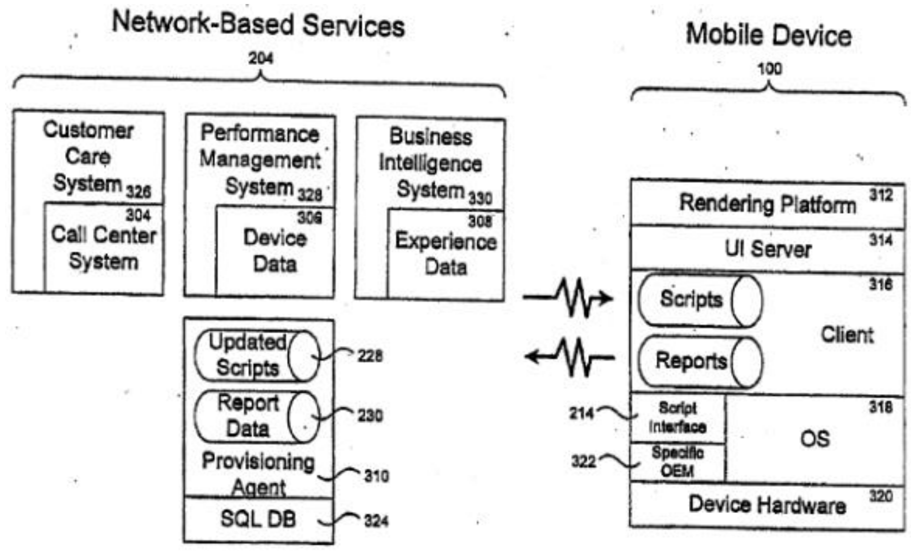
	generating the asset specification data may be performed by executing the "add asset" method described and illustrated in connection with FIG. 5. Bly '944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly '944 at [0096] Classes of users 194 include a dealer class 196, and a member class 198. With respect to dealer class 196, a logical variable 200 is associated therewith, and may take either of the values "Y", indicating that dealers are allowed to bid on the asset, or "N", indicating that the dealers are not allowed to bid on the asset. As illustrated, logical variable 200 is a "Y", indicating that dealers may bid on the asset. Likewise, with respect to member class 198, a logical variable 202 is provided, and may also assume one of the values "Y" or "N". In the illustrated embodiment, users who are in the member class may also bid on the asset. It should be understood that other logical arrangements, such as the use of a logical "0" or logical "1" could also be used, being an equivalent thereof. Bly '944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry of dates, and pricing, where appropriate. Bly '944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition

Claims	
	in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36. Bly ’944 at [0105] In an alternative use of system 20, a non-dealer user of system 20, for example, an equipment leasing company, may purchase infrequently used equipment, for example, and make such equipment available through market database 36. The universe of dealers (with the dealers sub-renting the equipment to end-user customers) and end-users may have a sufficiently high aggregate need for such piece of equipment to justify the purchase and ongoing rental to third parties. In this embodiment, the end-user customer need not be aware of the actual ownership of the equipment, and will look to the dealer for service, maintenance and the like. Bly ’944 at [0107] A particular business type of user who may take particular advantage of electronic system 20 is one engaged in the business of financing the capital requirements of other companies. For example, such financing may involve the lease or rental of forklifts 221, . . . , 22n to the company who actually uses the forklifts in its business, and who pays a lease or rental fee. This type of user often has a large number of leases that may represent literally thousands of individual assets that are or will periodically be coming off of lease. Since this type of user has no direct use for such assets, such assets must be disposed of in an effective manner. The assignee of the present invention has determined that the information acquired during the tracking and management of the asset while the asset was being leased can be leveraged into a value proposition when such asset comes off of lease and must be disposed of. In particular, the assignee of the present invention has determined that keeping maintenance history data associated with assets on lease becomes a value-added feature when disposing of the asset in a fashion to be described in detail now. Barkan ’859 at [0354]–[0355] The centers 31 are also responsible for tracking down malfunctions in the cellular network. If a base station would not respond or would not operate correctly, that information is brought to the attention of the center by related parties. The center will disseminate that information, to help user form communication links with reliable channels and base stations only. The new centers may initiate calls to the various base stations, to verify their correct operation. Thus, the new cellular centers correlate and guide the operation of the users in the net, in real time.

Claims	
	Barkan ’859 at [0357]–[0368] The new center 31 coordinates the operation of the new base stations like 41 and 43 as illustrated. The duties of the cellular centers 31 include, among others: a) Network integration and planning b) Implementing a price policy. c) Network operability. d) Manager of phone locator. (In case of incoming calls). Detailed Description: a) The Cellular center 3 knows the current physical location of all add-on base stations, and is aware of the status of each base station (i.e. is available or not available, optionally processing a call etc.). b) The cellular center is possibly responsible for the price policy. It determines and publishes the cost for each operation over the network. The updated information may be transferred over an Internet, or may be available to add-on base stations. The information may be dispersed between units in the network. In each transaction, the parties thereto will check the date of each price list. The more updated price list will be transferred to the other party. Thus, the new price list or policy will gradually expand throughout the network. c) The cellular center is responsible to actively check, once in a while, the availability of base stations and their operability (see if they work properly). d) One of the main tasks of the cellular center is to give the function: when given a “cellular phone number”, it is able to return the IP address of a base station, that has radio contact with it. Alternately, it may return a message that the phone is in the “out of coverage area”.

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>Roundtree ’997 at Figure 2A

</td></tr>
</table>

Claims	
	Roundtree '997 at Figure 3  *FIG. 3* Roundtree '997 at [0023]–[0024] The components within the network-based services 204 allow the mobile device 100 to communicate with and to retrieve data from the network 206. The network-based services 204 may include wired and wireless systems. The mobile network services 222 may consist of one or more systems including billing, CRM (Customer Relationship Management), provisioning, and others. Furthermore, mobile network services 222 are able to return data calls made by mobile devices via standard network protocols (e.g., IP, DTMF (Dual-Tone Multi-Frequency), SMS, USSD, etc.). The mobile network operator customer service system 224 may also consist of one or more systems relating to customer service, including billing, CRM, provisioning, and others. The host information management system 226 controls interactions between the mobile device and the host customer support system. The host information management system 226 can transmit updates to the mobile device. The mobile device typically employs a unique handset ID or serial number, and a mobile phone number. The report data 230 provides storage for report information gathered from the mobile device. The updated scripts 228 consist of scripts that the host customer support system provides to the mobile device. The updated scripts 228 can be managed and versioned as desired by the host information management system

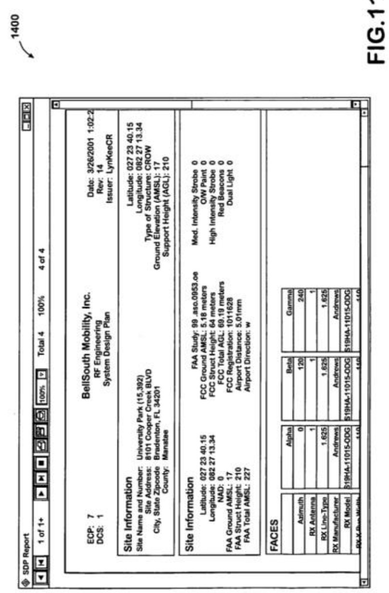
Claims	
	226, can be targeted at specific subscribers or groups of subscribers, and can include requests for reports and customer interview surveys. Roundtree ’997 at [0025]–[0027] The device management component 240 may communicate with the mobile device 100, such as via a diagnostic component within the script platform 216. FIG. 2B illustrates a component architecture for implementing diagnostic management methods as network-based services 204. The device management component 240 includes an actions database 241 that contains one or more actionable scripts, a message component 242 capable of receiving messages from the mobile device 100, translating or identifying data from within the messages, and transmitting messages back to the mobile device 100. The component 240 may also include a customer service component 243 that interacts with other customer service functions provided by the network based services 204. For example, the customer service component 243 may request information from the mobile network operator customer service system 224, or may provide information to system 224. The component 240 may include other additional components or modules 244, such as components that contain user specific or device specific data, components that contain configuration updates and settings, and so on. FIG. 3 illustrates a system architecture for the network-based services 204 and the mobile device 100. The network-based services 204 include a call center system 304, device data 306, subscriber experience data 308, and a provisioning agent 310. The call center system 304 may be part of a customer care system 326, the device data 306 may be part of a performance management system 328, and the subscriber experience data 308 may be part of a business intelligence system 330. The call center system 304 can manage settings remotely and can collect data OTA (over the air) from the mobile device 100 without asking the subscriber for permission. The call center system 304 can also automatically collect device data (e.g., handset ID and mobile phone number) 306 and subscriber experience data (e.g., the nature of the customer service problems) 308 from the mobile device 100. The device data 306 and the subscriber experience data 308 may be integrated into network-based services or used standalone. The provisioning agent 310 interacts with the updated scripts 228 and report data 230. The provisioning agent collects report data 230 associated with the device data 306 and subscriber experience data 308 from the mobile device 100. The provisioning agent also corrects subscriber problems in real-time by transmitting appropriate scripts to the mobile device 100. The transmission of scripts to, and the collection of data from, the mobile device 100 may be hosted within the network or externally. In addition, the updated scripts 228 and the report data 306 may be stored in an SQL (Structured Query Language) database 324. Roundtree ’997 at [0033]–[0035] There are many ways in which the system identifies a problem with the mobile device. For example, in

Claims	
	step 512, a running application identifies a problem with the configuration of the mobile device. The running application may be a guide application providing a tutorial to a user of available services and functions provided by the device or may be a customer care application that acts to diagnose help requests initiated by a user by intercepting calls and/or messages to a customer care center. The running application can automatically identify the configuration of the mobile device without input from a user or customer care agent. A user may also identify a problem with the mobile device, as shown in step 514. For example, when the user attempts to connect to a wireless network and is unsuccessful, the system may present a number of options to be selected by the user that define a possible problem. The system presents, via a graphical user interface or via a audio user interface, one or more choices that describe the problem faced by the user. In this example, the user interface may present options such as "Are you having a problem connecting to the internet?" or "Are you having a problem connecting to a wireless network?" Based on receiving input from the user about an encountered problem, the system can diagnose and/or determine any configuration errors or problems without relying on the user to attempt to solve the problem his or herself. A customer service agent may also identify a problem with the mobile device, as shown in step 516. For example, a user may call a customer service center related to a provider of services for the user when the user encounters a problem. The customer service agent, upon receiving information from the user or from the mobile device (such as during an over the air diagnosis of the mobile device), may then be able to identify a problem with the device.

Claims	

Boehmke ’997 at Figure 11

FIG.11



Boehmke ’997 at 1:54–2:7

> In different embodiments, the invention comprises a system, method and apparatus for maintaining cellular telephone network site information. A distributed database management system may provide a user with several items of real-time information regarding a cellular telephone network site such as: cell name, cell number, location code, address, latitude/longitude, switch number, battery information (e.g., type, manufacturer, model) for all strings, building information (e.g., building and tower type, gate codes, generator information), contact information (e.g., fire, police, landlord etc.), directions to the site, facility circuit identification numbers and log entries for audits of changed data. In one embodiment, the user can be provided with emergency data associated with the telecommunication network. A common database is provided for storing the information from various entities within an organization responsible for maintaining the cellular telephone network site. Once the information is stored in a common database, it can be made available to users associated with the various entities as well as to various other computer software programs residing on the distributed system.

Boehmke ’997 at 11:9–48

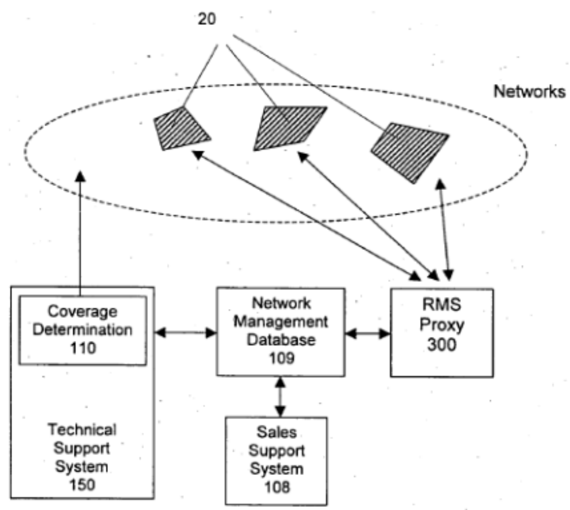
> If the user selects cell numbering, a cell number will be provided. Furthermore, the user can look for a

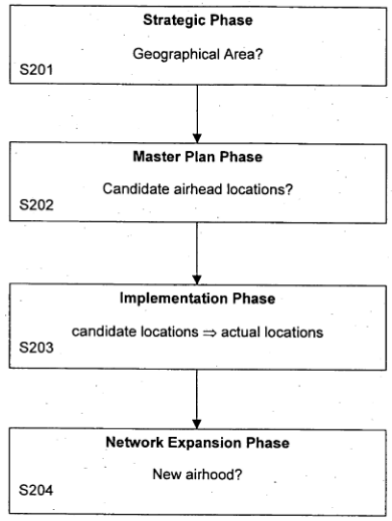
Claims	
	particular site by selecting that option or clicking on an icon displayed on a system 56 output device. Accordingly, the system 56 will provide the user with the name of the cell site, the number of the cell site, the location code of the cell site, the last time the code was modified, the company number, the switch 58 that the cell site is located in, who the responsible field engineer is, address, city, state, zip, latitude, longitude and the facility information associated with that cell site. Those skilled in the art will appreciate that “facilities” are provided to make a connection between the cell site and the switch 58 for various data links, such that the switch 58 can communicate with the cell site 86. Moreover, the system will provide the user with information that can be retrieved from other computer software programs 20, for example a facility management program. Those skilled in the art will appreciate that the above list is not exhaustive and should not be considered as limiting the invention. Those skilled in the art will appreciate that the information can be initially populated in a table 100 from a common table 100 that is shared by all the computer software programs throughout the system 56. For example, if the user selects to review generator or battery information of a particular cell site 86, the system 56 will provide the user with information associated with the generator and the battery. One embodiment of the system 56 provides the user with a string for identifying a 24-volt battery including the battery type, the battery manufacturer, the battery model number, the number of active cells there are and where they are physically located. The same information can be provided in a string for identifying a 48-volt battery. If the user selects to review building information of a particular cell site 86, the system will provide the telephone information, the building type, the company number, the tower type, whether there is a gate at the tower, the gate key, if there is a gate key, and if there is, whether there is a gate code. In addition, the system can provide different types of information about the generator, fuel loads and the like. Boehmke ’997 at 12:44–65 Referring now to FIG. 5, an illustration of a user accessing a system design plan software application 20 via the distributed database management system 56 will be described. The system design plan software application may display much of the information described above for a particular cellular telecommunications network site. The system, method and apparatus provide a user with information regarding the maintenance of cellular telecommunications network sites across a geographic region on a real-time basis. The distributed information system main menu 800 includes a plurality of region fields 805. The user may select one of these region fields 805 to access different functionality for a particular region. For example, as illustrated in FIG. 8, the user has selected the West Florida region field. After selecting one of the region fields 805, a drop down menu 810 is displayed to the user. To access the system design plan software application 20, the user selects drop down menu selection 815 entitled SDP (System Design Plan). After selecting the SDP software application 20 via the drop down menu selection

Claims	
	815, the SDP software application 20 displays a SDP main menu 900 to the user as illustrated in FIG. 6. Boehmke ’997 at 12:66–13:9 Referring now to FIG. 6, the SDP main menu 900 comprises a plurality of tabs 905 that provide access to different information about cellular telecommunications network sites within the selected region field. For example, as illustrated in FIG. 6, the tabs 905 include a cell tab, a face tab, a regulatory tab, a microwave tab and a reports tab. Each of these tabs, when selected, causes different information regarding a cellular telephone network to be displayed to the user. For example, as illustrated in FIG. 9, when the cell tab is selected, location information and other information regarding a particular cellular site is presented to the user. Dawson ’953 at [0023] Sites in the market data 110 undergo two separate evaluations. First, a determination is made at step 112 as to whether a site is “real estate friendly,” that is, whether legal rights have or can be obtained for a site at a reasonable cost, and under reasonable terms and conditions. This determination is based on input 114 from users in a real estate group, who are responsible for carrying out negotiations with the landlord of the site. An exemplary user interface 200 through which a real estate group member may input the information is shown in FIG. 2. The interface 200 includes a user identification field 202. By requiring users to log on to the system and provide a password, the system can track input to the system by user, which facilitates such functions as tracking commissions as discussed in further detail below. Dawson ’953 at [0024] The user interface 200 also includes a site identification field 204, a site address field 206, a field 208 indicating the number of tenants, and a sales volume field 210. Other fields 212 and 214 indicate the closest base station to the site and the distance to the site from that base station, respectively. Notes pertaining to real estate aspects of the site, such as the name of the landlord and/or management company for the site, permit requirements for the site, and/or, if known, the cost of obtaining roof rights, are maintained in field 216. Field 218 allows the real estate group user to indicate the real estate friendliness of the site. Possible choices in some embodiments are “in review,” “accepted” and “reject.” The user presses the save button 220 when the appropriate indication as to real estate friendliness has been made.

Claims	
	Dawson ’953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. Dawson ’953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. As indicated by the user field 405, the home page requires the sales group user to log in, both to protect the confidentiality of the sales data and to allow the system to track actions performed by each user. The home page 400 includes a plurality of links 410 to other information and system resources, as well as a number of information fields 420, 430. The home page 400 also includes a ‘My Buildings’ button that allows the sales group member (which may be a regional sales manager or account executive) to view sites that have been assigned to that member. A ‘My Buildings With No AEs’ button allows a regional sales manager user to view only those sites to which no account executive has yet been assigned. Finally, window 460 allows sites to be selected on the basis of the account executive to which the site is assigned and/or applicable geographical market (e.g., city). Dawson ’953 at [0031] When sites are selected via either of the site buttons 440 or 450 or via the window 460, they are presented to the user in a sites window 500 as shown in FIG. 5. The sites window 500 includes a field 510 that identifies the site identification number, a field 520 that identifies the site name, fields 522, 524, 526 that identify the address of the site, a field 530 that identifies the base station, or hub, through which the site is connected to the wireless service provider's network, a field 540 that identifies the number of tenants at the site, a field 550 that identifies any current sales promotions directed toward a site, and fields 560 and 570 that identify the account executive and regional sales manager to which the site has been assigned. Another field 580 indicates the site status: On Net (meaning a wireless infrastructure has been installed and the site is in communication with the service provider's network), Leased (meaning that a lease for the site has been signed and the process of installing a wireless infrastructure is underway); Target (indicating that the site has been approved by engineering and is real estate friendly), Coverage Optimization, and Reject. A Customers field 590 serves as a link to a list of current customers at the site. Some of the fields in the window 500 also include links to further information. For example, clicking on the number of tenants field 540 will produce a tenants window 600 that provides information for all tenants at the associated site. This information may be used for, among other things, producing a mailing list for a site-specific sales promotion.

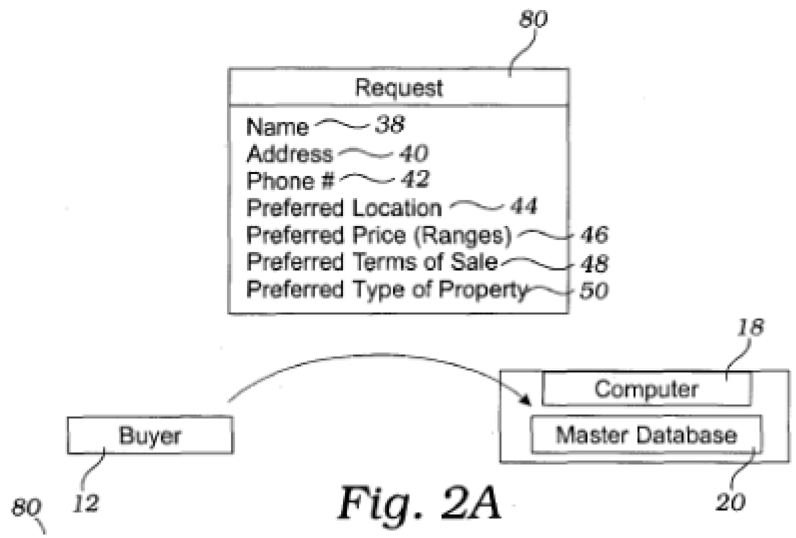
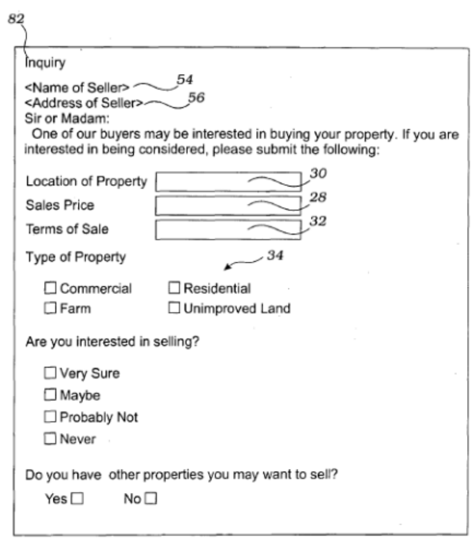
Claims	
	Dawson ’953 at [0032] FIG. 7 is a screen shot of a site information web page 700 illustrating another site-centric information display. The web page 700 includes a site basics tab 710, a customers tab 720, a leases tab 730, a dB Planner tab 740 and a files tab 750. Selecting the site basics tab 710 calls up the window 712, which displays various information relative to a site, such as the site address, real estate information related to the site, and an identification of the nearest and next-nearest base station (hub) to the site. Selecting the customers tab results in the display of a list of customers for the site. Selecting the leases tab will provide images of lease documents pertaining to legal rights for the site. Selecting the dB Planner tab will result in the display of a propagation model image for the site such as the image 300 of FIG. 3. Finally, selecting the Files tab will result in a display of any other miscellaneous files associated with the site. Dawson ’953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates; sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate.

Claims	
	Korpela ’484 at Figure 2  Fig. 2

Claims	
	Korpela '484 at Figure 7  Fig. 7 Korpela '484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Korpela '484 at [0043] Furthermore, a Technical Support System (TSS) 150 is provided for connecting to the network

Claims	
	management database 109 to access coordinate and performance data of the installed and/or planned wireless routers. Using the locations of the routers and some performance data (e.g. transmit power, antenna installation height or the like), a coverage determination functionality or unit 110 of the TSS 150 calculates the combined coverage area of the wireless routers. The calculation can be based on a concept of finding points having a line of sight to at least one of the other wireless routers. This concept may thus be a viewshed concept or any other suitable concept for determining a coverage of a wireless connection. In particular, the dynamical coverage area calculation may be based on a viewshed analysis of a three-dimensional map including building heights and statistical information about the existing network. Korpela '484 at [0045]–[0053] The information retrievable from the network management database 109 may consist for example of all or some of the following parts: a) Line-of-sight to existing network nodes (wireless routers) within a high link speed coverage area; b) line-of-sight to existing network nodes (wireless routers) within a low link speed coverage area; c) line-of-sight to planned network nodes (routers); d) planned coverage areas, i.e. detailed location of wireless routers which are missing for the time being but where network coverage is to be built; e) line-of-sight sensitivity to antenna height (this information can be used to compensate for errors in map material like missing trees), tolerance in antenna location and estimated quality of the link; f) likely antenna radiation directions as deduced from other links in the area (e.g. to compensate for antennas located on one side of the building); g) availability of other technologies to connect the user (e.g. to create a fixed line connection if for some reason the wireless router connection against the calculated predictions cannot be created); h) the capacity of the existing airhoods (i.e. cluster of subscriber routers in a neighbourhood, controlled by an Air Operating System, wherein the connections from the subscriber routers in the airhood to an Internet access point are organized via a single or multiple airheads)). Korpela '484 at [0056] The RMS Proxy 300 constantly or regularly monitors the network and updates the network management database 109 with new nodes and their coordinates. To achieve this, the RMS Proxy or management engine regularly or constantly reads node specific data stored in memories of the wireless routers 10. The node specific data is essential from the planning viewpoint, since it reflects the current network situation. In particular, the node specific data may comprise the name, geographical coordinates and link statistics of the respective wireless router. Thus, the actual cumulative coverage area can be calculated at any moment due to the fact that the network management database 109 is constantly updated based on any

Claims	
	changes derived from the node specific data stored at the individual wireless routers. Consequently, the wireless routers 10 are at all times aware of all possible links to their neighbouring routers. Furthermore, information about poor links having a quality not sufficient to be utilized as links may be stored as well. Thus, even if only a view links are actually used for data processing, the wireless routers 10 know the characteristics of several possible links. This information (e.g. link statistics) is then stored by the RMS Proxy 300 in the network management database 109. Aufricht ’781 at [0109] fleet management module 154 performs functions associated with fleets of clients 108, which are groups of clients 108. For example, fleet management module 154 may perform global or mass operations on groups (fleets) of clients 108, such as loading or updating an application on groups (fleets) of clients 108. Another example of a mass operation is retrieval of information on clients 108 in a fleet, such as the free memory in clients 108 in a fleet (this would help an organization determine if its clients 108 need a memory upgrade). These and additional functions performed by the fleet management module 154 are described in co-pending application entitled “System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices,” Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht ’781 at [0110] The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API.

Claims	
	Geranio ’871 at Figure 2A  Geranio ’871 at Figure 3B  *Fig. 3B*

Claims	
	Geranio ’871 at Figure 4

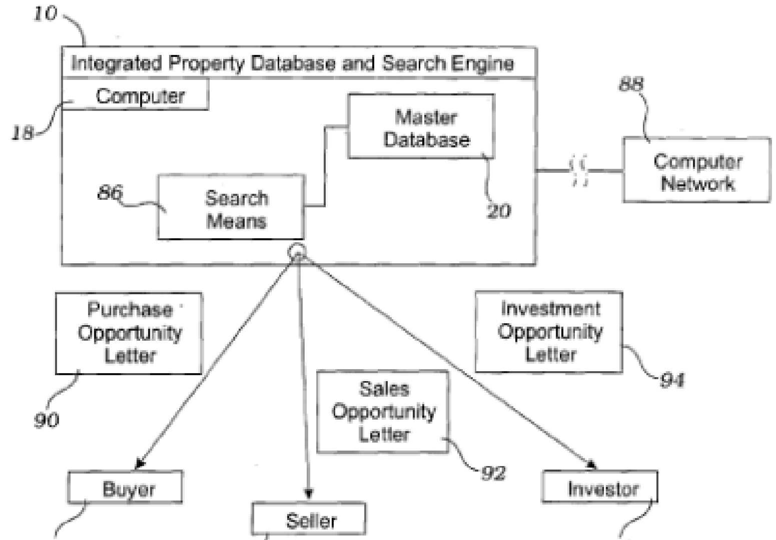


Fig. 4

Geranio ’871 at Figure 5

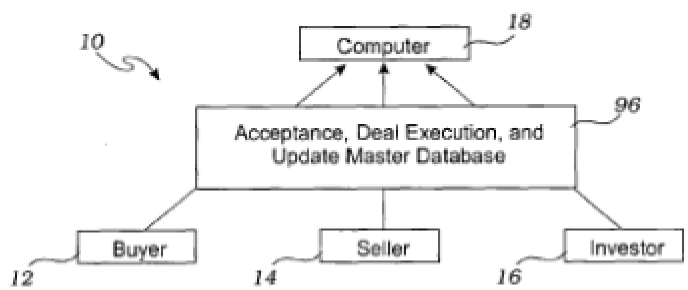


Fig. 5

Geranio ’871 at [0009]

> Tornetta, U.S. Pat. No. 5,032,989, teaches a method for locating available real estate properties for sale, lease or rental using a database of available properties at a central location and remote stations which use a graphic interface to select desired regions on a map of the areas of interest. The user begins with a region where they are interested in acquiring property and select an inner area within this region by using

Claims	
	a pointing device such as a mouse to designate boundaries on a map displayed on screen. This is then zoomed in on and a second area is selected within the zoomed region. The second area is then cross-referenced with the database of available properties whose approximate locations are then pictorially displayed on screen. Information about the properties can then be obtained in textual form. Geranio ’871 at [0013] The present invention provides an integrated property database and search engine for matching properties with buyers. The integrated property database and search engine is executed on a computer having a master database and a search means. The master database includes a property for sale database and a buyer's database. The property for sale database has a plurality of property definition fields that include a property identification, a property location, and a property price. The buyers database has a plurality of buyers definition fields that include a buyer's identification, a location of interest, and an offer price. The integrated property database and search engine further includes a means for generating and transmitting a plurality of requests to the buyers for ascertaining information to be contained in the buyers database; a means for generating and transmitting a plurality of inquiries to the properties for ascertaining information to be contained in the property for sale database; a means for incorporating information from the plurality of requests into the buyers database, and for incorporating information from the plurality of inquiries into the property for sale database; and a search means for identifying properties in the property for sale database that have a property location within the location of interest for a buyer, and have a property price that is equal to or lower than the offer price. Geranio ’871 at [0032]–[0033] The sellers database 52 may include a name 54, address 56, phone number 58, and any other contact information or other information that may be of use. The sellers database 52 also includes a list of property available 60 that the seller 14 is interested in selling, with an appropriate link to the property for sale database 22. The investor database 62 may include a name 64, address 66, phone number 68, preferred location 70, preferred price range 72, preferred type(s) of property 74, and other information of interest. Sharma ’925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user

Claims	
	can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76. Sharma '925 at [0033] FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well. Stenton '260 at [0018] In this embodiment of the present invention, the wireless Internet service provider 11 may own, or control access to, or be able to authorise access by third parties to the wireless LANs 3 meeting the wireless Internet service provider's quality of service and security criteria. The wireless LANs 3 therefore make up a matrix of wireless LANs 3 offering considerable coverage. The controlling function of the wireless Internet service provider allows mobile communication devices 7 equipped with wireless LAN cards or chip sets 12 to communicate with wireless LANs 3 and via the private data network 9 provided by the

Claims	
	wireless LAN 3 to communicate with remote servers or other service providers accessible over the Internet or the like. Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11 and transmitted to the cellular telecommunications network 2 operator. Lim ’402 at [0047] Meanwhile, as illustrated in FIG. 3, the remote diagnosis server 20 includes a communication module 23 configured to transmit and receive data to and from the external mobile communication terminal 10 connected through a wired/wireless method, a remote diagnosis database 22 configured to store data on the operation of each mobile communication terminal in order to diagnose a failure, and a server control unit 21 configured to receive operation data of the mobile communication terminal 10 connected through the communication module 23 and determine whether a failure has occurred based on the remote diagnosis database 22. Tolz ’933 at 19:3–5 Additionally, in a more advanced system, multiple shippers may deliver one item and they could coordinate via the system as the system provides information enabling the scheduling of a time and place where they can meet. Tolz ’933 at 20:5–22 In a preferred embodiment, it is understood that a shipper may enter their own criteria for shipping availability. For example, Figure 3(d) illustrates a situation where the Shipper inputs their criteria (step 235) for shipping availability such as maximum radius of availability, times of availability, any special restrictions, the prices for the various times/dates, fixed pricing, and any specials offered. Shippers may input last minute offers, for example, proposing for $50 an offer to ship a purchased item between these two points for the next 4 hours. This is put in the shipper database and can be viewed by anyone at anytime (step 240). This information is available for use immediately by purchasers so that in the case of a canceled delivery, a new purchaser may make use of the idle time of a delivery person/truck.

Claims	
	Shippers may additionally enter their schedule if they choose, and the system can help them bid on jobs that are appropriate based on their schedule and availability (step 250). Shippers may also bid on previously arranged schedules created by the System based on the current needs for shipments throughout the System. (of course, system offers calculation of least distance/cost route) (step 260). Tolz ’933 at 24:17–25:12 Referring back to Figure 5(a), the next step depicts a User, i.e., a person with an advertisement for sale of goods or services, who is interested in putting their item (goods/services) up for sale in, a local sense, via the system web site. Particularly, according to this aspect of the invention, the User, via his/her web browser, may first search the database for a “Sponsor” who may be an organizer, flea market operator, etc., or a person that provides services, such as scanning or consulting services, for assisting the User in placing their ads on the system web site (step 1010). Particularly, via a web page display, the system enables a User to search for a Sponsor who has already registered in the system as an entity providing services and whose latitude/longitude designator has been determined. A determination is made as to whether the User has specified a distance radius they are willing to travel to meet with a Sponsor providing the service (step 1012). If a distance radius was specified, a database search is conducted for Sponsor assumed to be “locally” available, i.e., the User is willing to travel a certain distance as indicated by the location (lat./long. designation) of the Sponsor, to personally meet with the Sponsor and provide all the services necessary for assisting the User in the manner specified (step 1015). Alternately, it is understood that the Sponsor may indicate a distance radius that the Sponsor is willing to travel to meet the User, and the search may be conducted according to the distance a Sponsor is willing to travel to meet with a User (step 1020). Generally, Sponsors may list their services on-line and will eventually even be able to auction their services as well, based on a distance calculation as described herein. The services may include typing or scanning services, e.g., for generating a digital representation, e.g., an image for display, of the User’s product to be auctioned and/or advertised for sale via the System, and/or may include consulting services, e.g., providing the User with informative business ideas for selling, displaying goods/services via the System.
1[e] wherein said wireless access characteristics comprise one or more of identified, perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum	It was well known and routine at the time of the alleged invention for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “wherein said wireless access characteristics comprise one or more of identified, perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air

Claims	
availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service.	interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify provisioning of an existing method of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "wherein said wireless access characteristics comprise one or more of identified, perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "wherein said wireless access characteristics comprise one or more of identified, perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 ("Daley '800") 700-A02 U.S. Pat. Pub. No. 2008/0186882 ("Scherzer '882") 700-A03 U.S. Pat. Pub. No. 2008/0305747 ("Aaron '747") 700-A04 U.S. Pat. Pub. No. 2003/0216953 ("Dawson '953") 700-A05 U.S. Pat. Pub. No. 2007/0178911 ("Baumeister '911") 700-A06 U.S. Pat. Pub. No. 2007/0111748 ("Risbood '748")

Claims	
	700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 (“Roundtree ’237”) 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to automatically update individual records associated with each of the assets with information received, including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled “APPARATUS AND METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS”, hereby incorporated by reference in its entirety. Barkan ’859 at [0271]–[0272] While engaged in a conversation, the mobile station scans beacon frequencies of neighboring cell in case it will have to switch cells. The frequencies to be scanned are provided to the mobile station by the MSC controlling the cell. The MSC is not aware of the actual deployment of the MicroCells and of their beacon frequencies. For this reason, the MCCIU directs the IU1 to replace the frequency list provided by the MSC by a list that includes frequencies of both GSM cells and MicroCells beacon frequencies in the area. This procedure is used whether the cell conducting the call is a GSM cell or a MicroCell. The mobile station uses the replaced list to perform pre-synchronization with the neighboring cells. The mobile station measures signal level and reception quality of cell having beacon frequency that is included in the list. The results are averaged and transmitted to the BTS through the SACCH (Slow Associated Control Channel) channel. The information ends up at the BSC that makes the decision whether to switch cells (handover) and to what target cell the call is to be transferred.

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>
Barkan ’859 at [0428]–[0431]
Let us assume that a mobile phone has a link with a first base station. It may happen, during the conversation, that the phone detects that it receives the first base station at a low power, that is at a power lower than a predefined threshold.
In that case, a program in the phone may run a background search for an alternate base station. If it finds a second base station at a higher received power, then the phone will ask it to continue the call. It will send packets from the new station, and try to inform the old station of the change. Alternately, the new base station can inform the old base station of the transfer of the call to it.
The other party's base station is informed by the phone or by the base station of the new IP address of new base station.
Thus the link is disconnected from the first base station and a new connection is established with the second base station, to improve the quality of the link. It is assumed that a higher received power indicates a link with an improved communication quality.

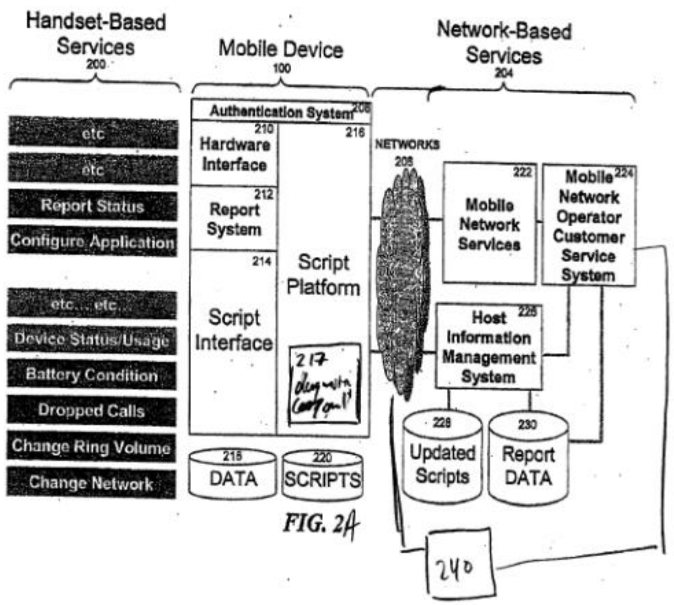
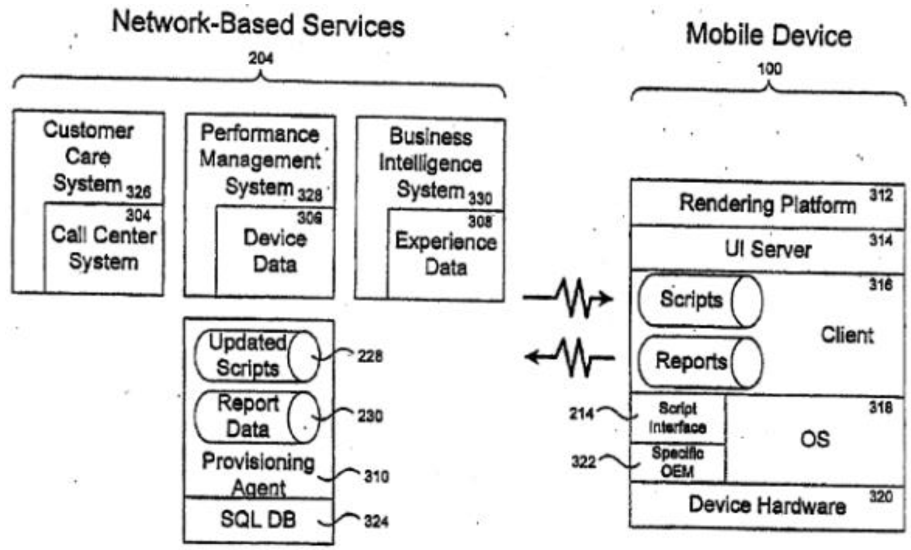
Roundtree ’997 at Figure 2A


FIG. 2A
</td></tr>
</table>

Claims	
	Roundtree ’997 at Figure 3  *FIG. 3* Roundtree ’997 at [0018]–[0022] The handset-based services 200 may include executable software, software configurations, hardware configurations and controls, and handset operating system interfaces. As disclosed herein, executable software may include, without limitation, any software program stored on the mobile device or associated memory device, both permanently and temporarily connected via hardware or wireless connectivity. The mobile device 100 may include an authentication system 208 (e.g., via a SIM), a hardware interface 210, a report system 212, a script interface 214, a script platform 216, data 218, scripts 220, and a device management component 217. The network-based services and/or components 204 may include a network or networks 206, mobile network services 222, a mobile network operator customer service system 224, a host information management system 226, updated scripts 228, report data 230 and device management component 240. The components of the mobile device 100 and the network-based services 204 will be described below. The components within the mobile device 100 allow the device to integrate both handset-based services 200 and network-based services 204. The authentication system 208 can implement SIM (Subscriber Identity Module) card-based or standalone authentication to meet network requirements for desired levels of security. Authenticating a system to meet network requirements may not be required but is often recommended.

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	The hardware interface 210 may retrieve hardware interface elements required for interfacing with network or phone-based customer support services. Examples of hardware interface elements include changing volume, changing frequency, retrieving SIM (Subscriber Identity Module) ID, connection status from the SIM or radio hardware, and others. The report system 212 may collect and forward the data reported by the mobile device to the network 206. The report system 212 can also encrypt the handset identification information to provide increased security. The information can be encoded so that only the host information management system 226 can decipher the handset identification information. The script interface 214 serves as a standard application programming interface for customer support services. More specifically, the script interface 214 provides an interface between scripts 220 and the various hardware-specific and executable, program-specific functions. The script interface 214 allows a single customer service script to be deployed across multiple operating systems and hardware configurations. In addition, the script interface 214 includes a standard API (Application Programming Interface) for both the hardware/OS side and the script interface. The script platform 216 can mix and match calls through the script interface to acquire information, to change or correct settings on the phone, and to perform additional functions as described below. The script platform 216 authenticates, runs, and updates all scripts 220, manages reporting updates and changes, communicates with the host information management system 226, communicates with the GUI (Graphical User Interface), and manages customer surveys and interviews. The host information management system 226 can push a notification to the script platform 216 via USSD (Unstructured Supplementary Services Data), SMS (Short Message Service), IP (Internet Protocol), or any other network connectivity that the mobile device supports. The script platform 216 can run the scripts 220 after authentication, and the scripts 220 can be authenticated to the network 206 or to the phone. Roundtree ’997 at [0023]–[0024] The components within the network-based services 204 allow the mobile device 100 to communicate with and to retrieve data from the network 206. The network-based services 204 may include wired and wireless systems. The mobile network services 222 may consist of one or more systems including billing, CRM (Customer Relationship Management), provisioning, and others. Furthermore, mobile network services 222 are able to return data calls made by mobile devices via standard network protocols (e.g., IP, DTMF (Dual-Tone Multi-Frequency), SMS, USSD, etc.). The mobile network operator customer service system 224 may also consist of one or more systems relating to customer service, including billing, CRM, provisioning, and others. The host information management system 226 controls interactions between the mobile device and the host customer support system. The host information management system 226 can transmit updates to the mobile device. The mobile device typically employs a unique handset ID or serial number, and a mobile phone number. The report data 230 provides storage for report information gathered from the mobile device. The updated

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	scripts 228 consist of scripts that the host customer support system provides to the mobile device. The updated scripts 228 can be managed and versioned as desired by the host information management system 226, can be targeted at specific subscribers or groups of subscribers, and can include requests for reports and customer interview surveys. Roundtree ’997 at [0025]–[0027] The device management component 240 may communicate with the mobile device 100, such as via a diagnostic component within the script platform 216. FIG. 2B illustrates a component architecture for implementing diagnostic management methods as network-based services 204. The device management component 240 includes an actions database 241 that contains one or more actionable scripts, a message component 242 capable of receiving messages from the mobile device 100, translating or identifying data from within the messages, and transmitting messages back to the mobile device 100. The component 240 may also include a customer service component 243 that interacts with other customer service functions provided by the network based services 204. For example, the customer service component 243 may request information from the mobile network operator customer service system 224, or may provide information to system 224. The component 240 may include other additional components or modules 244, such as components that contain user specific or device specific data, components that contain configuration updates and settings, and so on. FIG. 3 illustrates a system architecture for the network-based services 204 and the mobile device 100. The network-based services 204 include a call center system 304, device data 306, subscriber experience data 308, and a provisioning agent 310. The call center system 304 may be part of a customer care system 326, the device data 306 may be part of a performance management system 328, and the subscriber experience data 308 may be part of a business intelligence system 330. The call center system 304 can manage settings remotely and can collect data OTA (over the air) from the mobile device 100 without asking the subscriber for permission. The call center system 304 can also automatically collect device data (e.g., handset ID and mobile phone number) 306 and subscriber experience data (e.g., the nature of the customer service problems) 308 from the mobile device 100. The device data 306 and the subscriber experience data 308 may be integrated into network-based services or used standalone. The provisioning agent 310 interacts with the updated scripts 228 and report data 230. The provisioning agent collects report data 230 associated with the device data 306 and subscriber experience data 308 from the mobile device 100. The provisioning agent also corrects subscriber problems in real-time by transmitting appropriate scripts to the mobile device 100. The transmission of scripts to, and the collection of data from, the mobile device 100 may be hosted within the network or externally. In addition, the updated scripts 228 and the report data 306 may be stored in an SQL (Structured Query Language) database 324.

Claims	
	Roundtree ’997 at [0033]–[0035] There are many ways in which the system identifies a problem with the mobile device. For example, in step 512, a running application identifies a problem with the configuration of the mobile device. The running application may be a guide application providing a tutorial to a user of available services and functions provided by the device or may be a customer care application that acts to diagnose help requests initiated by a user by intercepting calls and/or messages to a customer care center. The running application can automatically identify the configuration of the mobile device without input from a user or customer care agent. A user may also identify a problem with the mobile device, as shown in step 514. For example, when the user attempts to connect to a wireless network and is unsuccessful, the system may present a number of options to be selected by the user that define a possible problem. The system presents, via a graphical user interface or via a audio user interface, one or more choices that describe the problem faced by the user. In this example, the user interface may present options such as “Are you having a problem connecting to the internet?” or “Are you having a problem connecting to a wireless network?” Based on receiving input from the user about an encountered problem, the system can diagnose and/or determine any configuration errors or problems without relying on the user to attempt to solve the problem his or herself. A customer service agent may also identify a problem with the mobile device, as shown in step 516. For example, a user may call a customer service center related to a provider of services for the user when the user encounters a problem. The customer service agent, upon receiving information from the user or from the mobile device (such as during an over the air diagnosis of the mobile device), may then be able to identify a problem with the device. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates; sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate. Korpela ’484 at [0043] Furthermore, a Technical Support System (TSS) 150 is provided for connecting to the network management database 109 to access coordinate and performance data of the installed and/or planned wireless routers. Using the locations of the routers and some performance data (e.g. transmit power,

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	antenna installation height or the like), a coverage determination functionality or unit 110 of the TSS 150 calculates the combined coverage area of the wireless routers. The calculation can be based on a concept of finding points having a line of sight to at least one of the other wireless routers. This concept may thus be a viewshed concept or any other suitable concept for determining a coverage of a wireless connection. In particular, the dynamical coverage area calculation may be based on a viewshed analysis of a three-dimensional map including building heights and statistical information about the existing network. Korpela ’484 at [0045]–[0053] The information retrievable from the network management database 109 may consist for example of all or some of the following parts: a) Line-of-sight to existing network nodes (wireless routers) within a high link speed coverage area; b) line-of-sight to existing network nodes (wireless routers) within a low link speed coverage area; c) line-of-sight to planned network nodes (routers); d) planned coverage areas, i.e. detailed location of wireless routers which are missing for the time being but where network coverage is to be built; e) line-of-sight sensitivity to antenna height (this information can be used to compensate for errors in map material like missing trees), tolerance in antenna location and estimated quality of the link; f) likely antenna radiation directions as deduced from other links in the area (e.g. to compensate for antennas located on one side of the building); g) availability of other technologies to connect the user (e.g. to create a fixed line connection if for some reason the wireless router connection against the calculated predictions cannot be created); h) the capacity of the existing airhoods (i.e. cluster of subscriber routers in a neighbourhood, controlled by an Air Operating System, wherein the connections from the subscriber routers in the airhood to an Internet access point are organized via a single or multiple airheads)). Korpela ’484 at [0056] The RMS Proxy 300 constantly or regularly monitors the network and updates the network management database 109 with new nodes and their coordinates. To achieve this, the RMS Proxy or management engine regularly or constantly reads node specific data stored in memories of the wireless routers 10. The node specific data is essential from the planning viewpoint, since it reflects the current network situation. In particular, the node specific data may comprise the name, geographical coordinates and link statistics of the respective wireless router. Thus, the actual cumulative coverage area can be calculated at any moment due to the fact that the network management database 109 is constantly updated based on any changes derived from the node specific data stored at the individual wireless routers. Consequently, the wireless routers 10 are at all times aware of all possible links to their neighbouring routers. Furthermore,

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	information about poor links having a quality not sufficient to be utilized as links may be stored as well. Thus, even if only a view links are actually used for data processing, the wireless routers 10 know the characteristics of several possible links. This information (e.g. link statistics) is then stored by the RMS Proxy 300 in the network management database 109. Korpela ’484 at [0062]–[0063] The automatically measured information about possible links improves the accuracy of the coverage area. Line-of-sight calculation results based on map data and measured information about all available links each wireless router 10 can detect are combined automatically. The calculation of the cumulated or combined coverage area can then be based on the viewshed concept and the link statistics. In this case, the geographical areas can be further differentiated by the number of neighbouring routers that can be accessed in each area. Korpela ’484 at [0066] Due to the continuously changing network environment, consistency among plans in different phases and ability to use performance data collected from already implemented parts of the network is essential. For expansion planning all the existing network data must be always available. This process is essential as the network coverage is extended by each router in the network and as the routers are customer equipment there are continuous changes in the network. The following network planning process guarantees the network service availability. Korpela ’484 at [0082]–[0083] To reuse the transmission frequencies as efficiently as possible, a frequency band optimization step which may focus on having as low antennas and as low transmission power as possible could be initiated. Thus, a unique new network solution which incorporates planning and administration features is provided. In other technologies, different parts have been planned with separate tools, which may cause inconsistency and requires resources, when the data from earlier phase or existing network is manually collected. Because of the unpredictable nature of customers joining the network, the process can adapt to deviations from the initial plans. Moreover, it is essential to get up-to-date snapshots of the network status at any point of time. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the

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	following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory Available storage space Screen size User profile(s) Color depth Applications on device Buttons on-device Data markers (e.g., cookies, tokens) Preferences Fonts Font specifications Sync type Synchronization types Supported data types Supported mime types Connection/Network profile Aufricht ’781 at [0109] fleet management module 154 performs functions associated with fleets of clients 108, which are groups of clients 108. For example, fleet management module 154 may perform global or mass operations on groups (fleets) of clients 108, such as loading or updating an application on groups (fleets) of clients 108. Another example of a mass operation is retrieval of information on clients 108 in a fleet, such as the free memory in clients 108 in a fleet (this would help an organization determine if its clients 108 need a memory upgrade). These and additional functions performed by the fleet management module 154 are described in co-pending application entitled “System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices,” Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Sharma ’925 at [0029] A NO determination by step 66 or completion of step 68 results in continued processing in accordance

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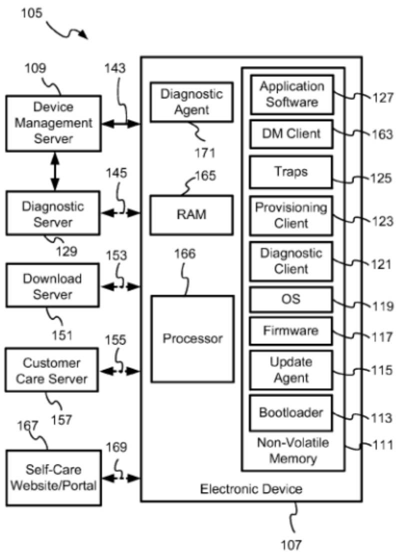
	with step 70. The latitude/longitude coordinates of the specific locations specified by the user are utilized to query one or more communication coverage databases. If available in database 56, this information can be most efficiently and directly retrieved by server 54. Alternatively, server 54 may generate a query transmitted by the Internet to the server, e.g. wireless carrier server 50 hosting database 52, to obtain coverage information concerning the specific location (s), or if permission has been granted and communication channels are available, the server 54 made directly access the database 52 such as indicated by the dashed lines coupled to server 54 in FIG. 1. Depending upon the granularity of information made available by the wireless carriers, it may be necessary to compile and store separate coverage information such as in database 56 for specific geographic locations identified by latitude/longitude coordinates. Such information can be compiled by empirical testing such as by determining signal strengths available at specific latitude and longitude coordinates for wireless carriers either by professional engineering signal strength studies or by obtaining such information from reports provided by users of the various wireless carriers indicating signal strength readings/communication quality at specific locations. Sharma ’925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76.

Claims	
	Rao ’815 at Figure 1  FIG. 1

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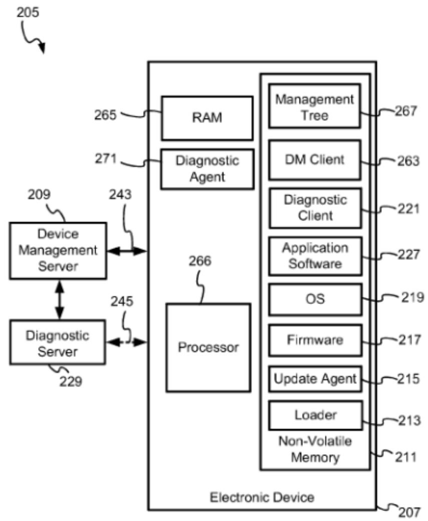
	Rao ’815 at Figure 2  FIG. 2 Rao ’815 at [0033] In a representative embodiment of the present invention, a server such as, for example, the DM server 209 or diagnostic server 229 accesses one or more management objects (MOs) representing key performance indicators in a management tree, such as the management tree 267, to determine the performance or operating behavior of one or more layers of a communication protocol used in supporting an application on the electronic device 207. For example, different layers of functionality of a communication protocol in an electronic device such as a network layer, a service layer, and an application layer may each have its own set of key performance indicator (KPI) values. Rao ’815 at [0051] FIG. 7 is a block diagram illustrating another exemplary arrangement of management objects of key performance indicators within the hierarchy of a management tree of an electronic device such as, for example, the management tree 267 of the electronic device 207 of FIG. 2, in accordance with a representative embodiment of the present invention. As shown in the illustration of FIG. 7, in some representative embodiments of the present invention, a management object such as the KPIs MO 710 comprises a root node of a collection of nodes containing all key performance indicators. In various

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	representative embodiments, such a collection could be organized as a logical tree. As shown in FIG. 7, collection of nodes of the KPIs MO 710 contains node Network A KPI 712 and node Network B KPI 714, which contain network-level key performance indicators for Network A and Network B, respectively. For each network, a KPI may be retrieved when needed from the Network A KPI 712 MO node and the Network B KPI 714 MO node. The collection of nodes of the KPIs MO 710 also comprises nodes Service A KPI 716 and Service B KPI 718, which contain service-level key performance indicators for Service A and Service B, respectively. Each service may provide its own KPI information, such as broadcast service, streaming audio service, etc. The example of FIG. 7 also illustrates that the KPIs MO 710 has as one of its element a node Application A KPI 720 that contains application-level key performance indicators. In a representative embodiment of the present invention, each application such as, for example, a broadcast client application MobiTV or a DVB-H client may provide its own KPIs that may be retrieved via a DM client and an associated management object. A representative embodiment of the present invention may also comprise a quality of service (QoS) parameters node, OtherQoSParameters 722. Lim ’402 at [0027]–[0028] In this case, the service center 30 is a service center operated by a business operator or a manufacturer of the mobile communication terminal, and when the mobile communication terminal fails, the service center 30 is repaired. That is, the remote diagnosis server 20 transmits the diagnosis result to the mobile communication terminal 10 or the service center 30 according to the data received from the server-connected mobile communication terminal 10, so that the user can check the state of the mobile communication terminal 10, and when the result is transmitted to the service center 30, the service center 30 receives the state of the mobile communication terminal 10 so that the mobile communication terminal 10 can be repaired. Lim ’402 at [0047] Meanwhile, as illustrated in FIG. 3, the remote diagnosis server 20 includes a communication module 23 configured to transmit and receive data to and from the external mobile communication terminal 10 connected through a wired/wireless method, a remote diagnosis database 22 configured to store data on the operation of each mobile communication terminal in order to diagnose a failure, and a server control unit 21 configured to receive operation data of the mobile communication terminal 10 connected through the communication module 23 and determine whether a failure has occurred based on the remote diagnosis database 22. Lim ’402 at [0048] The remote diagnosis database 22 stores data on each mobile communication terminal operator or

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	manufacturer, model information of each mobile communication terminal, etc., and also stores data on the operation and function of the mobile communication terminal according to each model.
3 The method of claim 1 wherein said quality or service information is location specific.	It was well known and routine at the time of the alleged invention for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "wherein said quality or service information is location specific." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify provisioning of an existing method of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "wherein said quality or service information is location specific" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "wherein said quality or service information is location specific" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 ("Daley '800") 700-A02 U.S. Pat. Pub. No. 2008/0186882 ("Scherzer '882") 700-A03 U.S. Pat. Pub. No. 2008/0305747 ("Aaron '747") 700-A04 U.S. Pat. Pub. No. 2003/0216953 ("Dawson '953") 700-A05 U.S. Pat. Pub. No. 2007/0178911 ("Baumeister '911") 700-A06 U.S. Pat. Pub. No. 2007/0111748 ("Risbood '748") 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 ("Roundtree '237") 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server The Loopt, Smaato, or Digital Envoy systems. Barkan '859 at [0253]–[0254] To answer the issue of interference between microcells, The microcell network can use the mobile

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	stations as monitors to the possible interactions. Mobile station is capable of listening to frequencies given by the cell that serves them, and report back the strength of the received signal. Such measurements are designed for handovers, however they can be used to test the interface by microcells. When user location is known, it enables to get valuable information of the RF propagation of each and every microcell. Barkan ’859 at [0271]–[0272] While engaged in a conversation, the mobile station scans beacon frequencies of neighboring cell in case it will have to switch cells. The frequencies to be scanned are provided to the mobile station by the MSC controlling the cell. The MSC is not aware of the actual deployment of the MicroCells and of their beacon frequencies. For this reason, the MCCIU directs the IU1 to replace the frequency list provided by the MSC by a list that includes frequencies of both GSM cells and MicroCells beacon frequencies in the area. This procedure is used whether the cell conducting the call is a GSM cell or a MicroCell. The mobile station uses the replaced list to perform pre-synchronization with the neighboring cells. The mobile station measures signal level and reception quality of cell having beacon frequency that is included in the list. The results are averaged and transmitted to the BTS through the SACCH (Slow Associated Control Channel) channel. The information ends up at the BSC that makes the decision whether to switch cells (handover) and to what target cell the call is to be transferred. Barkan ’859 at [0428]–[0431] Let us assume that a mobile phone has a link with a first base station. It may happen, during the conversation, that the phone detects that it receives the first base station at a low power, that is at a power lower than a predefined threshold. In that case, a program in the phone may run a background search for an alternate base station. If it finds a second base station at a higher received power, then the phone will ask it to continue the call. It will send packets from the new station, and try to inform the old station of the change. Alternately, the new base station can inform the old base station of the transfer of the call to it. The other party's base station is informed by the phone or by the base station of the new IP address of new base station. Thus the link is disconnected from the first base station and a new connection is established with the second base station, to improve the quality of the link. It is assumed that a higher received power indicates a link with an improved communication quality. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user;

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	translating the address to latitude and longitude coordinates; sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate. Korpela ’484 at [0056] The RMS Proxy 300 constantly or regularly monitors the network and updates the network management database 109 with new nodes and their coordinates. To achieve this, the RMS Proxy or management engine regularly or constantly reads node specific data stored in memories of the wireless routers 10. The node specific data is essential from the planning viewpoint, since it reflects the current network situation. In particular, the node specific data may comprise the name, geographical coordinates and link statistics of the respective wireless router. Thus, the actual cumulative coverage area can be calculated at any moment due to the fact that the network management database 109 is constantly updated based on any changes derived from the node specific data stored at the individual wireless routers. Consequently, the wireless routers 10 are at all times aware of all possible links to their neighbouring routers. Furthermore, information about poor links having a quality not sufficient to be utilized as links may be stored as well. Thus, even if only a view links are actually used for data processing, the wireless routers 10 know the characteristics of several possible links. This information (e.g. link statistics) is then stored by the RMS Proxy 300 in the network management database 109. Korpela ’484 at [0062]–[0063] The automatically measured information about possible links improves the accuracy of the coverage area. Line-of-sight calculation results based on map data and measured information about all available links each wireless router 10 can detect are combined automatically. The calculation of the cumulated or combined coverage area can then be based on the viewshed concept and the link statistics. In this case, the geographical areas can be further differentiated by the number of neighbouring routers that can be accessed in each area. Sharma ’925 at [0029] A NO determination by step 66 or completion of step 68 results in continued processing in accordance with step 70. The latitude/longitude coordinates of the specific locations specified by the user are utilized to query one or more communication coverage databases. If available in database 56, this information can be most efficiently and directly retrieved by server 54. Alternatively, server 54 may generate a query transmitted by the Internet to the server, e.g. wireless carrier server 50 hosting database 52, to obtain coverage information concerning the specific location (s), or if permission has been granted and

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	communication channels are available, the server 54 made directly access the database 52 such as indicated by the dashed lines coupled to server 54 in FIG. 1. Depending upon the granularity of information made available by the wireless carriers, it may be necessary to compile and store separate coverage information such as in database 56 for specific geographic locations identified by latitude/longitude coordinates. Such information can be compiled by empirical testing such as by determining signal strengths available at specific latitude and longitude coordinates for wireless carriers either by professional engineering signal strength studies or by obtaining such information from reports provided by users of the various wireless carriers indicating signal strength readings/communication quality at specific locations. Deshpande ’933 at [0008] FIG. 1 is a diagram illustrating a communication device 10 that is located within an area 28 (e.g., a hot spot) that is serviced by multiple wireless network access service providers 12, 14, 16, 18. Each of the network access service providers has a corresponding coverage region 20, 22, 24, 26 within the area 28 in which it provides services. As illustrated, the coverage regions 20, 22, 24, 26 of the network access service providers 12, 14, 16, 18 overlap within the area 28. The communication device 10 is located in a position that is encompassed by each of the coverage regions 12, 14, 16, 18. Thus, the communication device 10 can theoretically achieve network access (e.g., to the Internet, a corporate intranet, etc.) through any one of the available providers. Each of the network access service providers 12, 14, 16, 18 will generally have one or more service offerings that users can take advantage of. These service offerings will most likely differ from provider to provider in attributes such as cost and performance. In addition, special service arrangements may exist between the user (or the user's employer) and one or more of the service providers. In one aspect of the present invention, therefore, functionality is provided within a communication device for selecting a network access service provider in a multi-provider environment. Deshpande ’933 at [0019] Once the mobile client 38 has been activated and a provider selection has been made, the client 38 can continue to monitor the providers in the area to determine whether a switch to another provider is warranted. For example, if the user moves to a new location within the area 28, the communication device 10 may leave the coverage area of the selected provider. The mobile client 38 can then automatically select a new provider that is active in the new location (e.g., using the same selection criteria that was previously used). Even without moving, the mobile client 38 may identify another provider that is now offering a “better deal” than the selected provider (e.g., less expensive, more bandwidth, etc.) and switch

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	to this provider.
4 The method of claim 1, further comprising serving data based on mobile device location information and quality or service information stored in said memory or database.	It was well known and routine at the time of the alleged invention for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "serving data based on mobile device location information and quality or service information stored in said memory or database." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify provisioning of an existing method of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "serving data based on mobile device location information and quality or service information stored in said memory or database" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "serving data based on mobile device location information and quality or service information stored in said memory or database" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 ("Daley '800") 700-A02 U.S. Pat. Pub. No. 2008/0186882 ("Scherzer '882") 700-A03 U.S. Pat. Pub. No. 2008/0305747 ("Aaron '747") 700-A04 U.S. Pat. Pub. No. 2003/0216953 ("Dawson '953") 700-A05 U.S. Pat. Pub. No. 2007/0178911 ("Baumeister '911") 700-A06 U.S. Pat. Pub. No. 2007/0111748 ("Risbood '748") 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 ("Roundtree '237") 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server The Loopt, Smaato, or Digital Envoy systems.

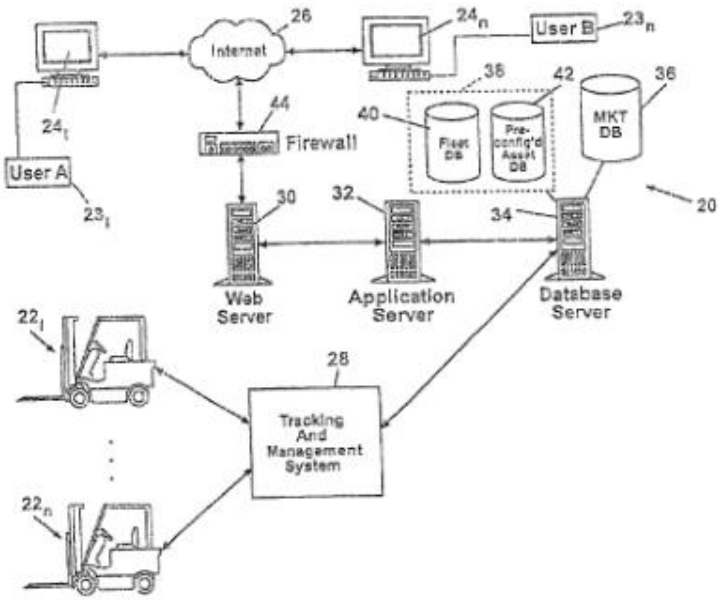
Claims	
	Howarter ’897 at [0005] To provide a system and method for identifying potential customers for communications services. In one embodiment a latitude and longitude associated with an address of a potential customer may be identified. The availability of the communications services may be indicated based on the latitude and longitude. An availability map and services offers may be displayed to the potential customer. A communication service is added for the potential customer. Howarter ’897 at [0006]–[0007] Another embodiment includes a server for determining availability of communications services. The server may include a memory with a set of instructions. The server may also include a processing unit for executing the set of instructions to identify a latitude and longitude associated with an address of a potential customer of a communication service provider, indicate availability of the communication services based on the latitude and longitude, display an availability map to the potential customer, and add a communication service for the potential customer. Yet another embodiment includes a method for expanding communications resources. Multiple potential customers that are unable to receive a communication service may be identified. Latitudes and longitudes associated with the address of the multiple potential customers are identified. A location for a network device is determined that may provide the communication service to a portion of the multiple potential customers based on the latitudes and longitudes. The network device is installed to provide the communication service to the portion of the multiple potential customers. The communications services are marketed to the multiple potential customers. Howarter ’897 at [0027] Map 300 includes service locations 304 and 306, customers 308, 310, 312, 314, 316, and 318, network device 320, boundaries 322 and 323, potential customers 324 and 326, proposed line 328, and proposed devices 330 and 332. The map 300 may be displayed to a customer/potential customer or customer service representative by a server, through a program, or on the service provider's website in order to answer service availability questions. The map 300 may be displayed using a graphical user interface or as part of a program application or website. In one example, customers 308, 310, 312, 314, 316, and 318 may initiate contact with a customer service representative during a given day for adding, deleting, or modifying a communications service. The customers 308, 310, 312, 314, 316, and 318 may be current customers or potential customers Howarter ’897 at [0044] FIG. 4 is an exemplary city territory map in accordance with an illustrative embodiment of the present

Claims	
	invention. Map 400 is another embodiment of a geographic tool for illustrating service availability of a communications service provider similar to map 300 of FIG. 3. The map 400 may display roads, geographic elements, such as mountains, lakes, and rivers, neighborhoods, and other features that make the map more easily understood. The map 400 is a zoomed in or narrow view of a coverage area 402. The map 400 may be displayed to a potential customer or CSR to better illustrate communication service availability. In particular, the map 400 may be used to illustrate a network device 403, a customer A 404, a customer B 406, a straight line distance 408, a network distance 410, and a boundary 412. In another embodiment, the map 400 may also show proposed network resources and the effect that the proposed network resources may have on the availability of services for each area within the map. Howarter ’897 at [0060] The registered services 614 may show an additional indicator that informs the customer service representative that the customer currently subscribes to the one or more services, such as wireless phone and data 618, satellite television 622, broadband internet, 624 and IP television 628. In addition, the mapping graphical user interface 600 may indicate the services that are not currently available, such as WiMAX 620, and cable television 626. As previously mentioned, the mapping graphical user interface 600 may be used by a customer service representative to individualize the services provided to the customer. In another embodiment, the mapping graphical user interface 600 may be displayed directly to the customer for allowing the customer to easily upgrade, modify or delete services as needed. Howarter ’897 at [0068] Next, the communications service provider system retrieves and sends available services information to the customer service representative (step 802). The available services information may specify the services available to the customer based on the geographic location of the customer's residence or business location. In another embodiment, the available services information may be displayed directly to the customer through a graphical user interface. Howarter ’897 at [0073] Next, the customer service representative provisions the service (step 914) with the process terminating thereafter. If the customer service representative determines not to add service, the service is not added (step 916). If the customer service representative determines the customer is not within the service provider territory in step 906, the customer service representative displays the map to the customer and a message indicating that they are outside of the service provider footprint (step 918). The information of step 918 may be displayed to the customer through a graphical user interface, or a chat tool, or verbally

Claims	

communicated to the customer over the telephone.

Bly ’944 at Figure 1



Bly ’944 at [0013]

Through the foregoing, a dealer or the like is provided access to a “virtual” rental fleet of assets, some of which are not owned or controlled by the dealer. The system allows a user, such as a dealer, to satisfy the requirements of the dealer's end-user customer without having to maintain infrequently used items in the dealer's own rental fleet (which experience low utilization rates and thus return on investment.) Additionally, the electronic system also allows a user, such as a dealer, who has its own under-utilized assets to consign such assets for rental by third parties, thereby allowing an increased, effective utilization rate.

Bly ’944 at [0015]

In a preferred embodiment, the first database is configured to store information associated with a plurality of assets, such as pieces of industrial equipment. The market search module is configured to search the first database, based on search parameters specified by the user in anticipation of at least one of a purchase, rental and lease transaction. The market search module is also adapted to generate an

Claims	
	identification of assets in accordance with the specified search parameters. At least one of the identified assets has a description that includes maintenance history data of the asset. The communications interface is configured to facilitate electronic remote access of the system by the user, which, in one embodiment, occurs over the Internet. Bly ’944 at [0041] Another shortcoming set forth in the Background involves the failure to realize an assets' full value upon disposal at the end of a lease term. Conventional systems are inefficient and inconvenient for making desired information available to new owners, lessees, and renters prior to their making decisions concerning such transactions. In accordance with the present invention, electronic system 20 is configured for facilitating transactions by creating an electronic market. In particular, system 20 is configured to allow remotely located users to electronically search the market based on search parameters they specify, and obtain a detailed description of the assets, including the maintenance history data. System 20 also includes a bidding mechanism configured to allow the user to bid on the assets. The contemplated transactions can be closed electronically. Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to automatically update individual records associated with each of the assets with information received, including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled “APPARATUS AND METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS”, hereby incorporated by reference in its entirety.

Claims	
	Bly ’944 at [0056] Login 46 provides authentication functions, principally through a user ID/password approach. In one embodiment, electronic system 20 includes several classes of users: a guest class, a member class, and a dealer class. A guest is characterized as having no member privileges, but can view assets available in market database 36, as well as other public areas of electronic system 20. A member has an enhanced set of privileges. A member may create an actual fleet, and/or a simulated fleet, may conduct searches of the assets contained in the members existing and/or simulated fleets, may search market database 36 and bid on selected assets, run reports and conduct analyses, as well as place assets in market database 36 for disposal. A dealer has access to the features available to members, but in addition, has access to a set of dealer tools generally unavailable to members, as discussed further below. Finally, electronic system 20 provides for an administrative class of users having heightened, administrative rights and privileges, for example to perform maintenance or reconfigure system 20. Bly ’944 at [0062] The “Home” button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The “MY FLEET” button 84 invokes fleet module 48, taking the user to the user's start page 66. The “FLEET BUILDER” button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The “STORE” button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access questions and answers of interest to the users of system 20. Bly ’944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile 182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment,

Claims	
	generating the asset specification data may be performed by executing the “add asset” method described and illustrated in connection with FIG. 5. Bly ’944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly ’944 at [0096] Classes of users 194 include a dealer class 196, and a member class 198. With respect to dealer class 196, a logical variable 200 is associated therewith, and may take either of the values “Y”, indicating that dealers are allowed to bid on the asset, or “N”, indicating that the dealers are not allowed to bid on the asset. As illustrated, logical variable 200 is a “Y”, indicating that dealers may bid on the asset. Likewise, with respect to member class 198, a logical variable 202 is provided, and may also assume one of the values “Y” or “N”. In the illustrated embodiment, users who are in the member class may also bid on the asset. It should be understood that other logical arrangements, such as the use of a logical “0” or logical “1” could also be used, being an equivalent thereof. Bly ’944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry of dates, and pricing, where appropriate. Bly ’944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition

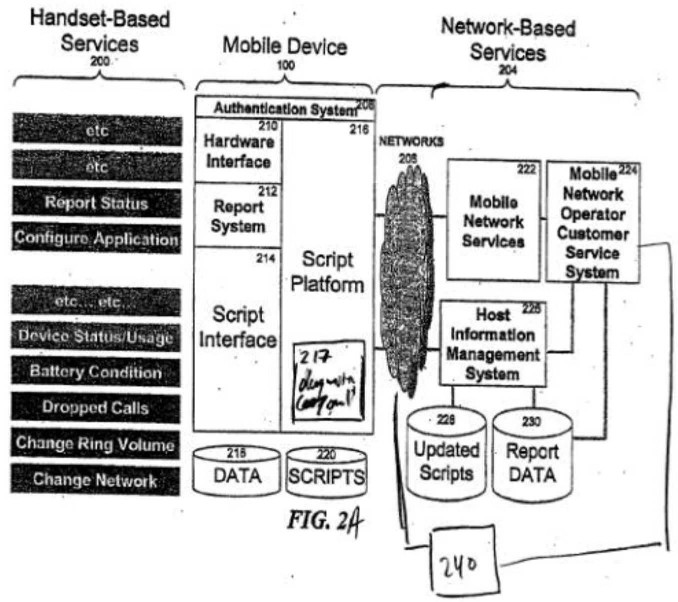
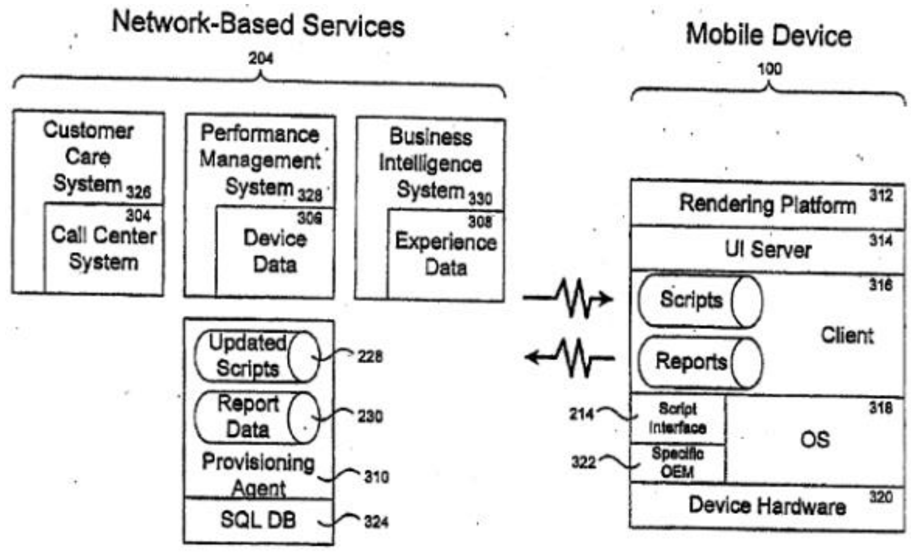
Claims	
	in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36. Roundtree ’997 at Figure 2A 

FIG. 2A

Claims	
	Roundtree '997 at Figure 3  *FIG. 3* Dawson '953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson '953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates;

Claims	
	sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate. Korpela ’484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Aufricht ’781 at [0033] Briefly stated, the invention is directed to placing objects such as, but not limited to, Internet or Web content on data processing devices, and more particularly, placing interactive advertisements from the Internet or Web content on data processing devices, such as but not limited to mobile devices. Table 1 lists examples of such Internet content, although the invention is not limited to these examples. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory

Claims	

Available storage space
Screen size
User profile(s)
Color depth
Applications on device
Buttons on-device
Data markers (e.g., cookies, tokens)
Preferences
Fonts
Font specifications
Sync type
Synchronization types
Supported data types
Supported mime types
Connection/Network profile

Aufricht ’781 at [0110]

> The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API.

Aufricht ’781 at Table 1

TABLE 1

Internet Content
Internet content includes but is not limited to:
HTML
JavaScript ™
Channels
Java ™
ActiveX
Multimedia:
Images (e.g., JPEG, GIF, PNG, vector graphics, etc.)
Audio Files (e.g. MP3)
Video (e.g. AVI)
Streaming Content: Voice/Data/Video
Binary files
XML
Applications
Data Objects
Documents
Anything that can be delivered via a “browser”

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>

Geranio ’871 at Figure 2A

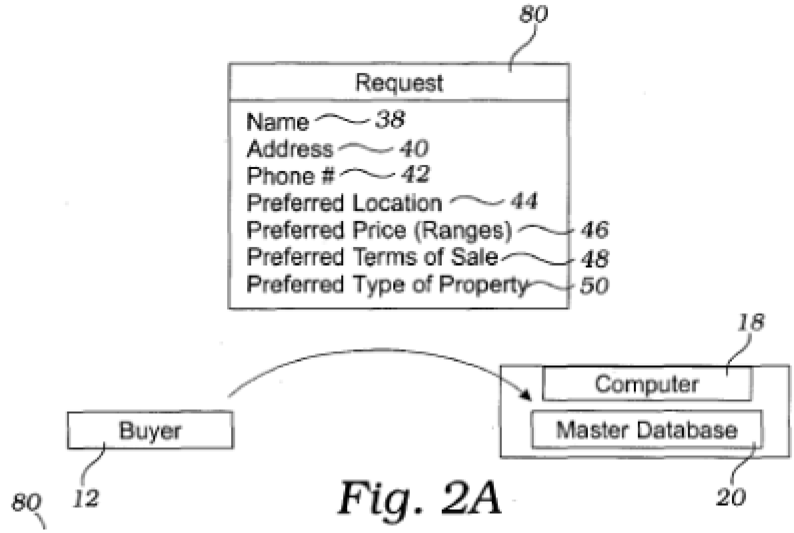


Fig. 2A

Geranio ’871 at Figure 3B

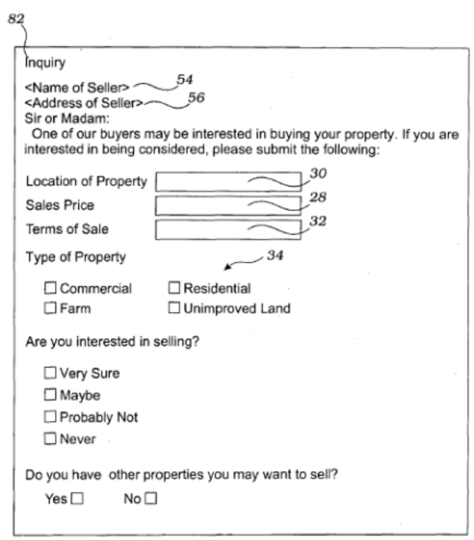


Fig. 3B

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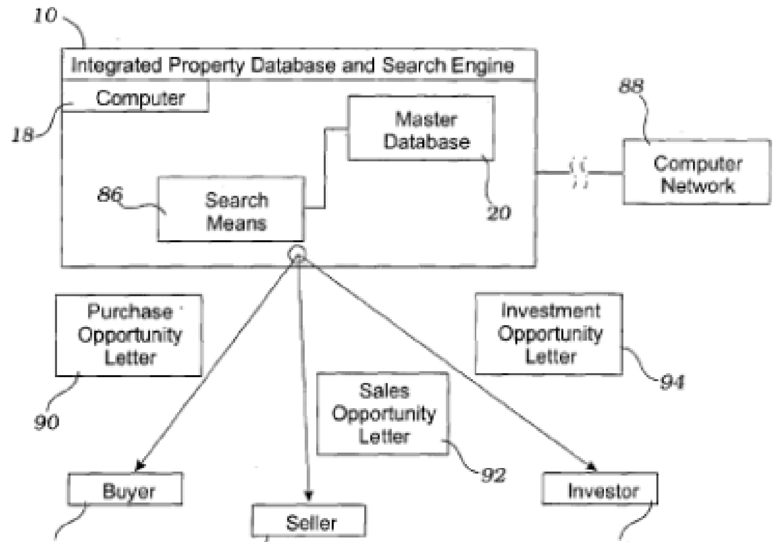
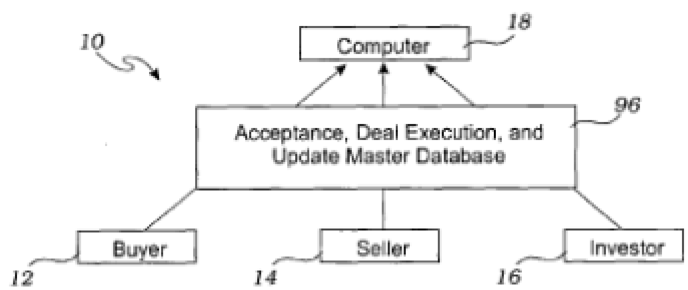
Claims	
	Geranio '871 at Figure 4  Fig. 4 Geranio '871 at Figure 5  Fig. 5 Sharma '925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an

Claims	
	indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76. Sharma ’925 at [0033] FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well. Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11

Claims	
	and transmitted to the cellular telecommunications network 2 operator. Bandera '127 at 4:61–5:8 The Web server 24 is configured to dynamically generate a requested Web page 26 using a dynamic execution engine (DEE) 28 and one or more Web page content objects. The DEE 28 defines the selection of content objects within the Web page and the layout of those content objects within the Web page 26 when displayed within a Web client (i.e., Web browser). Conventionally, each element of a Web page, including, but not limited to, divisions, sections, headings, paragraphs, images, lists, tables, and hyperlinks, may be represented by a content object. In addition, a content object may include audio and video files. It is understood, however, that a single content object may represent one or more of these Web page elements. Dynamic generation of Web pages is well understood by those skilled in the art and need not be described further herein.
5 The method of claim 4 wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for end users or end user communications devices.	It was well known and routine at the time of the alleged invention for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for end users or end user communications devices." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify provisioning of an existing method of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for end users or end user communications devices" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for end users or end user communications devices" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 ("Daley '800") 700-A02 U.S. Pat. Pub. No. 2008/0186882 ("Scherzer '882") 700-A03 U.S. Pat. Pub. No. 2008/0305747 ("Aaron '747")

Claims	
	700-A04 U.S. Pat. Pub. No. 2003/0216953 ("Dawson '953") 700-A05 U.S. Pat. Pub. No. 2007/0178911 ("Baumeister '911") 700-A06 U.S. Pat. Pub. No. 2007/0111748 ("Risbood '748") 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 ("Roundtree '237") 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server Howarter '897 at [0005] To provide a system and method for identifying potential customers for communications services. In one embodiment a latitude and longitude associated with an address of a potential customer may be identified. The availability of the communications services may be indicated based on the latitude and longitude. An availability map and services offers may be displayed to the potential customer. A communication service is added for the potential customer. Howarter '897 at [0006]–[0007] Another embodiment includes a server for determining availability of communications services. The server may include a memory with a set of instructions. The server may also include a processing unit for executing the set of instructions to identify a latitude and longitude associated with an address of a potential customer of a communication service provider, indicate availability of the communication services based on the latitude and longitude, display an availability map to the potential customer, and add a communication service for the potential customer. Yet another embodiment includes a method for expanding communications resources. Multiple potential customers that are unable to receive a communication service may be identified. Latitudes and longitudes associated with the address of the multiple potential customers are identified. A location for a network device is determined that may provide the communication service to a portion of the multiple potential customers based on the latitudes and longitudes. The network device is installed to provide the communication service to the portion of the multiple potential customers. The communications services are marketed to the multiple potential customers. Howarter '897 at [0027] Map 300 includes service locations 304 and 306, customers 308, 310, 312, 314, 316, and 318, network device 320, boundaries 322 and 323, potential customers 324 and 326, proposed line 328, and proposed

Claims	
	devices 330 and 332. The map 300 may be displayed to a customer/potential customer or customer service representative by a server, through a program, or on the service provider's website in order to answer service availability questions. The map 300 may be displayed using a graphical user interface or as part of a program application or website. In one example, customers 308, 310, 312, 314, 316, and 318 may initiate contact with a customer service representative during a given day for adding, deleting, or modifying a communications service. The customers 308, 310, 312, 314, 316, and 318 may be current customers or potential customers Howarter ’897 at [0044] FIG. 4 is an exemplary city territory map in accordance with an illustrative embodiment of the present invention. Map 400 is another embodiment of a geographic tool for illustrating service availability of a communications service provider similar to map 300 of FIG. 3. The map 400 may display roads, geographic elements, such as mountains, lakes, and rivers, neighborhoods, and other features that make the map more easily understood. The map 400 is a zoomed in or narrow view of a coverage area 402. The map 400 may be displayed to a potential customer or CSR to better illustrate communication service availability. In particular, the map 400 may be used to illustrate a network device 403, a customer A 404, a customer B 406, a straight line distance 408, a network distance 410, and a boundary 412. In another embodiment, the map 400 may also show proposed network resources and the effect that the proposed network resources may have on the availability of services for each area within the map. Howarter ’897 at [0060] The registered services 614 may show an additional indicator that informs the customer service representative that the customer currently subscribes to the one or more services, such as wireless phone and data 618, satellite television 622, broadband internet, 624 and IP television 628. In addition, the mapping graphical user interface 600 may indicate the services that are not currently available, such as WiMAX 620, and cable television 626. As previously mentioned, the mapping graphical user interface 600 may be used by a customer service representative to individualize the services provided to the customer. In another embodiment, the mapping graphical user interface 600 may be displayed directly to the customer for allowing the customer to easily upgrade, modify or delete services as needed. Howarter ’897 at [0068] Next, the communications service provider system retrieves and sends available services information to the customer service representative (step 802). The available services information may specify the services available to the customer based on the geographic location of the customer's residence or

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<tr><th>Claims</th><th></th></tr>
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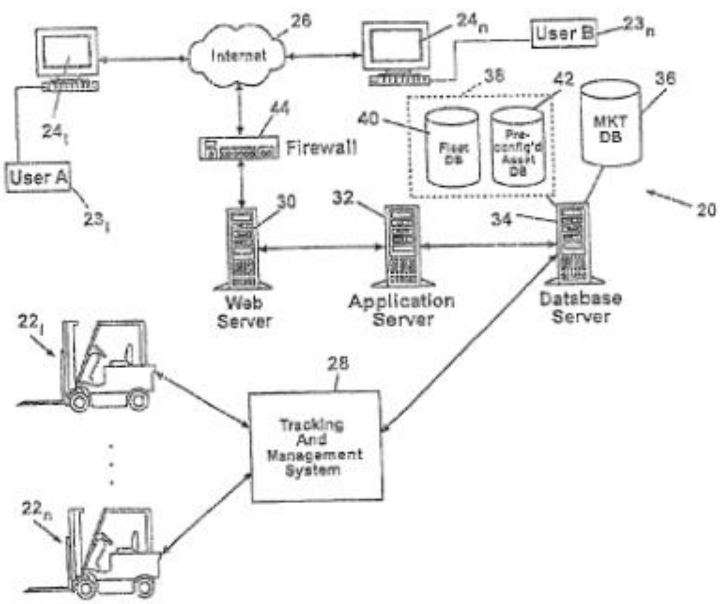
business location. In another embodiment, the available services information may be displayed directly to the customer through a graphical user interface.

Howarter ’897 at [0073]

Next, the customer service representative provisions the service (step 914) with the process terminating thereafter. If the customer service representative determines not to add service, the service is not added (step 916). If the customer service representative determines the customer is not within the service provider territory in step 906, the customer service representative displays the map to the customer and a message indicating that they are outside of the service provider footprint (step 918). The information of step 918 may be displayed to the customer through a graphical user interface, or a chat tool, or verbally communicated to the customer over the telephone.

Bly ’944 at Figure 1



Bly ’944 at [0013]

Through the foregoing, a dealer or the like is provided access to a “virtual” rental fleet of assets, some of which are not owned or controlled by the dealer. The system allows a user, such as a dealer, to satisfy the requirements of the dealer's end-user customer without having to maintain infrequently used items in the

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Claims	
	dealer's own rental fleet (which experience low utilization rates and thus return on investment.) Additionally, the electronic system also allows a user, such as a dealer, who has its own under-utilized assets to consign such assets for rental by third parties, thereby allowing an increased, effective utilization rate. Bly ’944 at [0015] In a preferred embodiment, the first database is configured to store information associated with a plurality of assets, such as pieces of industrial equipment. The market search module is configured to search the first database, based on search parameters specified by the user in anticipation of at least one of a purchase, rental and lease transaction. The market search module is also adapted to generate an identification of assets in accordance with the specified search parameters. At least one of the identified assets has a description that includes maintenance history data of the asset. The communications interface is configured to facilitate electronic remote access of the system by the user, which, in one embodiment, occurs over the Internet. Bly ’944 at [0041] Another shortcoming set forth in the Background involves the failure to realize an assets' full value upon disposal at the end of a lease term. Conventional systems are inefficient and inconvenient for making desired information available to new owners, lessees, and renters prior to their making decisions concerning such transactions. In accordance with the present invention, electronic system 20 is configured for facilitating transactions by creating an electronic market. In particular, system 20 is configured to allow remotely located users to electronically search the market based on search parameters they specify, and obtain a detailed description of the assets, including the maintenance history data. System 20 also includes a bidding mechanism configured to allow the user to bid on the assets. The contemplated transactions can be closed electronically. Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to automatically update individual records associated with each of the assets with information received,

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	including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled “APPARATUS AND METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS”, hereby incorporated by reference in its entirety. Bly ’944 at [0056] Login 46 provides authentication functions, principally through a user ID/password approach. In one embodiment, electronic system 20 includes several classes of users: a guest class, a member class, and a dealer class. A guest is characterized as having no member privileges, but can view assets available in market database 36, as well as other public areas of electronic system 20. A member has an enhanced set of privileges. A member may create an actual fleet, and/or a simulated fleet, may conduct searches of the assets contained in the members existing and/or simulated fleets, may search market database 36 and bid on selected assets, run reports and conduct analyses, as well as place assets in market database 36 for disposal. A dealer has access to the features available to members, but in addition, has access to a set of dealer tools generally unavailable to members, as discussed further below. Finally, electronic system 20 provides for an administrative class of users having heightened, administrative rights and privileges, for example to perform maintenance or reconfigure system 20. Bly ’944 at [0062] The “Home” button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The “MY FLEET” button 84 invokes fleet module 48, taking the user to the user's start page 66. The “FLEET BUILDER” button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The “STORE” button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access

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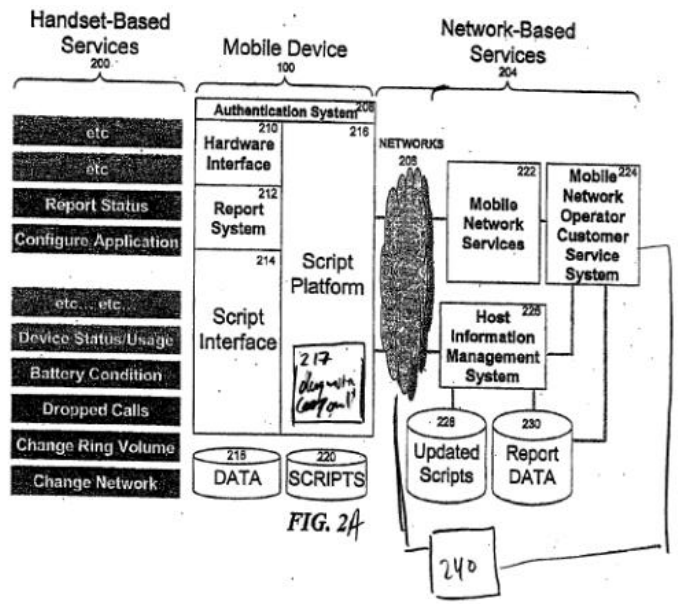
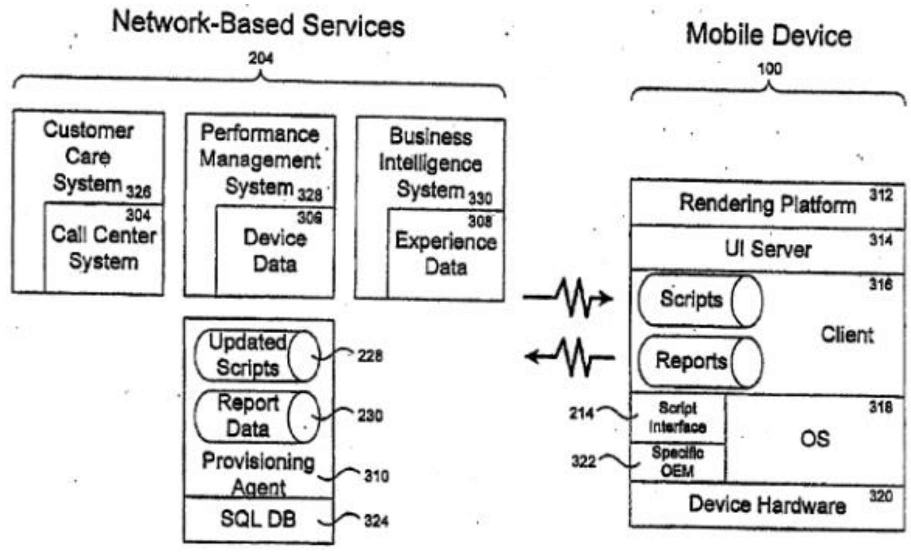
	questions and answers of interest to the users of system 20. Bly ’944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile 182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment, generating the asset specification data may be performed by executing the “add asset” method described and illustrated in connection with FIG. 5. Bly ’944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly ’944 at [0096] Classes of users 194 include a dealer class 196, and a member class 198. With respect to dealer class 196, a logical variable 200 is associated therewith, and may take either of the values “Y”, indicating that dealers are allowed to bid on the asset, or “N”, indicating that the dealers are not allowed to bid on the asset. As illustrated, logical variable 200 is a “Y”, indicating that dealers may bid on the asset. Likewise, with respect to member class 198, a logical variable 202 is provided, and may also assume one of the values “Y” or “N”. In the illustrated embodiment, users who are in the member class may also bid on the asset. It should be understood that other logical arrangements, such as the use of a logical “0” or logical “1” could also be used, being an equivalent thereof.

Claims	
	Bly '944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry of dates, and pricing, where appropriate. Bly '944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36. Roundtree '997 at Figure 2A  FIG. 2A

Claims	
	Roundtree ’997 at Figure 3  *FIG. 3* Dawson ’953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates;

Claims	
	sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate. Korpela ’484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Aufricht ’781 at [0033] Briefly stated, the invention is directed to placing objects such as, but not limited to, Internet or Web content on data processing devices, and more particularly, placing interactive advertisements from the Internet or Web content on data processing devices, such as but not limited to mobile devices. Table 1 lists examples of such Internet content, although the invention is not limited to these examples. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory

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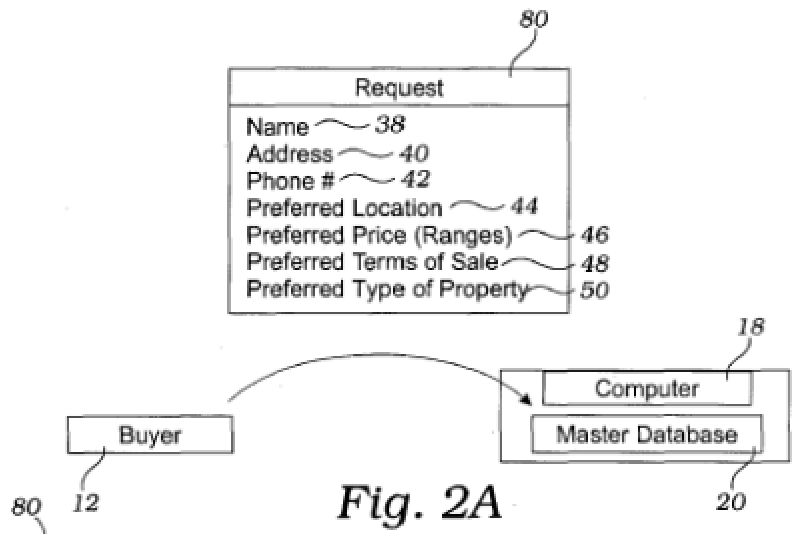
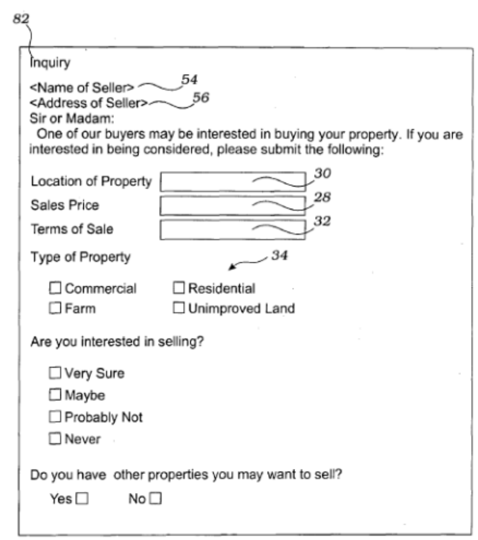
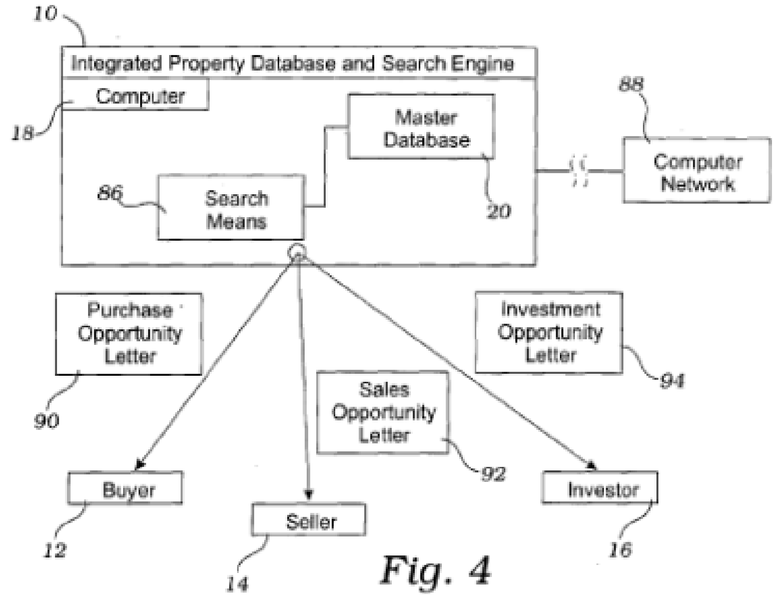
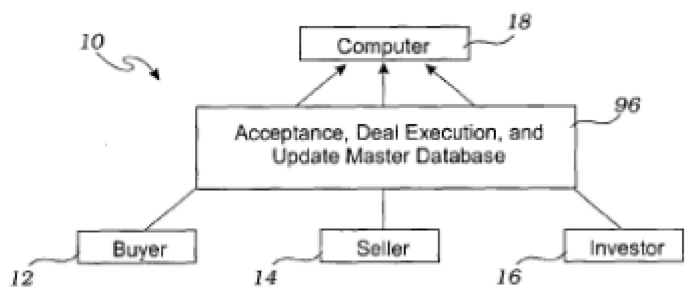
	Available storage space Screen size User profile(s) Color depth Applications on device Buttons on-device Data markers (e.g., cookies, tokens) Preferences Fonts Font specifications Sync type Synchronization types Supported data types Supported mime types Connection/Network profile Aufricht ’781 at [0110] The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API. Aufricht ’781 at Table 1 TABLE 1 Internet Content Internet content includes but is not limited to: HTML JavaScript ™ Channels Java ™ ActiveX Multimedia: Images (e.g., JPEG, GIF, PNG, vector graphics, etc.) Audio Files (e.g. MP3) Video (e.g. AVI) Streaming Content: Voice/Data/Video Binary files XML Applications Data Objects Documents Anything that can be delivered via a “browser”

Claims	
	Geranio ’871 at Figure 2A  Fig. 2A Geranio ’871 at Figure 3B  Fig. 3B

Claims	
	Geranio ’871 at Figure 4  Fig. 4 Geranio ’871 at Figure 5  Fig. 5 Sharma ’925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an

Claims	
	indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76. Sharma ’925 at [0033] FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well. Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11

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	and transmitted to the cellular telecommunications network 2 operator. Bandera ’127 at 4:61–5:8 The Web server 24 is configured to dynamically generate a requested Web page 26 using a dynamic execution engine (DEE) 28 and one or more Web page content objects. The DEE 28 defines the selection of content objects within the Web page and the layout of those content objects within the Web page 26 when displayed within a Web client (i.e., Web browser). Conventionally, each element of a Web page, including, but not limited to, divisions, sections, headings, paragraphs, images, lists, tables, and hyperlinks, may be represented by a content object. In addition, a content object may include audio and video files. It is understood, however, that a single content object may represent one or more of these Web page elements. Dynamic generation of Web pages is well understood by those skilled in the art and need not be described further herein.
10[pre] A system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users, comprising:	“A system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users” was well known at the time of the alleged invention. A person of ordinary skill in the art would have found it obvious to modify an existing system to include the claimed elements as set forth below and in Defendants’ other invalidity charts. For example: *See* limitation 1[pre].
10[a] a computer configured to receive mobile device location information of a plurality of mobile devices or end users that are associated with one or more wireless communications networks and quality or service information pertaining to wireless access characteristics for one or more mobile devices of said plurality of mobile devices or end users, and said quality or service information comprising coverage, availability or performance information of one	It was well known and routine at the time of the alleged invention for a system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “a computer configured to receive mobile device location information of a plurality of mobile devices or end users that are associated with one or more wireless communications networks and quality or service information pertaining to wireless access characteristics for one or more mobile devices of said plurality of mobile devices or end users, and said quality or service information comprising coverage, availability or performance information of one or more wireless communications networks or said one or more mobile devices.” To the extent a clearinghouse system for communications networks disclosed in any of Defendants’ other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify an existing system of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “a computer configured to receive mobile device location information of a plurality of mobile devices or end

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or more wireless communications networks or said one or more mobile devices;	users that are associated with one or more wireless communications networks and quality or service information pertaining to wireless access characteristics for one or more mobile devices of said plurality of mobile devices or end users, and said quality or service information comprising coverage, availability or performance information of one or more wireless communications networks or said one or more mobile devices" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "a computer configured to receive mobile device location information of a plurality of mobile devices or end users that are associated with one or more wireless communications networks and quality or service information pertaining to wireless access characteristics for one or more mobile devices of said plurality of mobile devices or end users, and said quality or service information comprising coverage, availability or performance information of one or more wireless communications networks or said one or more mobile devices" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 ("Daley '800") 700-A02 U.S. Pat. Pub. No. 2008/0186882 ("Scherzer '882") 700-A03 U.S. Pat. Pub. No. 2008/0305747 ("Aaron '747") 700-A04 U.S. Pat. Pub. No. 2003/0216953 ("Dawson '953") 700-A05 U.S. Pat. Pub. No. 2007/0178911 ("Baumeister '911") 700-A06 U.S. Pat. Pub. No. 2007/0111748 ("Risbood '748") 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 ("Roundtree '237") 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server The Loopt, Smaato, or Digital Envoy systems.

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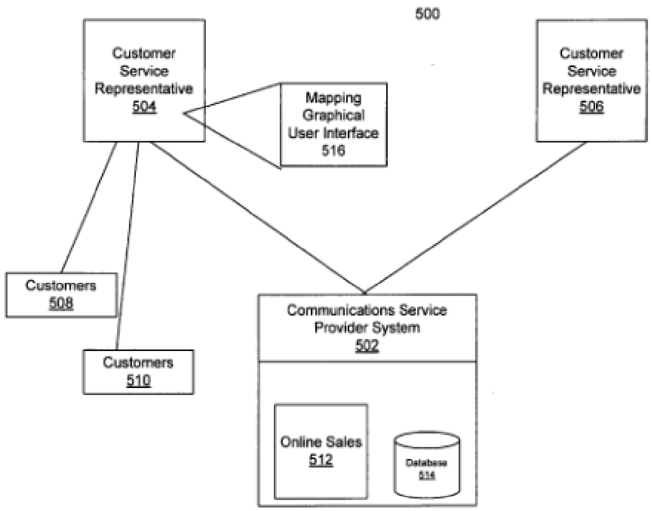
	Howarter ’897 at Figure 5 *FIG. 5*  Howarter ’897 at [0005] To provide a system and method for identifying potential customers for communications services. In one embodiment a latitude and longitude associated with an address of a potential customer may be identified. The availability of the communications services may be indicated based on the latitude and longitude. An availability map and services offers may be displayed to the potential customer. A communication service is added for the potential customer. Howarter ’897 at [0006]–[0007] Another embodiment includes a server for determining availability of communications services. The server may include a memory with a set of instructions. The server may also include a processing unit for executing the set of instructions to identify a latitude and longitude associated with an address of a potential customer of a communication service provider, indicate availability of the communication services based on the latitude and longitude, display an availability map to the potential customer, and add a communication service for the potential customer. Yet another embodiment includes a method for expanding communications resources. Multiple potential customers that are unable to receive a communication service may be identified. Latitudes and longitudes

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	associated with the address of the multiple potential customers are identified. A location for a network device is determined that may provide the communication service to a portion of the multiple potential customers based on the latitudes and longitudes. The network device is installed to provide the communication service to the portion of the multiple potential customers. The communications services are marketed to the multiple potential customers. Howarter ’897 at [0020] The services 118, 120 and 122 represent the communications services provided by the communications service provider for each geographic location shown in the system map 100. The communications service provider may provide or distribute any number of services, such as wireless telephone and data services, television, standard telephone service, cable television service, IP television service, Internet service, and satellite television. In one example, footprint 102 provides services 120 which may include telephone and cellular services for Customer C 112. The system map 100 illustrates the different services 118, 120 and 122 that may be available to each customer based on the geographic location of the customer. In some cases, the customer may travel throughout the area or system map 100 during the regular course of life and/or business. However, the actual geographic locations shown for each customer illustrate the services that may be available at the customer's residence, educational, business, or other location. For example, Customer C 112 may work out of the office and, as such, may need telephone service when performing the regular aspects of his or her job. Howarter ’897 at [0022] In one embodiment, the system map 100 may be displayed to a customer service representative (CSR) that works for the communications service provider using a data processing system, such as a desktop computer. The system map 100 may be used by the CSR to determine which services 118, 120 and 122 are available to the customer based on the customer's address and corresponding latitude and longitude coordinates. Howarter ’897 at [0027] Map 300 includes service locations 304 and 306, customers 308, 310, 312, 314, 316, and 318, network device 320, boundaries 322 and 323, potential customers 324 and 326, proposed line 328, and proposed devices 330 and 332. The map 300 may be displayed to a customer/potential customer or customer service representative by a server, through a program, or on the service provider's website in order to answer service availability questions. The map 300 may be displayed using a graphical user interface or as part of a program application or website. In one example, customers 308, 310, 312, 314, 316, and 318 may initiate contact with a customer service representative during a given day for adding, deleting, or

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	modifying a communications service. The customers 308, 310, 312, 314, 316, and 318 may be current customers or potential customers Howarter ’897 at [0041] In one embodiment, the map 300 may be revised to expand the service locations 304 and 306 based on the proposed network devices 330 and 332. The map 300 with revisions or proposed modifications may be displayed in real-time to a customer, CSR, or executive of the communication service provider in order to make decisions regarding network expansions. For example, the communications service provider may determine that once a predetermined number of potential customers 324 and 326 is reached, fixed plans for adding proposed network devices 330 and 332 may be implemented. Before the changes are made, the map 300 may be modified to show proposed expansion based on the new network resources and/or a timeline for installation. Howarter ’897 at [0042] In one embodiment, the proposed placement of a new length of fiber, new cell tower, new hot spot, power adjustment to a cell tower, or other network addition or adjustment may be automatically reflected on map 300 to show the new addition or adjustment and/or the geographic footprint impacted by the change. In another embodiment, the customers falling within the impacted geographic footprint may be displayed, reported, stored, or determined. In one embodiment, customers who have generated inquiries for a requested service may be highlighted on the map 300 when an adjustment or addition would render the requested service available to the customer. In such a manner, an operator may immediately see the number of customer inquiries that would be addressed by a network adjustment or addition. In another embodiment, once a change is approved, an email, mailing or other automatic or manual notification may be initiated to the customers who have inquired letting them know that the service is available or will be available by a certain date. Howarter ’897 at [0046]–[0048] The map 400 may illustrate various distances for each customer. For example, the straight line distance 410 between the network device 403 and the customer B 406 represents the direct point-to-point distance between the two points. The straight line distance 410 may be calculated using the latitude and longitude of the network device 403 and the customer B 406. The straight line distance 410 may be particularly useful for determining availability to wireless services from a central broadcasting device, such as WiFi® or WiMAX®. The network distance 408 represents the actual distance that a communications service would take as

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	buried or otherwise routed to the address of the customer. For example, a new communication service may be run through, around, or along existing right-of-ways, roads, bridges, parks, easements, alleys, in a route that is not point-to-point. The network distance 408 may be used to determine whether the customer may add a service based on a determined, calculated, or inferred network distance. In some cases, although the customer may appear to be within the boundary 412, the customer may be unable to receive a service because the determined network distance from the nearest network device 403 exceeds distance limitations. If the communications service is a wireless network or other similar service the straight line distance and network distance for each customer may be the same. The network distance 408 may include different segments or paths of the communications line. For example, the network distance 408 may be for fiber optics which includes a customer premise segment between a splice box and the customer's home, a segment between the splice box and a central junction box, and a distance between the central junction box distance and a network device. The network distance 408 may be calculated by summing the three different segments. The network distance 408 may include any number of segments that may be combined to determine whether a network limitation is exceeded. The network distance 408 and the different segments may have distance limitations that effect whether the customer is eligible to receive applicable services. Additionally, the customer may subscribe to multiple services each of which may have a different network distance that may be calculated to determine service eligibility. Howarter ’897 at [0053] The database 514 stores information regarding the services provided by the communications service provider. The database 514 may store geographic information, service availability maps, population and demographic information, network device locations, footprint maps, potential customers, addresses, and other information that is used by the communications service provider system 502 to both provide and administer the communications services that are provided to customers 508 and 510. Howarter ’897 at [0055] The customer service representatives 504 and 506 represent the persons and/or devices providing user information to customers 508 and 510. The customer service representative 504 uses the mapping graphical user interface 516 to view the customer's geographic location by latitude and longitude, and also to determine the availability of services based on the physical location, available network devices, and other factors that may not be automatically evaluated. The mapping graphical user interface 516 may be part of the communications service provider system 502 or may be a separately executed application that allows the customer service representative 504 to determine the availability of services based on the physical location of the customer, service footprints the network distance, the straight line distance, or the

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	distance to the nearest node or access point, and other routing data. The customers 508 and 510 may communicate with the customer service representative 504 through a network connection, such as an Internet website, a chat tool, a phone line, or other communications method. In one example, the customer 508 may call the customer service representative 504 using a cellular telephone. In another example, the customer 510 may go to the webpage of the communications service provider and request a chat session with the customer service representative 504 in order to initiate communication. Howarter ’897 at [0056]–[0057] FIG. 6A is a mapping graphical user interface 600 in accordance with an illustrative embodiment of the present invention. FIGS. 6A and 6B are a particular implementation of the mapping graphical user interface 516 of FIG. 5. The mapping graphical user interface 600 may be displayed to a customer service representative on a computing device, such as a desktop computer, personal digital assistance, wireless device, or other data processing system. The mapping graphical user interface 600 may be part of a program application accessible to the customer service representative or provided from a communications service provider system. The mapping graphical user interface 600 may include any number of fields, icons, check boxes, data, or other means of displaying information and receiving user input from the customer service representative. The mapping graphical user interface 600 may include a name 602, and an address 604, for allowing the customer's information to be input into the mapping graphical user interface 600. The name 602 and address 604 may be associated with a residence or business address of the customer. For example, the name 602 and address 604 may correspond to Customer A 108 of FIG. 1. In one embodiment, the mapping graphical user interface 600 of FIG. 6A allows a customer service representative to verify availability 606, add service 608, and change or remove service 610. The verify availability 606 may allow the customer service representative to determine whether the customer has access to services such as Customer A 108 of FIG. 1. Howarter ’897 at [0058] In other embodiments, the verify availability 606 may be used to determine the customer does not have access to services such as Customer B 110 of FIG. 1. The address 604 may be converted into a latitude and longitude address that is used to determine network and straight-line distances to the nearest network device or node. In the event that the customer is available to receive the services, the customer service representative may add services 608. Alternatively, the customer service representative may change or remove services 610 in accordance with the customer's needs. In the event the customer may not receive information the name 602 and address 604 may be stored in a database, such as database 514 of FIG. 5. This information may be used by the communications service provider for marketing, network expansion,

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	or strategic planning. Howarter ’897 at [0060] The registered services 614 may show an additional indicator that informs the customer service representative that the customer currently subscribes to the one or more services, such as wireless phone and data 618, satellite television 622, broadband internet, 624 and IP television 628. In addition, the mapping graphical user interface 600 may indicate the services that are not currently available, such as WiMAX 620, and cable television 626. As previously mentioned, the mapping graphical user interface 600 may be used by a customer service representative to individualize the services provided to the customer. In another embodiment, the mapping graphical user interface 600 may be displayed directly to the customer for allowing the customer to easily upgrade, modify or delete services as needed. Howarter ’897 at [0063] Next, the communications service provider system indicates service footprint map, availability of services, and availability map (step 704). The different data displayed in step 704 may be used to determine the services available based on location and the footprint of the available services. The footprint map an availability map may be overlaid with the location of the customer's address to allow the customer and/or CSR to make informed decisions. The service footprint map may also include a proposed service map that may allow a user to specify whether he or she would be interested if the wireless service provider expanded to the latitude and longitude of the customer. As a result, the customer's contact information may be added to a call list or direct marketing campaign based on subsequent communications network expansions. Howarter ’897 at [0068] Next, the communications service provider system retrieves and sends available services information to the customer service representative (step 802). The available services information may specify the services available to the customer based on the geographic location of the customer's residence or business location. In another embodiment, the available services information may be displayed directly to the customer through a graphical user interface. Howarter ’897 at [0071]–[0072] The process begins by receiving an address on the service provider web interface (step 900). The address may be entered by a user using any number of standard user input devices, such as a keyboard, mouse,

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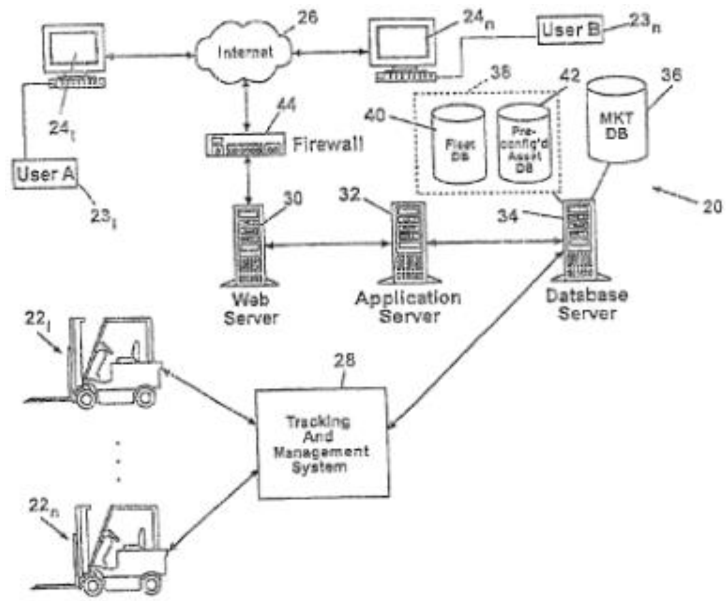
	keypad, touch screen, or other input/output device. Next, the customer service representative identifies the latitude and longitude (step 902). The latitude and longitude may be determined based on the address previously entered. The customer service representative displays the map location of the customer in relation to the service provider footprint (step 904). The location of the customer may be the location that relates to the address specified in step 900. For example, the address may be linked to the residence or business of the customer. Next, the customer service representative determines whether the customer is within the service provider territory (step 906). The determination may be made based on the service provider footprint displayed in step 904. If the customer is within the service provider territory, the customer service representative displays the map and available services to the customer (step 908). Next, the customer service representative determines whether to add a service (step 910). One or more services may be added in step 910, based on user input. For example, the user may verbally provide a confirmation to add a high speed Internet connection. If the customer service representative determines to add a service in step 910, the customer service representative adds the service and submits an order (step 912). Howarter ’897 at [0073] Next, the customer service representative provisions the service (step 914) with the process terminating thereafter. If the customer service representative determines not to add service, the service is not added (step 916). If the customer service representative determines the customer is not within the service provider territory in step 906, the customer service representative displays the map to the customer and a message indicating that they are outside of the service provider footprint (step 918). The information of step 918 may be displayed to the customer through a graphical user interface, or a chat tool, or verbally communicated to the customer over the telephone. Howarter ’897 at [0074] Next, the customer service representative updates a potential customer database (step 920), and does not add the service (step 916) with the process terminating thereafter. The potential customer database may be updated in step 920, in order to provide the communications service provider information with regard to potential customers and provide marketing and strategic expansion information. For example, the potential customer database may be used to determine locations in which potential customers exist so that the communications service provider may use future expansion and growth to cover those areas, thereby capturing more market share, and improving profitability.

Claims	
	Bly ’944 at Figure 1  Bly ’944 at [0013] Through the foregoing, a dealer or the like is provided access to a “virtual” rental fleet of assets, some of which are not owned or controlled by the dealer. The system allows a user, such as a dealer, to satisfy the requirements of the dealer's end-user customer without having to maintain infrequently used items in the dealer's own rental fleet (which experience low utilization rates and thus return on investment.) Additionally, the electronic system also allows a user, such as a dealer, who has its own under-utilized assets to consign such assets for rental by third parties, thereby allowing an increased, effective utilization rate. Bly ’944 at [0014] In another aspect of the present invention, an electronic system is provided for facilitating transactions, including, for example, assets disposal. The system, according to this aspect of the present invention, provides detailed information concerning an asset including the maintenance history data so that the user, a potential purchaser, rentee or lessee, may evaluate the asset. The system includes a first database, a market search module, and a communications interface.

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	Bly ’944 at [0015] In a preferred embodiment, the first database is configured to store information associated with a plurality of assets, such as pieces of industrial equipment. The market search module is configured to search the first database, based on search parameters specified by the user in anticipation of at least one of a purchase, rental and lease transaction. The market search module is also adapted to generate an identification of assets in accordance with the specified search parameters. At least one of the identified assets has a description that includes maintenance history data of the asset. The communications interface is configured to facilitate electronic remote access of the system by the user, which, in one embodiment, occurs over the Internet. Bly ’944 at [0038] Referring now to the drawings wherein like reference numerals are used to identify identical components in the various views, FIG. 1 is a simplified diagrammatic and block diagram view showing an electronic system 20 for managing, tracking and conducting electronic commerce, with respect to a plurality of assets designated 221, . . . , 22n. The assets 221, . . . 22n are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. It should be understood, however, that system 20 is configured for operation with a wide variety of assets. System 20 is further configured to manage, and facilitate commercial transactions involving other assets (i.e., those not tracked) that are consigned or otherwise made available on an electronic market established by system 20. Bly ’944 at [0040] Electronic system 20 overcomes a problem identified in the Background, namely, the inability of prior systems to significantly facilitate business transactions that could increase utilization of infrequently rented assets in a user's rental fleet. Electronic system 20 includes functionality that allows users, in-effect, to consign assets on an electronic market in a manner that makes detailed information, such as maintenance history, readily available. Through the foregoing, users of system 20 having under-utilized equipment may use system 20 to “post” such equipment on the electronic market for rental, lease, or the like by other users of the system. Not only does system 20 enable some users to increase utilization of under-utilized assets, other users, (e.g., dealers) who have an occasional need for some equipment (e.g., to provide to their end-user customers), can rent or lease equipment from the market in contemplation of sub-rental or sub-lease, without having to actually own the equipment. Detailed information, such as maintenance history data, allow users to make informed decisions. Equipment selection efficiency is significantly improved since it is commonplace for users such as dealers to be responsible for the

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	maintenance of equipment they sub-rent. Well-maintained and problem free equipment will likely be in the highest demand, and draw the highest lease and rental rates. Bly ’944 at [0043] Referring now to FIG. 1, system 20 is configured for electronic remote access by a plurality of remote users, designated 231, . . . , 23n, through remote client computers 241, . . . ,24n, over a global computer network, such as Internet 26. Private networks or dial-up connecting may also be used. Inasmuch as system 20 performs a variety of functions, such as tracking and management of assets, as well as facilitating electronic commerce, the users 231, . . . , 23n may fall into a plurality of user classes, which are accommodated within system 20. Bly ’944 at [0045] System 20 interfaces with a tracking and management system 28, and preferably includes a first computer system, such as a web server 30, a second computer system, such as an application server 32, and a third computer system, such as a database server 34. One or more of the servers may be combined, depending on the size and complexity of system 20. Database server 34 is coupled to a market database 36 and a global asset database 38 comprising a fleet database 40 and a preconfigured asset database 42. In the client-server architecture described herein, the “server” provides the information to the “clients”. Electronic system 20 may further include, in an alternative embodiment, a firewall system 44. Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to automatically update individual records associated with each of the assets with information received, including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled “APPARATUS AND

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	METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS", hereby incorporated by reference in its entirety. Bly '944 at [0047] Web server 30 operates as a communications interface for facilitating electronic remote access of system 20 by users 231, . . . , 23n via client computers 241, . . . , 24n when using Internet 26. Web server 30 is preferably compatible with the ubiquitous HyperText Transfer Protocol (HTTP 1.1), and includes the capability of establishing a secure connection with client computers 241, . . . , 24n via, for example, the publicly available Secure Sockets Layer (SSL) protocol. Version 3.0 of the SSL protocol is commercially available from Netscape Communications Corporation. Web server 30 may comprise suitable hardware configured to handle anticipated traffic (e.g., requests, responses) therethrough, and may further execute conventional, commercial software, such as Windows NT 4.0 operating system software running Microsoft Internet Information Server (IIS 4.0) software, both commercially available from Microsoft, Redmond, Wash. U.S.A. Bly '944 at [0049] Database server 34 is configured for executing all database serving within electronic system 20, and may comprise suitably adapted hardware selected, in part, on anticipated traffic and data access response-time standards set for system 20. Database server 34 may include conventional, commercially available software, such as Windows NT 4.0 operating system software, and Microsoft SQL server 7.0 database server software, both from Microsoft, Redmond, Wash. U.S.A. Bly '944 at [0050] Web server 30, application server 32, and database server 34 define a multi-tiered computing environment configured to achieve and implement the functionality to be described in greater detail hereinafter. It should be understood that alternate architectures may be employed, achieving the same functionality, yet remain within the spirit and scope of the present invention. Bly '944 at [0051] System 20 organizes asset information into several logical groups. Market database 36, shown diagrammatically in FIG. 1, is configured for storing a plurality of asset profiles, associated with a corresponding plurality of assets, destined for disposal on an electronic market. Contemplated transaction types include sale, rental and lease. The asset profile includes two parts: asset specification data and a bid

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	definition. The asset specification data includes a variety of details about the asset, as well as its maintenance history. The bid definition outlines the parameters associated with the above-described commercial transactions contemplated for the asset. Market database 36 is illustrated as a logically separate database, although it should be understood that market database 36, in alternative embodiments, may be implemented together on the same physical hardware as the global asset database 38. Market database 36 is configured for rapid retrieval of asset information, as desired to facilitate the electronic commerce functionality of electronic system 20. Bly ’944 at [0052] Fleet database 40 is configured to store asset specification data for assets contained in fleets being managed by system 20. As used herein, “fleet” is a logical grouping or association of one or more assets, which may include assets 221 , . . . , 22n being tracked and managed by system 28. A “fleet” may be either (i) a current fleet, or (ii) a simulated or “Fantasy” fleet. An existing fleet is a fleet containing assets under the control of a user, for example, through ownership or lease. A “Fantasy” fleet may contain (i) any assets in any of the user's existing fleets (“held assets”), (ii) new or used assets not held or controlled by the user such as may be available for purchase, rental, or lease from third-parties via the market, or (iii) fictional assets having a predetermined usage, and performance profile, from the preconfigured asset database 42. Bly ’944 at [0059] With continued reference to FIG. 2, fleet module 48 is configured to allow members and dealers to add their current fleet information into electronic system 20 for reporting, tracking and analyzing by module 62. It should be understood that such activities provide much information regarding the status of the fleet, and upon which important business decisions can be based. Simulated fleet module 50 is configured to allow a user 23 to access, add, view, edit and delete assets in a simulated fleet. According to the invention, the “Fantasy fleet” feature allows accurate and immediate “what if” analysis, unavailable through the use of conventional systems. Current fleet module 52 allows a member or dealer to access, add, view, edit, or delete assets in one or more existing/actual fleets associated with the registered member or dealer. Bly ’944 at [0062] The “Home” button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The “MY FLEET” button 84 invokes fleet module 48, taking the user

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	to the user's start page 66. The “FLEET BUILDER” button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The “STORE” button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access questions and answers of interest to the users of system 20. Bly ’944 at [0066] Current fleet information pane 76 comprises the interface through which a user interacts with electronic system 20 to create an actual or a current fleet, and to edit or delete a fleet. Fleet information pane 76 includes, in the illustrated embodiment, a “Create Fleet” button 98, an Edit button 100, a Delete button 102, a radio button 104, and a link 106. Selecting (i.e., “clicking”) on the “Create Fleet” button 98 causes fleet module 48 to create a new fleet record in fleet database 40. In one embodiment, the record includes a fleet name, and a location. Edit button 100, when selected by the user, invokes current fleet module 52, which is configured to allow the user to edit the fleet name and/or location of the fleet selected by radio button 104. Note that in FIG. 3, only one existing fleet (i.e., the “Denver Division”) is illustrated; however, when two or more existing fleets are displayed, each have a corresponding radio button 104 associated therewith, and only one of the radio buttons may be selected at a time (i.e., is darkened). The fleet having a darkened radio button is the “selected” fleet for purposes of Edit button 100, and Delete button 102. Selecting the delete button 102 causes current fleet module 52 to delete the selected fleet from database 40. In the fleet information pane 76, in the illustrated embodiment, each existing fleet under the heading “Fleet Name” is configured to operate as a link to another page generated by system 20, particularly current fleet module 52. This “linked” page provides an identification of the assets contained in the fleet. The portion of the “linked” page that shows the asset identification is illustrated in FIG. 4 (portions of the “page” have been omitted for clarity, like the Navigation pane 68, which has was already been shown in FIG. 3). Bly ’944 at [0068] FIG. 4 shows a screen output current fleet module 52, responsive to a user's selection of link 106 in FIG. 3. FIG. 4 includes an identification of the individual assets included in the “Denver Division” fleet. In an illustrated embodiment, the identification includes a listing of the following parameters for each asset: a serial number, a make, a model, a capacity (pounds), an asset type, an application rating, a usage

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	parameter, a utilization parameter (percent), and a cost/hour (U.S. Dollars). Bly ’944 at [0071] In step 136, current fleet module 52 obtains basic asset specification data responsive to input data provided by user 23. While the particular types of information contained in the asset specification data will vary depending on the particular asset type involved, in the illustrated embodiment where the asset comprises an industrial piece of equipment, namely a forklift, the asset specification data is divided into four subgroups: “basic”, “additional”, “usage”, and “performance”. In one embodiment, the “basic” asset specification data may include an asset type (e.g., a standard forklift), a make/model designation, a serial number, a year of manufacture, a capacity (e.g., in pounds), and commentary text. In a constructed embodiment, “clicking” the “Add Asset” button causes a dialog box to be presented to the user having four tabs labeled “basic”, “additional”, “usage” and “performance”. The user moves from tab to tab, filling out respective forms, comprising input boxes and pull down menus. When complete, the user “clicks” on a “SAVE” link. The method then proceeds to step 138. Bly ’944 at [0072] In step 138, module 52 obtains “additional” asset specification data, which in the illustrated embodiment of a forklift may include a mast type (e.g., quad, standard, STD, TSU, etc.), a tire type (e.g., cushion, foam filled, non-marking, pneumatic, polyurethane, etc.), a “fuel type”, a mast height, a tilt selection, an attachment description, an asset description, a condition, and an accounting system asset identification (ID) number, and a lease ID number. As will be described below, reporting and analysis module 62 generates reports that include financial parameters, on both a per-asset and a per-fleet basis (e.g., average monthly cost). Part of the cost analysis derives from how much is paid monthly to lease or rent the asset. This cost information, in one embodiment, is derived from information found in a separate accounting/leasing system (not shown), and is identified and retrieved by electronic system 20 using the accounting system asset ID number, and lease ID number, provided as “additional” asset specification data in step 138. In an alternate embodiment, where the asset being added is not an asset covered under a lease in a leasing system in electronic communication with system 20, further financial-option information will be obtained from the user for the asset being added, which may include a purchase price (including applicable depreciation information so as to enable calculation of a monthly cost amount), a lease/rental amount, a lease-life rental-term, and a residual amount for lease/rent. The method then proceeds to step 140.

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	Bly ’944 at [0079] FIG. 6 shows a screen output generated by current fleet module 52 for a configured asset. The configured asset comprises asset specification data 154 including maintenance history data 156. In the example illustrated in the drawing, the user reaches the screen of FIG. 6 by “clicking” on link 132 in FIG. 4. Through the foregoing, a user wishing basic information (i.e., a simple identification) of the assets in the user's fleet need proceed no further than FIG. 4. However, for greater detail, including a description of the asset, the user can “drill down” by clicking on link 132 to reach FIG. 6. Screen output 152 further illustrates an “Add Maintenance Item” button 158, an Edit button 160, a Delete button 162, a plurality of radio buttons 164 and links 166, and 167. Bly ’944 at [0084] Referring now to FIG. 7, in accordance with the present invention, electronic system 20 is configured to facilitate transactions where a first user, such as a dealer, can consign assets, such as forklifts, to the electronic market established by system 20 for sale, rental, or lease. This feature allows the first user, such as the dealer, to increase asset utilization by exposure of the asset to a broader audience than just the end-user customers of that dealer. Additionally, by making assets available that a second user/dealer can rent, with a view towards sub-renting to an end-user customer, electronic system 20 in-effect provides a “virtual” rental fleet. The rental fleet is “virtual” because electronic system 20 enables the second user/dealer to provide equipment to his end-user customer that he does not own. Bly ’944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile 182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment, generating the asset specification data may be performed by executing the “add asset” method described and illustrated in connection with FIG. 5. Bly ’944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is

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	configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly ’944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry of dates, and pricing, where appropriate. Bly ’944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36. Bly ’944 at [0101] First, in a create and define feature, the asset specification data (including maintenance history data), as well as the bid definition are made by the first user directly out of market module 56. That is, when a first user, such as a dealer, wishes to post a piece of equipment on the electronic market, the first user, after logging in, initially selects the “STORE” button 88 (FIG. 3) from the user's start page 66, which invokes market module 56. Market module 56, as one of its available functions, would directly allow configuration of an asset (i.e., input of asset specification data including maintenance history data, as well as the bid definition). When completed, the asset is stored in the market database. Bly ’944 at [0102] Second, if the user wishes to post an asset on the electronic market, but the asset does not presently “electrically” exist in one of the user's fleets, then the user can follow the “add asset” process described above in connection with FIG. 5. Once the asset is created “electrically”, the user then “clicks” the “Add

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	to Market" button. Bly '944 at [0137] In summary, subsystem 300 works as follows. A database is configured and information associated with a plurality of assets 22 is stored in the database. Subsystem 300 analyzes the information in accordance with a set of pre-defined conditions. When a pre-defined condition is met, the subsystem recommends asset disposition using a hierarchy of disposition options, and the conditions and the options are selected to reduce expense and to maximize the return on investment for the asset user. The hierarchy of options are typically manually checked and confirmed, and a rejection of the hierarchy of options generates feedback with the system modifying as appropriate the availability of future options. Barkan '859 at [0112]–[0113] To achieve a cost reduction according to the present invention, MicroCells are to be possibly purchased and installed in private residences in exchange for incentives to the resident. These incentives might include economic incentives, new services for the resident such as cordless phone without range limit. For example, while using cellular services payment may be executed, or a cut from the revenues that are generated to the operator through the usage of these MicroCells may be transferred to the said purchaser. The MicroCell may use the home facilities, similarly to the way a cordless phone does it. Barkan '859 at [0253]–[0254] To answer the issue of interference between microcells, The microcell network can use the mobile stations as monitors to the possible interactions. Mobile station is capable of listening to frequencies given by the cell that serves them, and report back the strength of the received signal. Such measurements are designed for handovers, however they can be used to test the interface by microcells. When user location is known, it enables to get valuable information of the RF propagation of each and every microcell. Barkan '859 at [0271]–[0272] While engaged in a conversation, the mobile station scans beacon frequencies of neighboring cell in case it will have to switch cells. The frequencies to be scanned are provided to the mobile station by the MSC controlling the cell. The MSC is not aware of the actual deployment of the MicroCells and of their beacon frequencies. For this reason, the MCCIU directs the IU1 to replace the frequency list provided by the MSC by a list that includes frequencies of both GSM cells and MicroCells beacon frequencies in the area. This procedure is used whether the cell conducting the call is a GSM cell or a MicroCell. The mobile station uses the replaced list to perform pre-synchronization with the neighboring cells. The mobile station

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	measures signal level and reception quality of cell having beacon frequency that is included in the list. The results are averaged and transmitted to the BTS through the SACCH (Slow Associated Control Channel) channel. The information ends up at the BSC that makes the decision whether to switch cells (handover) and to what target cell the call is to be transferred. Barkan ’859 at [0353] In one embodiment of a billing method, the centers 31 are also responsible for price setting, as determined by an operator there. The information regarding prices of use of the net and the additional, private base stations, is disseminated as digital documents encrypted so as to prevent tampering with. Barkan ’859 at [0354]–[0355] The centers 31 are also responsible for tracking down malfunctions in the cellular network. If a base station would not respond or would not operate correctly, that information is brought to the attention of the center by related parties. The center will disseminate that information, to help user form communication links with reliable channels and base stations only. The new centers may initiate calls to the various base stations, to verify their correct operation. Thus, the new cellular centers correlate and guide the operation of the users in the net, in real time. Barkan ’859 at [0357]–[0368] The new center 31 coordinates the operation of the new base stations like 41 and 43 as illustrated. The duties of the cellular centers 31 include, among others: a) Network integration and planning b) Implementing a price policy. c) Network operability. d) Manager of phone locator. (In case of incoming calls). Detailed Description: a) The Cellular center 3 knows the current physical location of all add-on base stations, and is aware of the status of each base station (i.e. is available or not available, optionally processing a call etc.). b) The cellular center is possibly responsible for the price policy. It determines and publishes the cost for each operation over the network. The updated information may be transferred over an Internet, or may be available to add-on base stations. The information may be dispersed between units in the network. In each transaction, the parties thereto will check the date of each price list. The more updated price list will be transferred to the other party. Thus, the new price list or policy will gradually expand throughout the network. c) The cellular center is responsible to actively check, once in a while, the availability of base stations and their operability (see if they work properly).

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	d) One of the main tasks of the cellular center is to give the function: when given a “cellular phone number”, it is able to return the IP address of a base station, that has radio contact with it. Alternately, it may return a message that the phone is in the “out of coverage area”. Barkan ’859 at [0369]–[0371] The new system and method provides means for paying to the owner of the add-on base station for his/her services. This provides the incentive for acquiring and operating these base stations. Encrypted sessions can be used. The base station includes means for accepting a payment and for displaying to the user information relating to the payments received. Using encryption and digital documents, it is possible to reliably implement the payment method as detailed, while protecting from impostors or others who may present false payment means. This may help prevent stealing of calls, that is a problem in present systems. Barkan ’859 at [0373]–[0376] A possible method of billing is by way of money or tokens. Digital documents may be used that correspond to cash money or to a credit or right to use the network at someone's expense, or may represent phone tokens having a specific monetary value each. These documents may be encrypted or signed so as to allow the owner of the base station to receive payment for services rendered. The phone may download tokens or money from the center or from a plastic card or a smart card or by other means. These payment means may be stored in the phone for subsequent use. When originating a call, or otherwise as stated in the cellular center policy, the phone would send tokens to the base stations in the way to the other phone. In this way he pays for the session on—line and in real time. The center can profit since for a certain amount of money it will give a certain amount of tokens (and take its profit). Base stations receive payment, and can later redeem the tokens from the cellular center back to money, or receive new tokens for their owner instead, for the owner's use in his/her communications over their cellular phone. Barkan ’859 at [0390]–[0393] Cellular systems are easier to install in sparsely populated areas. It is more difficult to install cellular base stations in towns or other highly populated areas, where there are the problems cited above. The present invention helps solving the problem of cellular installation and achieves best performance in the densely populated areas that were difficult to address in the past. The very population that may have opposed to the cellular net, are now helping the setting up of the new cellular network. According to the new concept, small cells are thus created in cities or other populated areas. The maintenance cost is greatly reduced. The system operator is no longer responsible for the

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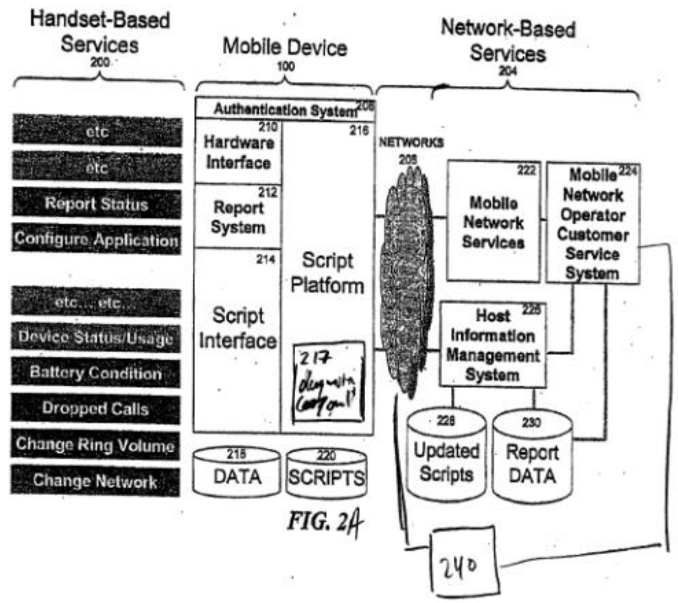
	maintenance of a multitude of base stations located in a highly populated urban area. Rather, each owner of a private base station is interested to keep his/her equipment in working order. If there is a problem, the owner will see to repairs or a replacement. In a preferred embodiment, simple and low cost base stations are used, that are expendable—when a malfunction is detected in a base station, the unit is discarded and replaced with a new one. The new add-on base station, together with the system and method for its effective integration in the existing cellular system, can help achieve a more cost-effective, gradual expansion of cellular networks. Barkan ’859 at [0428]–[0431] Let us assume that a mobile phone has a link with a first base station. It may happen, during the conversation, that the phone detects that it receives the first base station at a low power, that is at a power lower than a predefined threshold. In that case, a program in the phone may run a background search for an alternate base station. If it finds a second base station at a higher received power, then the phone will ask it to continue the call. It will send packets from the new station, and try to inform the old station of the change. Alternately, the new base station can inform the old base station of the transfer of the call to it. The other party's base station is informed by the phone or by the base station of the new IP address of new base station. Thus the link is disconnected from the first base station and a new connection is established with the second base station, to improve the quality of the link. It is assumed that a higher received power indicates a link with an improved communication quality.

Claims	
	Roundtree '997 at Figure 2A 

Claims	
	Roundtree '997 at Figure 3

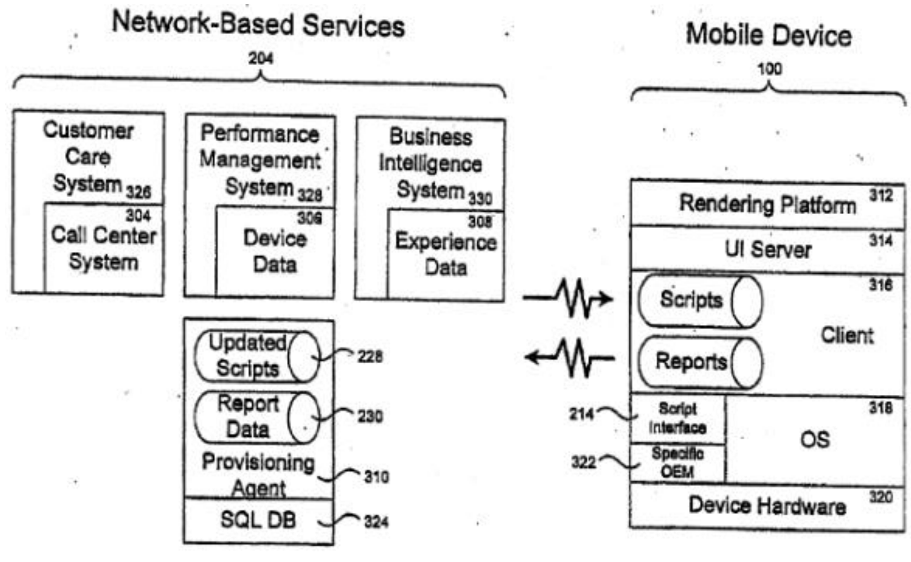
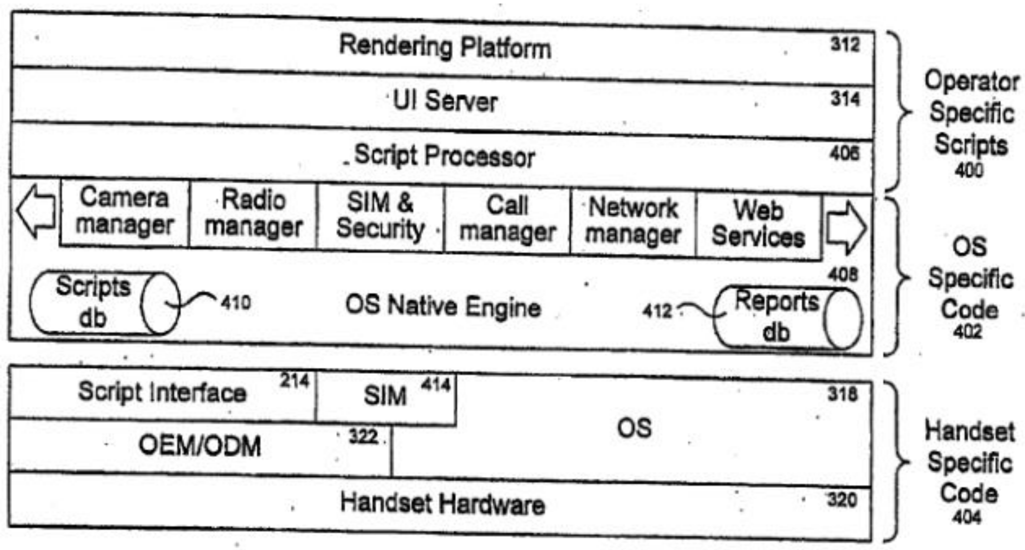


FIG. 3

Claims	
	Roundtree ’997 at Figure 4  *FIG. 4* Roundtree ’997 at [0018]–[0022] The handset-based services 200 may include executable software, software configurations, hardware configurations and controls, and handset operating system interfaces. As disclosed herein, executable software may include, without limitation, any software program stored on the mobile device or associated memory device, both permanently and temporarily connected via hardware or wireless connectivity. The mobile device 100 may include an authentication system 208 (e.g., via a SIM), a hardware interface 210, a report system 212, a script interface 214, a script platform 216, data 218, scripts 220, and a device management component 217. The network-based services and/or components 204 may include a network or networks 206, mobile network services 222, a mobile network operator customer service system 224, a host information management system 226, updated scripts 228, report data 230 and device management component 240. The components of the mobile device 100 and the network-based services 204 will be described below. The components within the mobile device 100 allow the device to integrate both handset-based services 200 and network-based services 204. The authentication system 208 can implement SIM (Subscriber Identity Module) card-based or standalone authentication to meet network requirements for desired levels of security. Authenticating a system to meet network requirements may not be required but is often recommended.

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	The hardware interface 210 may retrieve hardware interface elements required for interfacing with network or phone-based customer support services. Examples of hardware interface elements include changing volume, changing frequency, retrieving SIM (Subscriber Identity Module) ID, connection status from the SIM or radio hardware, and others. The report system 212 may collect and forward the data reported by the mobile device to the network 206. The report system 212 can also encrypt the handset identification information to provide increased security. The information can be encoded so that only the host information management system 226 can decipher the handset identification information. The script interface 214 serves as a standard application programming interface for customer support services. More specifically, the script interface 214 provides an interface between scripts 220 and the various hardware-specific and executable, program-specific functions. The script interface 214 allows a single customer service script to be deployed across multiple operating systems and hardware configurations. In addition, the script interface 214 includes a standard API (Application Programming Interface) for both the hardware/OS side and the script interface. The script platform 216 can mix and match calls through the script interface to acquire information, to change or correct settings on the phone, and to perform additional functions as described below. The script platform 216 authenticates, runs, and updates all scripts 220, manages reporting updates and changes, communicates with the host information management system 226, communicates with the GUI (Graphical User Interface), and manages customer surveys and interviews. The host information management system 226 can push a notification to the script platform 216 via USSD (Unstructured Supplementary Services Data), SMS (Short Message Service), IP (Internet Protocol), or any other network connectivity that the mobile device supports. The script platform 216 can run the scripts 220 after authentication, and the scripts 220 can be authenticated to the network 206 or to the phone. Roundtree ’997 at [0023]–[0024] The components within the network-based services 204 allow the mobile device 100 to communicate with and to retrieve data from the network 206. The network-based services 204 may include wired and wireless systems. The mobile network services 222 may consist of one or more systems including billing, CRM (Customer Relationship Management), provisioning, and others. Furthermore, mobile network services 222 are able to return data calls made by mobile devices via standard network protocols (e.g., IP, DTMF (Dual-Tone Multi-Frequency), SMS, USSD, etc.). The mobile network operator customer service system 224 may also consist of one or more systems relating to customer service, including billing, CRM, provisioning, and others. The host information management system 226 controls interactions between the mobile device and the host customer support system. The host information management system 226 can transmit updates to the mobile device. The mobile device typically employs a unique handset ID or serial number, and a mobile phone number. The report data 230 provides storage for report information gathered from the mobile device. The updated

Claims	
	scripts 228 consist of scripts that the host customer support system provides to the mobile device. The updated scripts 228 can be managed and versioned as desired by the host information management system 226, can be targeted at specific subscribers or groups of subscribers, and can include requests for reports and customer interview surveys. Roundtree ’997 at [0025]–[0027] The device management component 240 may communicate with the mobile device 100, such as via a diagnostic component within the script platform 216. FIG. 2B illustrates a component architecture for implementing diagnostic management methods as network-based services 204. The device management component 240 includes an actions database 241 that contains one or more actionable scripts, a message component 242 capable of receiving messages from the mobile device 100, translating or identifying data from within the messages, and transmitting messages back to the mobile device 100. The component 240 may also include a customer service component 243 that interacts with other customer service functions provided by the network based services 204. For example, the customer service component 243 may request information from the mobile network operator customer service system 224, or may provide information to system 224. The component 240 may include other additional components or modules 244, such as components that contain user specific or device specific data, components that contain configuration updates and settings, and so on. FIG. 3 illustrates a system architecture for the network-based services 204 and the mobile device 100. The network-based services 204 include a call center system 304, device data 306, subscriber experience data 308, and a provisioning agent 310. The call center system 304 may be part of a customer care system 326, the device data 306 may be part of a performance management system 328, and the subscriber experience data 308 may be part of a business intelligence system 330. The call center system 304 can manage settings remotely and can collect data OTA (over the air) from the mobile device 100 without asking the subscriber for permission. The call center system 304 can also automatically collect device data (e.g., handset ID and mobile phone number) 306 and subscriber experience data (e.g., the nature of the customer service problems) 308 from the mobile device 100. The device data 306 and the subscriber experience data 308 may be integrated into network-based services or used standalone. The provisioning agent 310 interacts with the updated scripts 228 and report data 230. The provisioning agent collects report data 230 associated with the device data 306 and subscriber experience data 308 from the mobile device 100. The provisioning agent also corrects subscriber problems in real-time by transmitting appropriate scripts to the mobile device 100. The transmission of scripts to, and the collection of data from, the mobile device 100 may be hosted within the network or externally. In addition, the updated scripts 228 and the report data 306 may be stored in an SQL (Structured Query Language) database 324.

Claims	
	Roundtree ’997 at [0028] The mobile device 100 may include a rendering platform 312 (e.g., implemented in C++), an optional UI (User Interface) server 314, a client 316, and a script interface 214. The client 316 generates reports containing subscriber data and transmits the reports to the network-based services 204. The client 316 receives scripts 320 from the network-based services 204 that can correct subscriber problems. The script interface 214 allows a single script to be executed by multiple operating systems and hardware configurations. In addition, the mobile device 100 may also include an OS (Operating System) 318, specific OEM (Original Equipment Manufacturer) 322, and device hardware 320. In general, the mobile device scripts or applications may be customized via a European Computer Manufacture's Association (ECMA) compliant scripting language such as JavaScript. Such software can be installed by the manufacturer, or after manufacturing, such as over the air, particularly with open OS-based devices. For proprietary OS-based devices, a small kernel can be installed at the time of manufacturing or flashed onto the device at a later time, and then the full client application can be installed on the mobile device over the air. Roundtree ’997 at [0031] As described herein, the mobile device includes one or more scripts that locally perform diagnostic or configuration management on the device to gather data regarding the configuration, operation, and/or functionality of the device. The scripts may be loaded to the mobile device when the mobile device is fabricated, or may be loaded over the air (OTA), (such as when initiated from a call center agent desktop computer). The scripts may be automatically initiated by the mobile device, manually initiated by a user of the mobile device, and/or remotely initiated by a customer care agent. The diagnostic or configuration scripts are launched on the mobile device to resolve problems encountered by the user. In some cases, the diagnostic or configuration scripts may be proactively launched when other scripts or applications are running on the device. For example, the scripts can be included within already running applications, such as the customer care applications and/or tutorial/guide applications discussed herein and in the related applications. The mobile device collects, via the running applications, data or information that can be used to proactively resolve possible configuration problems or errors. For example, the system uses the scripts to monitor the device, such as to monitor the configuration of the device. The scripts, which may reside within the memory of the device, within the SIM of the device, and so on, may initiate, trigger and/or launch device-management functions or actions that assist in correcting problems or updating settings or functions of the device

Claims	
	Roundtree '997 at [0033]–[0035] There are many ways in which the system identifies a problem with the mobile device. For example, in step 512, a running application identifies a problem with the configuration of the mobile device. The running application may be a guide application providing a tutorial to a user of available services and functions provided by the device or may be a customer care application that acts to diagnose help requests initiated by a user by intercepting calls and/or messages to a customer care center. The running application can automatically identify the configuration of the mobile device without input from a user or customer care agent. A user may also identify a problem with the mobile device, as shown in step 514. For example, when the user attempts to connect to a wireless network and is unsuccessful, the system may present a number of options to be selected by the user that define a possible problem. The system presents, via a graphical user interface or via a audio user interface, one or more choices that describe the problem faced by the user. In this example, the user interface may present options such as "Are you having a problem connecting to the internet?" or "Are you having a problem connecting to a wireless network?" Based on receiving input from the user about an encountered problem, the system can diagnose and/or determine any configuration errors or problems without relying on the user to attempt to solve the problem his or herself. A customer service agent may also identify a problem with the mobile device, as shown in step 516. For example, a user may call a customer service center related to a provider of services for the user when the user encounters a problem. The customer service agent, upon receiving information from the user or from the mobile device (such as during an over the air diagnosis of the mobile device), may then be able to identify a problem with the device. Roundtree '997 at [0037]–[0038] In step 530, the device management server receives the message from the mobile device. Depending on the type of the message, the server may translate the message, or may route the message to an appropriate location for further processing. In step 540, the system performs a device management action at the remote server. Some examples of device management actions include provisioning of new applications, provisioning of application upgrades (such as upgrades required to fix bugs, to fix security flaws, to add new features, and so on), personalization and customization of a mobile device, monitoring a device, repairing a device, and so on. For example, the system creates a message to be sent back to the mobile device that includes a configuration file used to fix a security flaw in the mobile device. Further details regarding how and when received messages trigger device management actions will be described with respect to FIG. 6 below. A message is then sent from the device management server back to the mobile device. In step 550, the mobile device receives the message from the device management server, and, in step 560, updates the configuration of the mobile device. For example, a mobile device may have an application running that monitors the data connection of the

Claims	
	mobile device. This application may be a separate application or script, or may be part of a customer care or guide application. The application may determine that the connectivity is faulty due to improperly configured access point names (APNs). Instead of the user attempting to diagnose the source of the problem or call a customer service agent to attempt and diagnose the source of the problem, the mobile device is capable of automatically fixing the problem. Upon determining the APNs are improperly configured, the device may send a predetermined SMS to a remote server at a predetermined number. At the server, the receipt of the SMS triggers a device management action to run on the server, causing the proper APN setting to be identified and then transmitted to the device. Thus, in some examples the system enables a mobile device to recognize a problem at the mobile device, request a solution, and automatically fix the problem without user intervention or without alerting the user. Boehmke ’997 at Figure 4

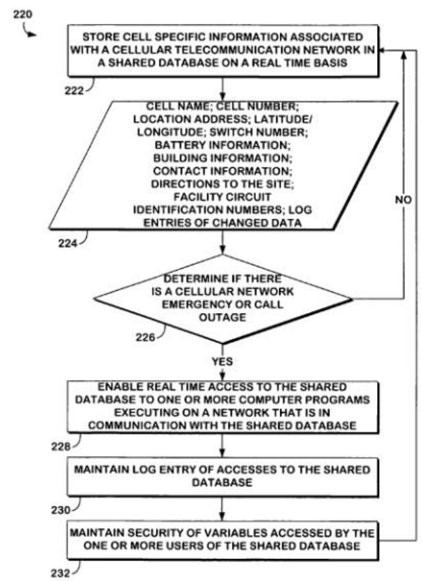
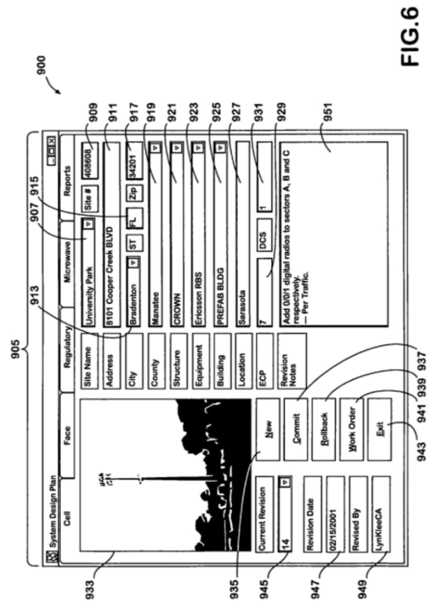
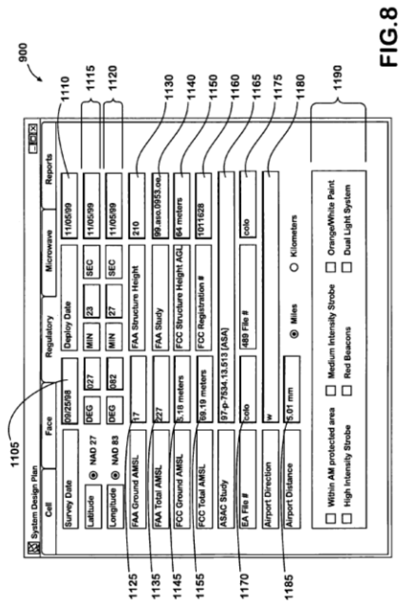
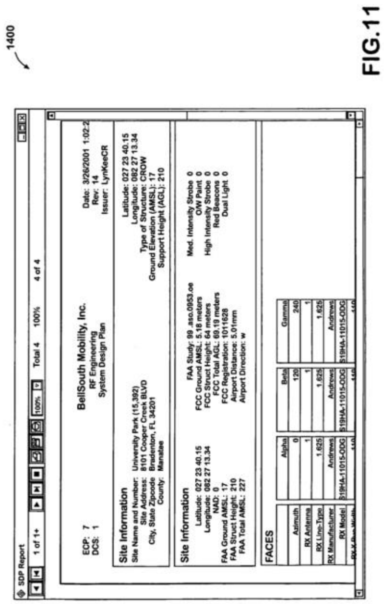


FIG. 4

Claims	
	Boehmke ’997 at Figure 6 

Claims	
	Boehmke '997 at Figure 8 

Claims	
	Boehmke ’997 at Figure 11  Boehmke ’997 at 1:54–2:7 In different embodiments, the invention comprises a system, method and apparatus for maintaining cellular telephone network site information. A distributed database management system may provide a user with several items of real-time information regarding a cellular telephone network site such as: cell name, cell number, location code, address, latitude/longitude, switch number, battery information (e.g., type, manufacturer, model) for all strings, building information (e.g., building and tower type, gate codes, generator information), contact information (e.g., fire, police, landlord etc.), directions to the site, facility circuit identification numbers and log entries for audits of changed data. In one embodiment, the user can be provided with emergency data associated with the telecommunication network. A common database is provided for storing the information from various entities within an organization responsible for maintaining the cellular telephone network site. Once the information is stored in a common database, it can be made available to users associated with the various entities as well as to various other computer software programs residing on the distributed system. Boehmke ’997 at 3:10–59 The distributed information system for data and processes in accordance with one embodiment of the

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	invention includes one or more databases and processes, such as computer software programs, that share a common database. In one embodiment, the distributed information system for data and processes can utilize a structured query language (SQL) common database for providing a distributed database management system. For example, a MICROSOFT SQL™ server can be used to provide a common database function whereby a plurality of general-purpose computers in communication with the SQL server can carry out the manipulation of data stored on the SQL server while the SQL server performs other operations associated with the distributed database management system. Those skilled in the art will appreciate that the SQL server can be coupled to or be in communication with one or more storage devices for storing data or computer software programs. In accordance with one embodiment of the invention, any changes that are made to a particular set of data by the one or more computer software programs in one process, or by one or more users, are reflected into and are accessible by other computer software programs within the distributed information system on a real-time basis. Referring now to FIG. 1, where one embodiment of one set of components that can be used to carry out the system, method and apparatus is illustrated in diagram form. In one embodiment, the system components comprising the distributed information system 10 include an application server 12, a shared server 14, a database server 16, a general-purpose computer 18 and a workstation 26. The application server 12 provides access to one or more computer software programs 20 stored therein or stored in a database 22 in communication with the application server 12. Further in one embodiment, the application server 12 is in communication with one or more other components of the other distributed information system 10, such as the shared server 14, the database server 16, the general-purpose computer 18 and the workstation 26, for example. The one or more system components also can communicate with each other via well-known communications hardware and software. Still further in one embodiment, the one or more system components can be interconnected in a network 24 configuration in accordance with various well-known network topologies. For example, the components of the distributed information system 10 can be interconnected in a bus topology, ring topology, a star topology or combinations thereof. Those skilled in the art will appreciate that any one of these network topologies, or combinations thereof, can provide an adequate implementation of the system, method and apparatus. Boehmke ’997 at 6:59–7:67 Referring now to FIG. 4, where one embodiment of the distributed information system 10 is illustrated which can be utilized as part of a telecommunication distributed database management system 56. In one embodiment, the general-purpose computer 18 can be in communication with one or more other general-purpose computers configured and adapted as the database server 16 component of the telecommunication distributed database management system 56. The database server 16 can be configured as a distributed database management server for creating, maintaining and viewing database data. Those skilled in the art will appreciate that, in addition to the data, the database 22″ can also include one or more computer

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	software programs 20 therein. In one embodiment, the database server 16 of the telecommunication distributed database management system 56 can utilize a structured query language (SQL) database for creating, viewing and maintaining database data. MICROSOFT, ORACLE, GUPTA, INFORMIX, POWERSOFT, ORACLE and SYBASE can all supply SQL databases, for example. Accordingly, the database server 16 can implement an SQL database server such that one or more general-purpose computers 18, workstations 26 or other servers can access and manipulate the data stored in the database 22″ that is accessible by the database server 16. In addition, the database server 16 can manage and coordinate the data stored in the database 22 while also performing calculations locally. For example, as discussed above, the database server 16 can be comprised of a general-purpose computer 18 or workstation 26 that includes one or more central processing units 52 for executing instructions according to one or more software programs 20 and a memory 54 for storing such instructions. The database server 16 also can be configured and adapted to perform additional functions and execute additional algorithms in addition to manipulating data within the database 22″. For example, in one embodiment, the database server 16 can execute instructions of a software program 20 for carrying out tasks such as managing the storage and retrieval of database 22″ data, generating reports, displaying data, transmitting data to one or more peripheral devices such as printers 38, plotters, facsimiles, modems 36 and other similar devices. In addition, in one embodiment, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as transmitting database data or specific reports to one or more other general-purpose computers 18 or workstations 26 that are in communication therewith. Further, in one embodiment, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as communicating database 22″ data or reports to one or more other computer software programs 20 whose instructions are executed on other general-purpose computers across the telecommunication distributed database management system 56. In addition, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as sending database data or reports to a network address or electronic mail (e-mail) address in response to a query or in response to a predetermined set of conditions. Still further in one embodiment, the database server 16, or for example any one of the one or more general-purpose computers 18 in communication with the network 24, can execute instructions of a software program 20 for carrying out the function of broadcasting a wireless signal to be received by one or more users carrying a wireless device or to be received by other devices having incorporated therein a device in response to a predetermined set of conditions. Those skilled in the art will appreciate that the wireless device can be, for example, a pager receiving a paging signal. Those skilled in the art will recognize that the above-enumerated tasks to be performed by the database server 16 can be performed by other components within

Claims	
	the telecommunication distributed database management system 56. Also, such tasks are illustrative in nature and are not intended to limit the scope of the invention. Boehmke ’997 at 8:17–30 Referring now to FIG. 4, where one embodiment of a logic flow diagram 220 for obtaining real-time information associated with a telecommunication network 25 is illustrated in block diagram form. At block 222, cell site 86 specific information associated with a telecommunication network 25 is stored in a shared database 22 on a real-time basis. For example, at block 224, a list of the type of cell site 86 specific information is listed. The cell site 86 specific information illustrated in block 224 includes the cell name, the cell number, the location code, the address, the latitude/longitude, the switch number, the battery information, the building information, the contact information, directions to the site, the facility circuit identification numbers and log entries of any changed data, for example. Boehmke ’997 at 10:41–54 One embodiment of the distributed database management system 56 can provide a user with several items of information regarding a cellular telephone network site. For example, the user can be provided with real-time information associated with a telecommunication network such as: cell name, cell number, location code, address, latitude/longitude, switch number, battery information (e.g., type, manufacturer, model) for all strings, building information (e.g., building and tower type, gate codes, generator information), contact information (e.g., fire, police, landlord etc.), directions to the site, facility circuit identification numbers and log entries for audits of changed data. In one embodiment, the user can be provided with emergency data associated with the telecommunication network. Boehmke ’997 at 11:9–48 If the user selects cell numbering, a cell number will be provided. Furthermore, the user can look for a particular site by selecting that option or clicking on an icon displayed on a system 56 output device. Accordingly, the system 56 will provide the user with the name of the cell site, the number of the cell site, the location code of the cell site, the last time the code was modified, the company number, the switch 58 that the cell site is located in, who the responsible field engineer is, address, city, state, zip, latitude, longitude and the facility information associated with that cell site. Those skilled in the art will appreciate that “facilities” are provided to make a connection between the cell site and the switch 58 for various data links, such that the switch 58 can communicate with the cell site 86. Moreover, the system will provide the user with information that can be retrieved from other computer software programs 20, for example a facility management program. Those skilled in the art will appreciate that the above list is not exhaustive and should not be considered as limiting the invention. Those skilled in the art will appreciate that the

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	information can be initially populated in a table 100 from a common table 100 that is shared by all the computer software programs throughout the system 56. For example, if the user selects to review generator or battery information of a particular cell site 86, the system 56 will provide the user with information associated with the generator and the battery. One embodiment of the system 56 provides the user with a string for identifying a 24-volt battery including the battery type, the battery manufacturer, the battery model number, the number of active cells there are and where they are physically located. The same information can be provided in a string for identifying a 48-volt battery. If the user selects to review building information of a particular cell site 86, the system will provide the telephone information, the building type, the company number, the tower type, whether there is a gate at the tower, the gate key, if there is a gate key, and if there is, whether there is a gate code. In addition, the system can provide different types of information about the generator, fuel loads and the like. Boehmke '997 at 11:49–67 If the user selects to review contact information relating to a particular cell site 86, the system will provide police, fire, water, Federal Aviation Administration (FAA), gas company, landlord and electric company contact information, the meter number, the account and various other pieces of contact information. In addition, the system can provide the name of the RF Engineer, the name of the Cell Manager and the like. In addition, the system provides logging and tracking of data associated with a particular cell site 86 in case there is ever a need to roll back the data. Moreover, a complete history of a particular cell site 86 can be provided to the user. The information discussed above is by no means exhaustive. For example, the system can provide additional pieces of information associated with a particular cell site 86 such as maintenance of routine history, the last time the generator was run, the last time the generator was inspected, when the warranty will expire and the like. Therefore, from one software program 20, the user can obtain a variety of information about a particular site. Boehmke '997 at 12:44–65 Referring now to FIG. 5, an illustration of a user accessing a system design plan software application 20 via the distributed database management system 56 will be described. The system design plan software application may display much of the information described above for a particular cellular telecommunications network site. The system, method and apparatus provide a user with information regarding the maintenance of cellular telecommunications network sites across a geographic region on a real-time basis. The distributed information system main menu 800 includes a plurality of region fields 805. The user may select one of these region fields 805 to access different functionality for a particular region. For example, as illustrated in FIG. 8, the user has selected the West Florida region field. After

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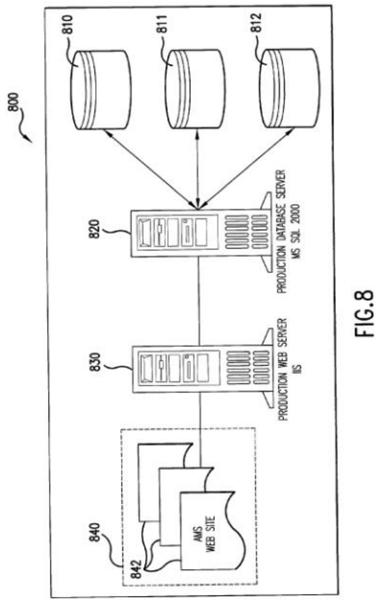
	selecting one of the region fields 805, a drop down menu 810 is displayed to the user. To access the system design plan software application 20, the user selects drop down menu selection 815 entitled SDP (System Design Plan). After selecting the SDP software application 20 via the drop down menu selection 815, the SDP software application 20 displays a SDP main menu 900 to the user as illustrated in FIG. 6. Boehmke ’997 at 12:66–13:9 Referring now to FIG. 6, the SDP main menu 900 comprises a plurality of tabs 905 that provide access to different information about cellular telecommunications network sites within the selected region field. For example, as illustrated in FIG. 6, the tabs 905 include a cell tab, a face tab, a regulatory tab, a microwave tab and a reports tab. Each of these tabs, when selected, causes different information regarding a cellular telephone network to be displayed to the user. For example, as illustrated in FIG. 9, when the cell tab is selected, location information and other information regarding a particular cellular site is presented to the user. Boehmke ’997 at 13:10–20 Referring to FIG. 6, when the cell tab is selected, the system design plan software application may display information such as a site name 907, a site number 909, an address 911 of the cell site, a city 913, state 915 and zip code 917 of the cell site, the county 919 of the cell site, the structure 921 of the cell site (such as the type of tower), the equipment 923 deployed at the cell site, the building type 925 of the cell site, the location 927 of the cell site, the electronic control processor (ECP) 929 of the cell site, and the digital cellular switch (DCS) 931 of the cell site. A photograph 933 of the cell site may also be displayed. Boehmke ’997 at 13:64–14:8 Referring now to FIG. 8, when the regulatory tab is selected, particular regulatory information regarding a cell site may be displayed such as information used for FAA/FCC filings. In one embodiment of the invention, the regulatory information includes a survey date 1105, a deploy date 1110, the latitude of the cell site 1115, the longitude of the cell site 1120, FAA ground AMSL 1125, FAA structure height 1130, FAA total AMSL 1135, FAA study 1140, FCC ground AMSL 1145, FCC structure height AGL 1150, FCC total height AGL 1155, FCC registration number 1160, ASAC study 1165, EA file number 1170, 489 file number 1175, airport direction 1180, and airport distance 1185.

Claims	
	Dawson ’953 at Figure 8  Dawson ’953 at [0019] In its broadest sense, the invention is a system and method for organizing the information necessary for an enterprise offering wireless services. This information relates to all aspects of the business and includes information pertaining to portfolios of roof rights (as used herein, “roof rights” refers to a legal right to install a wireless infrastructure, which is typically, but not necessarily, installed on the roof a building) held by the wireless service provider and roof rights that can be obtained by the wireless service provider, commissions, inventories and locations of wireless infrastructure equipment, engineering data, leases, contacts, and other types of information. Dawson ’953 at [0021] The process begins with marketing data 110, which is a list of sites that has been identified as containing potential customers. As used herein, the term site refers to a location at which a wireless infrastructure may be installed. Typically, but not necessarily, a site refers to a single building. However, there are instances in which a site is different from a building. For example, in some buildings that include an addition, it is cheaper and/or easier to install two separate wireless infrastructures rather than attempting to service the entire building with a single infrastructure as running cables between the original building

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	and the addition may be difficult. The information used to identify the list of sites can come from a variety of sources, including responses to mass-mailed advertisements from potential customers, sales leads, the fact that a site not currently being served by the wireless service provider is owned and/or operated by the same owner as another site to which services are provided and various other sources. Dawson ’953 at [0022] In the preferred embodiment, the invention is site-centric in that the site is used as the primary method of data organization. Thus, a site rather than a specific customer, is what appears on the marketing data list even though only a single potential customer from that site (which may include several other, distinct potential customers) has indicated interest in the wireless service provider's service offerings. This is not to say that data concerning individual customers is not maintained; rather, it is primarily grouped and accessed by site. Dawson ’953 at [0024] The user interface 200 also includes a site identification field 204, a site address field 206, a field 208 indicating the number of tenants, and a sales volume field 210. Other fields 212 and 214 indicate the closest base station to the site and the distance to the site from that base station, respectively. Notes pertaining to real estate aspects of the site, such as the name of the landlord and/or management company for the site, permit requirements for the site, and/or, if known, the cost of obtaining roof rights, are maintained in field 216. Field 218 allows the real estate group user to indicate the real estate friendliness of the site. Possible choices in some embodiments are “in review,” “accepted” and “reject.” The user presses the save button 220 when the appropriate indication as to real estate friendliness has been made. Dawson ’953 at [0026] Referring now back to FIG. 1, in addition to the determination of real estate friendliness at step 112, a determination as to whether a serviceable signal can be provided to the site is made at step 116. In preferred embodiments, this determination is made using commercially available programs sold under the trademarks deciBel Planner (Marconi Corporation) and MapInfo (MapInfo Corporation); however, other tools could be used in other embodiments of the invention. Generally speaking, the deciBel Planner program integrates electromagnetic wave propagation models that interface with a MapInfo spatially-enabled terrain database. The terrain databases can be obtained from commercial entities such as MapInfo Corp. that perform fly-overs of a desired area to obtain photographs and terrain information for the desired area. An example of a screen output 300 from the deciBel Planner program is shown in FIG. 3. The screen output includes a photograph 302 of an urban area including a potential site in the form of a

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	building 310. The screen output 300 includes color coded (with the colors representing signal strength) representations of a coverage area 312 over the building 310 as well as other coverage areas 313. The coverage area 312 over the building 310 signifies that the building 310 is serviceable by the wireless service provider's network and that an antenna for a wireless infrastructure may be placed in the coverage area 312 on the roof of the building 310. Dawson '953 at [0027] Also shown in FIG. 3 is the address 314 of the building 310. In one embodiment the address information was obtained by sending out a person with a handheld GPS (global position sensor) device and recording GPS coordinates for potential sites. Once the deciBel planner has been initially configured (including entering the location of the wireless service provider's hubs, specification of hub transmitting power and required signal strength, and preparing the terrain/picture database), the only input that is required to obtain an output such as the screen output 300 is the specification of a desired latitude/longitude. By preparing a database of site addresses and associated GPS coordinates, it becomes possible to obtain the output screen 300 of FIG. 3 by simply specifying the address and using the aforementioned database to translate the address into latitude and longitude coordinates. In some embodiments, the deciBel planner is integrated with the other portions of the program such that an address can be specified to the deciBel planner by simply clicking on it; in other embodiments, the deciBel planner is a stand-alone application and a user is required to manually enter the address into the deciBel planner and an indication as to whether a serviceable signal can be supplied to the site must be entered manually at step 116. Dawson '953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. Dawson '953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. As indicated by the user field 405, the home page requires the sales group user to log in, both to protect the confidentiality of the sales data and to allow the system to track actions performed by each user. The home page 400 includes a plurality of links 410 to other information and system resources, as well as a number of information fields 420, 430. The home page 400 also includes a 'My Buildings' button that allows the sales group member (which may be a regional sales manager or account executive) to view sites that have been assigned to that member. A 'My Buildings With No AEs' button allows a regional sales manager user to view only those sites to which no account executive has yet been assigned. Finally, window 460 allows sites to be selected on the basis of the account executive to which the site is assigned and/or applicable geographical

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	market (e.g., city). Dawson ’953 at [0031] When sites are selected via either of the site buttons 440 or 450 or via the window 460, they are presented to the user in a sites window 500 as shown in FIG. 5. The sites window 500 includes a field 510 that identifies the site identification number, a field 520 that identifies the site name, fields 522, 524, 526 that identify the address of the site, a field 530 that identifies the base station, or hub, through which the site is connected to the wireless service provider's network, a field 540 that identifies the number of tenants at the site, a field 550 that identifies any current sales promotions directed toward a site, and fields 560 and 570 that identify the account executive and regional sales manager to which the site has been assigned. Another field 580 indicates the site status: On Net (meaning a wireless infrastructure has been installed and the site is in communication with the service provider's network), Leased (meaning that a lease for the site has been signed and the process of installing a wireless infrastructure is underway); Target (indicating that the site has been approved by engineering and is real estate friendly), Coverage Optimization, and Reject. A Customers field 590 serves as a link to a list of current customers at the site. Some of the fields in the window 500 also include links to further information. For example, clicking on the number of tenants field 540 will produce a tenants window 600 that provides information for all tenants at the associated site. This information may be used for, among other things, producing a mailing list for a site-specific sales promotion. Dawson ’953 at [0032] FIG. 7 is a screen shot of a site information web page 700 illustrating another site-centric information display. The web page 700 includes a site basics tab 710, a customers tab 720, a leases tab 730, a dB Planner tab 740 and a files tab 750. Selecting the site basics tab 710 calls up the window 712, which displays various information relative to a site, such as the site address, real estate information related to the site, and an identification of the nearest and next-nearest base station (hub) to the site. Selecting the customers tab results in the display of a list of customers for the site. Selecting the leases tab will provide images of lease documents pertaining to legal rights for the site. Selecting the dB Planner tab will result in the display of a propagation model image for the site such as the image 300 of FIG. 3. Finally, selecting the Files tab will result in a display of any other miscellaneous files associated with the site. Dawson ’953 at [0033] FIG. 8 is a hardware diagram of a system 800 according to one embodiment of the present invention. The system 800 comprises a plurality of storage devices 810-812 that store the various databases (e.g., the

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	information used by the deciBel Planner application, site information, etc.) used by the system 800. The storage devices 810-812 are connected to a database server 820 (in preferred embodiments, the storage devices 810-812 are physically located inside the server 820). The database server 820 is connected to a web server 830. The web server 830 is connectable to a display device 840 (such as a personal computer with a web browser) for providing various web pages 780, such as the pages illustrated in FIGS. 2-7, to users of the system. It should be understood that the system 800 is exemplary only and that any number of modifications (e.g., replacing either server 820, 830 with a cluster of servers; implementing the system on a single physical device) are possible. Dawson '953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson '953 at claim 1 A method for classifying a potential customer for a wireless communications service comprising the steps of: identifying a site in a target area the target area including portions that are currently served by a wireless communications service provider and portions that are not currently served by the wireless communications service provider, the site having associated therewith at least one potential customer; accepting, from a user, an indication as to whether legal rights to provide or gain access to a wireless infrastructure for the site can be or have been obtained; accepting, from a user, an indication as to whether the site is in a portion of the target area that can be served by the wireless communications service provider; assigning a priority classification to the site if the site is in a portion of the target area that can be served by the wireless communications provider and the legal rights for the building can be or have been obtained; and

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	classifying potential customers at the site as priority potential customers of the site is classifies as a priority site. Dawson ’953 at claim 6 6. A system for managing data for a wireless service provider, the system comprising: a storage device for storing a database, the database comprising information pertaining to a plurality of sites, each of the sites having associated therewith at least one potential customer; a processor connected to the storage device, the processor configured to perform the steps of accepting, from a user, an indication as to whether legal rights to provide or gain access to a wireless infrastructure for a site can be or have been obtained; accepting, from a user, an indication as to whether the site is in a portion of the target area that can be served by the wireless communications service provider; assigning a priority classification to the site if the site is in a portion of the target area that can be served by the wireless communications provider and the legal rights for the building can be or have been obtained; and classifying a potential customer associated with the site as a priority potential customer if a priority classification has been assigned to the site. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates; sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate.

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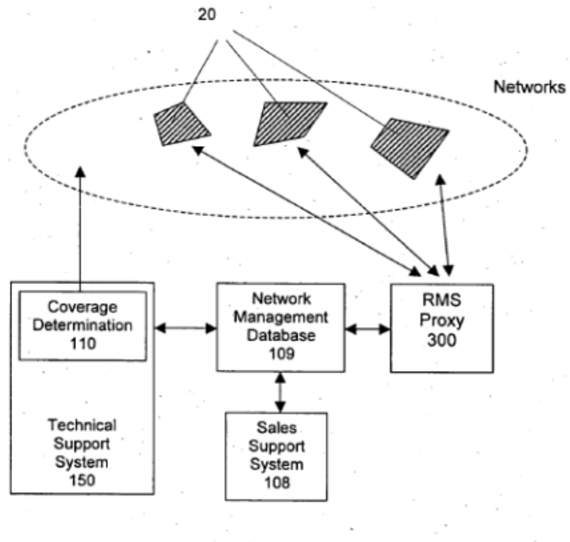
	Korpela '484 at Figure 2  Fig. 2 Korpela '484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Korpela '484 at [0043] Furthermore, a Technical Support System (TSS) 150 is provided for connecting to the network

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	management database 109 to access coordinate and performance data of the installed and/or planned wireless routers. Using the locations of the routers and some performance data (e.g. transmit power, antenna installation height or the like), a coverage determination functionality or unit 110 of the TSS 150 calculates the combined coverage area of the wireless routers. The calculation can be based on a concept of finding points having a line of sight to at least one of the other wireless routers. This concept may thus be a viewshed concept or any other suitable concept for determining a coverage of a wireless connection. In particular, the dynamical coverage area calculation may be based on a viewshed analysis of a three-dimensional map including building heights and statistical information about the existing network. Korpela ’484 at [0045]–[0053] The information retrievable from the network management database 109 may consist for example of all or some of the following parts: a) Line-of-sight to existing network nodes (wireless routers) within a high link speed coverage area; b) line-of-sight to existing network nodes (wireless routers) within a low link speed coverage area; c) line-of-sight to planned network nodes (routers); d) planned coverage areas, i.e. detailed location of wireless routers which are missing for the time being but where network coverage is to be built; e) line-of-sight sensitivity to antenna height (this information can be used to compensate for errors in map material like missing trees), tolerance in antenna location and estimated quality of the link; f) likely antenna radiation directions as deduced from other links in the area (e.g. to compensate for antennas located on one side of the building); g) availability of other technologies to connect the user (e.g. to create a fixed line connection if for some reason the wireless router connection against the calculated predictions cannot be created); h) the capacity of the existing airhoods (i.e. cluster of subscriber routers in a neighbourhood, controlled by an Air Operating System, wherein the connections from the subscriber routers in the airhood to an Internet access point are organized via a single or multiple airheads)). Korpela ’484 at [0054] In the coverage determination unit 110, a combined network coverage of the wireless mesh network is calculated. This may be achieved by calculating geographical polygons 20 indicating geographical areas having a line-of-sight connection to at least one wireless router. The combined coverage areas 20 of the wireless network are constantly changing as new network nodes (e.g. wireless routers) are installed. Since the node locations depend on the customer's purchase decisions preplanning the network coverage area is not possible. Instead, it is important to be able to analyze what is the coverage at any given point in time to plan network changes, to understand how good is the coverage on a particular target area, and to make

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	marketing and other business decisions. Korpela ’484 at [0056] The RMS Proxy 300 constantly or regularly monitors the network and updates the network management database 109 with new nodes and their coordinates. To achieve this, the RMS Proxy or management engine regularly or constantly reads node specific data stored in memories of the wireless routers 10. The node specific data is essential from the planning viewpoint, since it reflects the current network situation. In particular, the node specific data may comprise the name, geographical coordinates and link statistics of the respective wireless router. Thus, the actual cumulative coverage area can be calculated at any moment due to the fact that the network management database 109 is constantly updated based on any changes derived from the node specific data stored at the individual wireless routers. Consequently, the wireless routers 10 are at all times aware of all possible links to their neighbouring routers. Furthermore, information about poor links having a quality not sufficient to be utilized as links may be stored as well. Thus, even if only a view links are actually used for data processing, the wireless routers 10 know the characteristics of several possible links. This information (e.g. link statistics) is then stored by the RMS Proxy 300 in the network management database 109. Korpela ’484 at [0062]–[0063] The automatically measured information about possible links improves the accuracy of the coverage area. Line-of-sight calculation results based on map data and measured information about all available links each wireless router 10 can detect are combined automatically. The calculation of the cumulated or combined coverage area can then be based on the viewshed concept and the link statistics. In this case, the geographical areas can be further differentiated by the number of neighbouring routers that can be accessed in each area. Korpela ’484 at [0066] Due to the continuously changing network environment, consistency among plans in different phases and ability to use performance data collected from already implemented parts of the network is essential. For expansion planning all the existing network data must be always available. This process is essential as the network coverage is extended by each router in the network and as the routers are customer equipment there are continuous changes in the network. The following network planning process guarantees the network service availability.

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	Korpela ’484 at [0080] In a subsequent implementation phase S203, the candidate locations that have been identified in the master plan phase S202 gradually become actual. As the actual locations depend on the buying behaviour of the consumers in the area, the actual locations are typically different from the planned ones. Therefore it is essential to use the up-to-date data that is collected from the network by the RMS proxy 300. The master plan gradually becomes an implementation plan which supports the mass roll-out. Korpela ’484 at [0082]–[0083] To reuse the transmission frequencies as efficiently as possible, a frequency band optimization step which may focus on having as low antennas and as low transmission power as possible could be initiated. Thus, a unique new network solution which incorporates planning and administration features is provided. In other technologies, different parts have been planned with separate tools, which may cause inconsistency and requires resources, when the data from earlier phase or existing network is manually collected. Because of the unpredictable nature of customers joining the network, the process can adapt to deviations from the initial plans. Moreover, it is essential to get up-to-date snapshots of the network status at any point of time. Aufricht ’781 at [0042] Fleet management for centrally administering information in a handheld network environment that includes, but is not limited to, user data, user groups, group channels, channel data, personal channels, commercial channels, user accounts, corporate account, software groupings, personal information management, form delivery, form management, device configuration, device databases, device contents, and devices parameters. Aufricht ’781 at [0049] The sync operation of the invention includes various synchronization processes that can collect information from the Internet to a server, and to the client. In embodiments, the usage of the term “sync” refers to the overall operation of connecting a client to a server for the exchange, interaction, creation, and removal of data. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the

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	following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory Available storage space Screen size User profile(s) Color depth Applications on device Buttons on-device Data markers (e.g., cookies, tokens) Preferences Fonts Font specifications Sync type Synchronization types Supported data types Supported mime types Connection/Network profile Aufricht '781 at [0102] The server 104 includes an administration module 122, a database module 126, a user interface 130, a web synchronization module 124, a server extension module 156, a fleet management module 154, a notification module 132, and a server communication module 114. Other embodiments of server 104 may include a subset of these modules, and/or may include additional modules. Aufricht '781 at [0104] The database module 126 controls access to databases associated with the server 104. The database module 126 maintains information relevant to the clients 108, as well as information relevant to the modules contained in the server 104. The database module 126 manages information on the collection of channels maintained by server 104. These and additional functions performed by the database module 126 are described in co-pending application entitled "System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices," Ser. No.

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	09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht '781 at [0105] The user interface 130 is, in an embodiment, a graphical user interface (GUI) that enables users and clients 108 to access functions and modules offered by the server 104. More generally, the user interface 130 within server 104 provides access to server 104 and the modules and resources contained therein. Aufricht '781 at [0106] The invention supports various server web sites that are available through any communication medium, such as but not limited to the Internet, intranets, direct dial up links, etc. The UI 130 enables such web sites. Aufricht '781 at [0109] fleet management module 154 performs functions associated with fleets of clients 108, which are groups of clients 108. For example, fleet management module 154 may perform global or mass operations on groups (fleets) of clients 108, such as loading or updating an application on groups (fleets) of clients 108. Another example of a mass operation is retrieval of information on clients 108 in a fleet, such as the free memory in clients 108 in a fleet (this would help an organization determine if its clients 108 need a memory upgrade). These and additional functions performed by the fleet management module 154 are described in co-pending application entitled "System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices," Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht '781 at [0110] The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API. Aufricht '781 at [0111] For example, the web synchronization module 124 and the fleet management module 154 (as well as other types of synchronization modules, not shown in FIG. 1A) may interact with databases on the server 104 via the database module 126 by going through the server extension module 156. The web synchronization

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	module 124 and the fleet management module 154 may not be able to interact directly with the database module 126 for a number of reasons. For example, they may support different data formats, or simply "speak different languages." However, they can interact via the server extension module 156 as well as other server modules as long as they conform to the API of the server extension module 156. This is true of any modules in the server 104, or that interact with the server 104. Aufricht '781 at [0112] Server communication module 114 enables communication between the server 104 and entities external to the server 104, such as clients 108, adapters 118, providers 128, work stations, etc. The server 104 communicates with these entities via communication mediums 120, which may be any type of wireless or wired communication using any protocol. It is noted that multiple server communication modules 114 may execute in a single server 104. For example, in one embodiment, server communication module 114 is a TCP/IP stack. In another embodiment, server communication module 114 is a secure socket layer stack or a compression stack. The invention is not limited to any implementation examples discussed herein. These and additional functions performed by the server communication module 114 are described in co-pending application entitled "System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices," Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht '781 at [0114] An alternative representation of server 104 is shown in FIG. 1B. FIG. 1B illustrates, for example, that messages from entities outside of server 104 are received by server extension interface/module 156 via server communications modules 114. Generally, such messages represent requests for the server 104 to perform various functions. The server extension module 156 conceptually operates as a dispatcher who routes such messages to other modules contained in the server 104, such as web synchronization module 124 (who handles requests to synchronize with web content), notification module 132, fleet management module 154 (who handles fleet related requests), and/or third party modules 155 (such as other synchronization modules). Thus, the invention supports modules 155 generated by third parties to perform various functions. Such modules 155 "plug-in" to the server 104 via the server extension module 156. Aufricht '781 at [0147] The data processing unit 103A may also include an interface 103J which may receive objects (such as data, applications, software, images, etc.) from external entities 103N via any communication mediums including wired and wireless communication mediums. In such cases, the objects 103L are transported

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	between external entities 103N and interface 103J via signals 103K, 103M. In other words, such signals 103K, 103M include or represent control logic for enabling a processor or computer to perform functions of the invention. According to embodiments of the invention, such signals 103K, 103M are also considered to be computer program products, and the invention is directed to such computer program products. Geranio ’871 at Abstract An integrated property database and search engine for matching properties with buyers has a computer that includes a master database and a search engine. The master database includes a property for sale database and a buyer's database. The property for sale database includes a property identification, a property location, and a property price. The buyers database includes a buyer's identification, a location of interest, and an offer price. A request is sent to the buyer for ascertaining information to be contained in the buyers database. An inquiry is sent to ascertain information to be contained in the property for sale database. A search engine is used to identify properties in the property for sale database that have a property location within the location of interest for a buyer, and have a property price that is equal to or lower than the offer price.

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>
Geranio ’871 at Figure 1

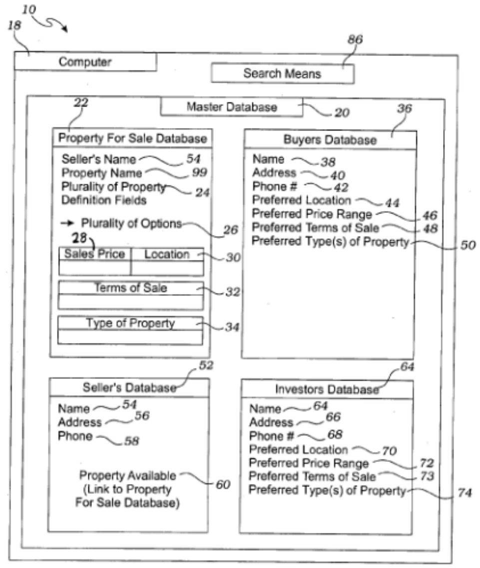

Fig. 1

Geranio ’871 at Figure 2A

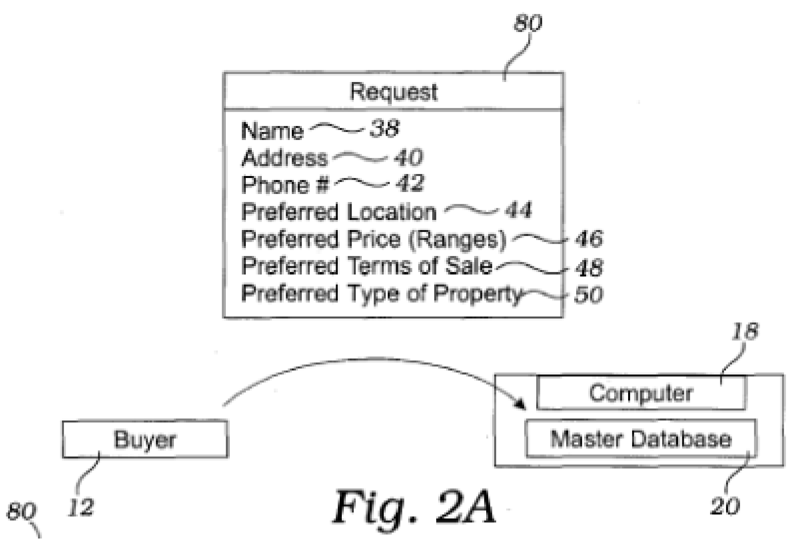

Fig. 2A
</td></tr>
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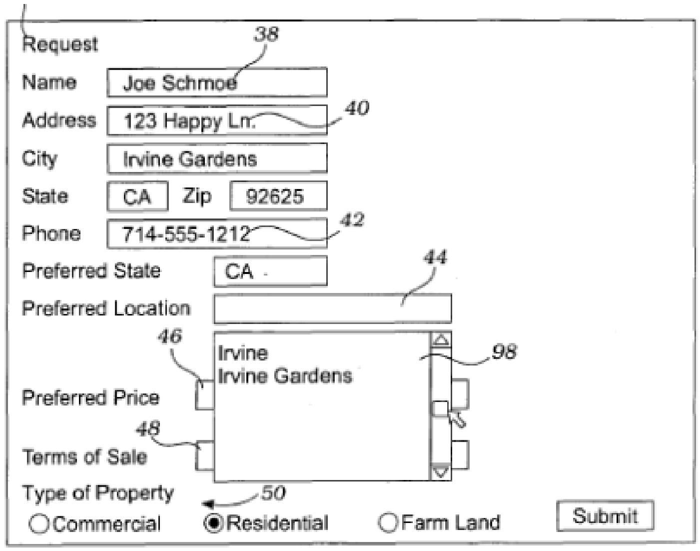
Claims	
	Geranio ’871 at Figure 2B  *Fig. 2B*

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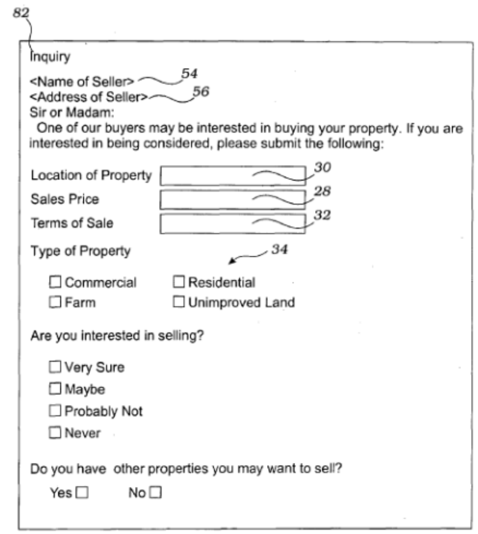
	Geranio ’871 at Figure 3B  *Fig. 3B*

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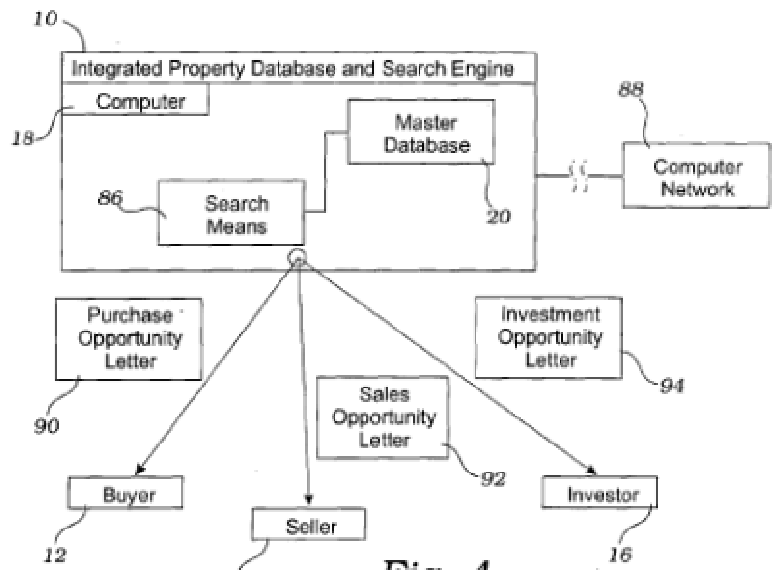
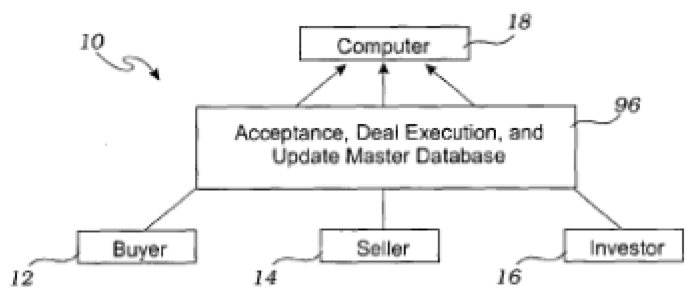
	Geranio ’871 at Figure 4  Fig. 4 Geranio ’871 at Figure 5  Fig. 5 Geranio ’871 at [0013] The present invention provides an integrated property database and search engine for matching properties with buyers. The integrated property database and search engine is executed on a computer having a master database and a search means. The master database includes a property for sale database and a buyer's database. The property for sale database has a plurality of property definition fields that include a

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	property identification, a property location, and a property price. The buyers database has a plurality of buyers definition fields that include a buyer's identification, a location of interest, and an offer price. The integrated property database and search engine further includes a means for generating and transmitting a plurality of requests to the buyers for ascertaining information to be contained in the buyers database; a means for generating and transmitting a plurality of inquiries to the properties for ascertaining information to be contained in the property for sale database; a means for incorporating information from the plurality of requests into the buyers database, and for incorporating information from the plurality of inquiries into the property for sale database; and a search means for identifying properties in the property for sale database that have a property location within the location of interest for a buyer, and have a property price that is equal to or lower than the offer price. Geranio ’871 at [0028] As shown in FIG. 1, the integrated property database and search engine 10 is executed on a computer 18 that includes a master database 20 and a search means 86. The master database 20 includes a property for sale database 22 and may also include a buyers 12 database, a sellers 14 database, and an investors 16 database. The property for sale database 22 has a plurality of property definition fields 24, each of the property definition fields having a plurality of options 26. The plurality of property definition fields 24 may include a sales price 28, a location 30, and terms of the sale. The plurality of options 26 for the sales price 28 could include any dollar amount, or could be rounded to the nearest 10 or 100 dollars. The plurality of options 26 for the location 30 could be by state, region, county, area code, or by custom region, or any other scheme that suits the needs of the buyers 12 and sellers 14. Geranio ’871 at [0035] The integrated property database and search engine 10 further includes a means for generating and transmitting a plurality of requests 80 to the buyers 12 for ascertaining information to be contained in the buyers database 36. As shown in FIG. 2A, in one embodiment the request 80 is a form that is adapted to be completed by the buyer 12 and submitted for entry into the computer 18. Geranio ’871 at [0036] The request 80, an example of which is shown in FIG. 2B, may have been printed and mailed or faxed, or it may be a form that is electronically generated and emailed to the buyer 12, or the buyer 12 may have accessed the request 80 via the computer network 88 (shown in FIG. 4). In another embodiment, the request 80 may be completed by a real estate specialist (not shown) during a phone consultation with the buyer 12. The request 80 enables the buyer 12 to select one of the plurality of options 26 for each of the

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	plurality of property definition fields 24. In an electronic format, the request 80 could include a drop down menu 98 of options; and in paper format, the request 80 may include pre-printed responses that the buyer 12 circles or checks; or the request 80 may be a paper that includes blanks that are filled in by hand. Geranio ’871 at [0037] The integrated property database and search engine 10 further includes a means for incorporating information from the plurality of requests 80 into the buyers database. Foe example, the buyer 12 may mail, fax, email, or otherwise transmit the request 80 to an office associated with the computer 18 for data entry or direct integration into the master database 20. In another embodiment, the request 80 may be completed over the phone, when the seller 14 is speaking with a property specialist, who can take the necessary information over the phone and input the information directly into the master database 20. Those skilled in the art can devise many methods of scanning or otherwise entering the data into the computer 18. Geranio ’871 at [0041] As discussed above, the integrated property database and search engine 10 includes a means for incorporating information from the requests 80 into the buyers database 36, and for incorporating information from the inquiries 82 into the property for sale database 22. This can include directly entering data into the master database 20, scanning the data in using technology known in the art, or having the interested parties enter the information directly over the computer network 88. Sharma ’925 at Abstract An illustrative method provides information to a user on wireless communication coverage. A wireless availability server receives a user request for coverage information where the request includes specific geographic location data provided by the user. A determination is made if the location data is in the form of latitude and longitude coordinates. Upon a determination that the location data is not in the form of latitude and longitude coordinates, the location data is converted into corresponding latitude and longitude coordinates. A query is made to a database containing wireless coverage data based on the latitude and longitude coordinates. A response to the query contains wireless coverage information for the latitude and longitude coordinates. A reply is transmitted to the user responding to the user request where the reply contains the wireless coverage information.

Claims	
	Sharma ’925 at [0021] The Internet 28 supports communications with a variety of information providers. Maps and travel services are available to Internet users from a variety of providers. One such provider utilizes a URL host site that includes map/travel server 46 and an associated database 48 that stores a variety of map, highway and other geographic related information that can be retrieved in response to inquiries from users received by the server 46. Maps showing roadways and other geographic landmarks, as well as aerial views that can be scaled to show areas of interest can be accessed by users. Users typically select areas of interest by inputting a street address, city, state and/or ZIP code. Assuming a specific address in an urban setting is known by the user, such an input provides a reasonably specific geographic location as a target query. However, in a rural environment it becomes increasingly harder to identify a specific geographic location, e.g. a particular rest stop along a rural section of an interstate highway. Sharma ’925 at [0022] Most if not all wireless communication providers provide some information to subscribers by Internet access. For example, one such provider utilizes a URL host site that includes a wireless carrier server 50 and an associated database 52. This communication provider stores service coverage information in the database 52. This information may be provided in response to a query by user in the form of the map typically showing colored regions designated by the communication provider where coverage is provided. However, such information is generally limited in terms of the granularity made available to the user. For example, a circular areas or a series of intersecting circular areas may be shown in which it is to be assumed that coverage is provided throughout these areas. However, a specific geographic location even within such a designated circular area may have poor or no coverage due to any number of factors adversely impacting RF signal propagation between a handset at the specific geographic location and the cellular base station antenna designed to cover of that region. Alternatively, a wireless communication provider may elect to provide a map showing the location of its base stations and leave the areas of service coverage to the user's interpretation. In yet another method, the communication provider, especially for smaller communities or towns, may provide a list of cities or towns for which service is stated to be provided. None of these methods provided by communication carriers provide sufficient granularity (geographic specificity) to permit a user to determine with any certainty whether service is actually available at specific geographical locations, especially those in more rural locations. Sharma ’925 at [0023] In accordance with an illustrative embodiment of the present invention, a wireless availability server 54 with an associated database 56 is coupled to the Internet 28 and serves as a URL host that receives user

Claims	
	queries requesting communication service coverage information at specific geographic locations as provided by one or more communication service providers. Based on information obtained from servers 46 and 50, as well as from information contained in its database 56, the wireless availability server 54 provides a response to the user's query as to communication service coverage at the specific geographic location(s) and/or along a travel route defined in the user's query. Details concerning functioning of the wireless availability server 54 are provided below. Depending upon the particular application and permission having been received from the proprietors of servers 46 and 50, wireless availability server 54 may obtain direct access to information contained in databases 48 and 52 as indicated by the dashed line paths, i.e. access to these databases other than by transmitting a query by the Internet to their respective servers. Some or all of the information contained in databases 48 and 52 could be stored or temporally cached in database 56 for faster access. Sharma ’925 at [0025] FIG. 4 shows steps of an illustrated method in accordance with an embodiment of present invention in which users can obtain information about whether wireless coverage exists for a specific location. Although this method is explained with reference to FIG. 1, it will be apparent that other architectures and configurations of apparatus could be utilized to perform these steps. In accordance with step 60, a user logs onto wireless availability server 54. The user may communicate with the server over a wireline communication channel such as by desktop computing apparatus 34 or by a wireless communication channel that supports a wireless enabled laptop computer, PDA, data enabled cellular telephone, or other types of wireless handsets. Although the Internet 28 is shown as supporting communications with the wireless availability server 54, it will be apparent that other types of communication networks could be utilized to transport communications between the wireless availability server and users. In this example it will be assumed that the user employs the desktop computing apparatus 34 to communicate through the Internet 28 with the wireless availability server 54 which serves as a host for URL queries addressed to it. Sharma ’925 at [0026] In step 62 the user inputs information based on a request for geographic information from the server displayed on his screen. A request may include, for example, multiple input boxes for receiving alphanumeric characters entered by the user that identify specific locations, e.g. addresses or geographic coordinates. Alternatively, the request may comprise a map, which preferably can be scaled to obtain the desired degree of granularity, permitting the user to select specific locations of interest such as by clicking on the corresponding locations of the map. Or the request may include latitude and longitude information such as determined by a built-in GPS receiver to specify a current or previously stored location. In step 64

Claims	
	the user may also identify the user's communication carrier, a particular communication carrier of interest, or request that all communication carriers serving the specific locations of interest be considered. Sharma ’925 at [0029] A NO determination by step 66 or completion of step 68 results in continued processing in accordance with step 70. The latitude/longitude coordinates of the specific locations specified by the user are utilized to query one or more communication coverage databases. If available in database 56, this information can be most efficiently and directly retrieved by server 54. Alternatively, server 54 may generate a query transmitted by the Internet to the server, e.g. wireless carrier server 50 hosting database 52, to obtain coverage information concerning the specific location (s), or if permission has been granted and communication channels are available, the server 54 made directly access the database 52 such as indicated by the dashed lines coupled to server 54 in FIG. 1. Depending upon the granularity of information made available by the wireless carriers, it may be necessary to compile and store separate coverage information such as in database 56 for specific geographic locations identified by latitude/longitude coordinates. Such information can be compiled by empirical testing such as by determining signal strengths available at specific latitude and longitude coordinates for wireless carriers either by professional engineering signal strength studies or by obtaining such information from reports provided by users of the various wireless carriers indicating signal strength readings/communication quality at specific locations. Sharma ’925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each

Claims	

displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76.

Sharma ’925 at [0033]

FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well.

Adwankar 2004 at Figure 1

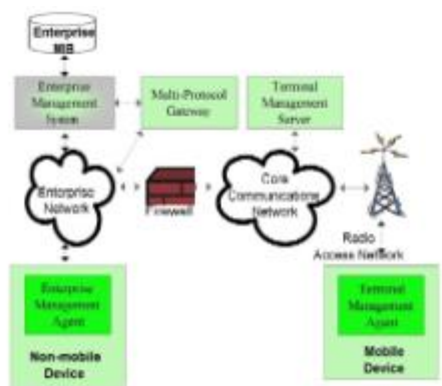
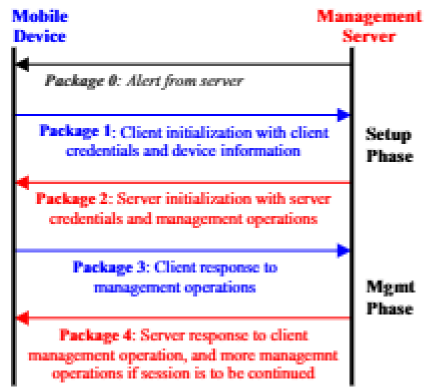
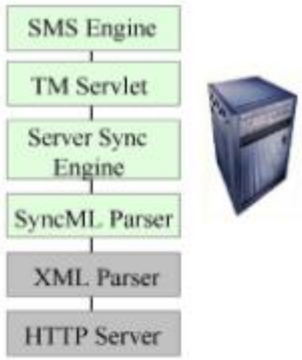


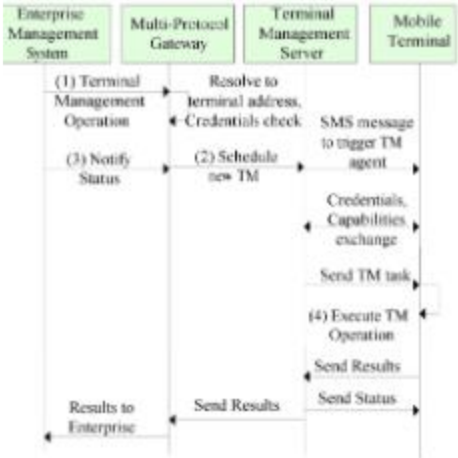
Figure 1 The Universal Manager Architecture

Claims	
	Adwankar 2004 at 3 A mobile device has a terminal management (TM) agent that is customized for its capabilities. The terminal management agent has access to firmware specific details and can perform management operations such as getting or setting configuration data, software image installation, and fault and security management. The TM agent talks with a TM server using a protocol that the device can support. For example a mobile device that supports only Short Message Service (SMS), management actions and results/responses are sent over SMS between TM agent and TM server. Adwankar 2004 at 3–4 SNMP is the IETF standard for operations and maintenance protocol for the Internet. SNMP is based on the manager/agent model consisting of a manager, an agent, a database of management information, managed objects and the network protocol. The manager and agent use MIB and a relatively small set of commands or protocol operations (e.g. GET, SET) to exchange information through SNMP PDUs. The MIB is organized as a tree structure with individual variables, such as point status or description, being represented as leaves on the branches. The SNMP data model defines an object identifier (OID) that is used to distinguish each variable uniquely in the MIB and in SNMP messages. For example, OID 1.3.6.1.2.1.1.1.0 is associated with MIB variable system description. The SNMP data modeling language is a subset of Abstract Syntax Notation Number One (ASN.1), defined as SMIv2. SNMP uses ASN.1 BER encoding as the data representation. SNMP is commonly implemented over Transport Control Protocol (TCP) or User Datagram Protocol (UDP) transport layers.

Claims	
	Adwankar 2004 at Figure 2  Figure 2 SyncML Protocol Phases Adwankar 2004 at 5 As shown in Figure 2 the SyncML-DM is a 2-phase protocol consisting of a setup phase for authentication and device information exchange, followed by a management phase that can be repeated multiple times to support complex manager-to-mobile sessions. A management session may also start with Packet 0 (the trigger), where the trigger may be out-of-band depending on the environment. Adwankar 2004 at 7 The terminal management agent occupies only 110 KB space on a terminal. Shown in Figure 5 is a GSM terminal used for the implementation. We chose J2ME [18] as the platform-independent application development environment, as it provides User Interface and HTTP connection APIs. We chose Tiny XML [21] as the XML parser as it is around 10 K in size. It is also SAX-based [22] and hence, memory efficient.

Claims	
	Adwankar 2004 at Figure 5  Figure 5 Terminal Management agent Adwankar 2004 at 7 The SyncML parser was written on top of the XML parser. The SyncML parser parses the SyncML package received by the J2ME Midlet over HTTP. The result of parsing is a set of management actions that need to be performed on the device. Since we had access to the firmware code of a GSM terminal, we wrote closed classes that in turn made Java Native method calls to firmware. The terminal management agent has two types of mechanisms for starting a TM Midlet. In one mechanism the TM agent has a socket connection in receive mode. On receiving a UDP message, it will check the body of the UDP message and will launch the TM Midlet. For phones, where this mechanism was not possible, we used SMS mechanism to trigger the TM Midlet.

Claims	
	Adwankar 2004 at Figure 6  Figure 6 Terminal Management Server Adwankar 2004 at 7 The Terminal management server shown in Figure 6 is a conventional HTTP Web Server with a Servlet Engine [23]. It receives SyncML messages sent over HTTP, parses them and extracts a set of results and status indicators of the management operations. These results are then sent to the multi-protocol gateway. The SMS Engine is basically a Java mail based mechanism to create a SMTP message. This mechanism was used to trigger the TM Midlet of the phone. For devices other than phones, the server, upon receiving a management action, sends periodic UDP messages to TM agent. Along with security information this UDP packet contains the IP address that the TM Agent will connect back for SyncML exchanges. Adwankar 2004 at 8 Figure 7 shows a sequence of exchanges between various components of the Universal Manager. These sequences of steps are explained below.

Claims	
	Adwankar 2004 at Figure 7  Figure 7 Flow of operations Adwankar 2004 at 8 (1) Terminal Management Operation For a terminal management action, such as the querying of the manufacturer name of a GSM terminal, the enterprise management system is unaware of the presence of such a terminal and either of the following operations takes place. 1. The enterprise management system based on additional information such as IMEI decides to route management action to multi-protocol gateway, or 2. Multi-protocol gateway advertises addressability to that IMEI as a certain IP address and terminal management action takes place on this proxy IP address. In either case the enterprise management system routes the SNMP PDU for the corresponding management action to the Multi-Protocol Gateway instead of sending the SNMP PDU directly to the wireless device. The SNMP PDU's host and port are set to the host and port (in our case 15003) that the Multi-Protocol Gateway is listening on as opposed to the host and port of the wireless device. The SNMP Packet thus sent contains the Operation Name (e.g. Get, Get Next, Set), the OID to be queried, (optionally IMEI of the GSM terminal and the value of the OID if it is a Set Operation), SNMP credentials and a request ID of the SNMP Packet. Figure 8 shows the result of querying the Object ID "./DevInfo/Man" of a mobile device from the enterprise management system. The result that is the manufacturer name is shown in the result panel.

Claims	

Adwankar 2004 at Figure 8

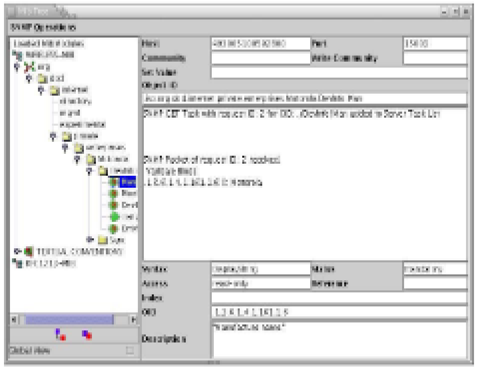
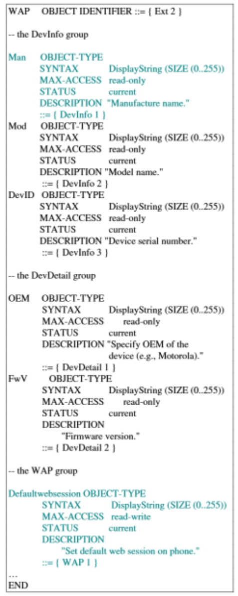


Figure 8 Management of mobile device using the Universal Manager

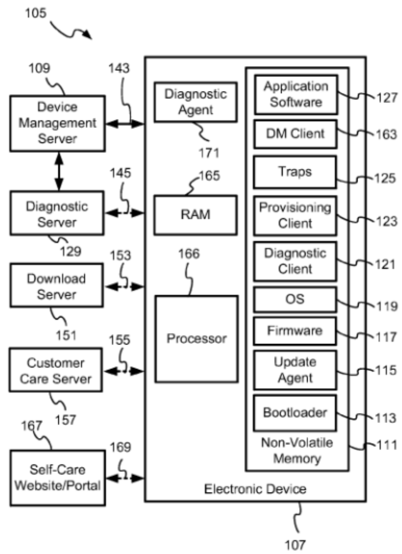
Adwankar 2004 at Figure 10 part 1

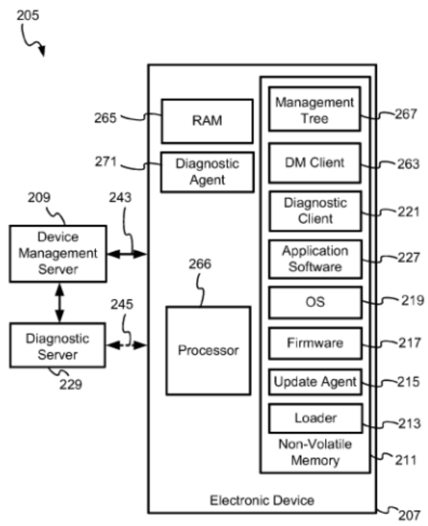
```
WIRELESS-MIB DEFINITIONS ::= BEGIN
IMPORTS MODULE-IDENTITY,
            OBJECT-TYPE, Integer32,
            enterprises
            FROM SNMPv2-SMI
            DisplayString, PhysAddress
            FROM SNMPv2-TC;

WIRELSS-MIB MODULE-IDENTITY
     LAST-UPDATED "200310200000Z"
     ORGANIZATION "Motorola"
     CONTACT-INFO  "Sandeep Adwankar... "
     DESCRIPTION
        "This MIB module defines a MIB which
        provides mechanisms to perform SNMP
         management operations on mobile devices."
         ::= { enterprises xxx }

DevInfo     OBJECT IDENTIFIER
        ::= { WIRELESS-MIB 1 }
DevDetail OBJECT IDENTIFIER
        ::= { WIRELESS-MIB 2 }
Ext    OBJECT IDENTIFIER ::= { DevDetail 1 }
```

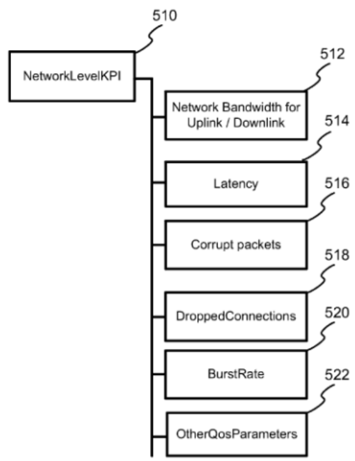
Claims	
	Adwankar 2004 at Figure 10 part 2

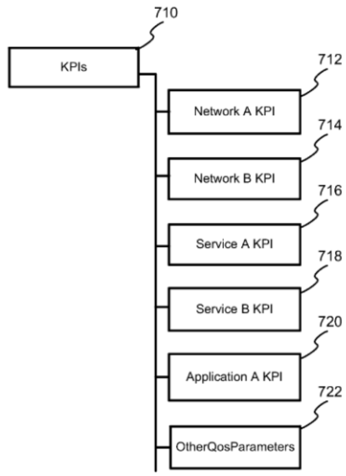


```
WAP    OBJECT IDENTIFIER ::= { Ext 2 }

-- the DevInfo group

Man     OBJECT-TYPE
        SYNTAX          DisplayString (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION     "Manufacture name."
        ::= { DevInfo 1 }
Mod     OBJECT-TYPE
        SYNTAX          DisplayString (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION "Model name."
         ::= { DevInfo 2 }
DevID   OBJECT-TYPE
        SYNTAX          DisplayString (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION "Device serial number."
         ::= { DevInfo 3 }

-- the DevDetail group

OEM     OBJECT-TYPE
         SYNTAX          DisplayString (SIZE (0..255))
         MAX-ACCESS          read-only
         STATUS          current
         DESCRIPTION "Specify OEM of the
                         device (e.g., Motorola)."
         ::= { DevDetail 1 }
FwV        OBJECT-TYPE
         SYNTAX          DisplayString (SIZE (0..255))
         MAX-ACCESS          read-only
         STATUS          current
         DESCRIPTION
               "Firmware version."
         ::= { DevDetail 2 }

-- the WAP group

Defaultwebsession OBJECT-TYPE
         SYNTAX           DisplayString (SIZE (0..255))
         MAX-ACCESS       read-write
         STATUS          current
         DESCRIPTION
               "Set default web session on phone."
         ::= { WAP 1 }
...
END
```

Claims	
	Rao ’815 at Figure 1  FIG. 1

Claims	
	Rao ’815 at Figure 2  FIG. 2

Claims	
	Rao '815 at Figure 5  FIG. 5

Claims	
	Rao '815 at Figure 7  FIG. 7 Rao '815 at [0017] As shown in the illustration of FIG. 1, the network 105 in one representative embodiment of the present invention comprises the electronic device 107, a device management (DM) server 109, a self-care website/portal 167, a diagnostic server 129, a customer care server 157, and a download server 151. In one representative embodiment of the present invention, the diagnostic server 129 is an application which receives, processes, and stores/presents the information obtained from the electronic device 107 in an easily readable fashion. The diagnostic server 129 may comprise a personal computer (PC) used by a user to accept collected tracing information from the electronic device 107 through a USB connection, a Bluetooth® connection or via an secure digital format (SD) card (e.g., when a wireless data service for over-the-air (OTA) transfer of data is unavailable). A representative embodiment of the present invention may also comprise other application servers. The electronic device 107 of FIG. 1 is able to communicate with the DM server 109, the download server 151, the customer care server 157, the self-care website/portal 167, and the diagnostic server 129 via communication paths 143, 153, 155, 169, and 145, respectively. Although the communication paths 143, 153, 155, 169, 145 are illustrated as being separate paths between the electronic device 107 and their respective servers, this is only for purpose of illustration, and is not a specific limitation of a representative embodiment of the present invention. The communication paths 143, 153, 155, 169, 145 may be combined into one or more paths that may comprise

Claims	
	any of the wired or wireless networks previously mention above, including point-to-point and/or broadcast, wired or wireless communication paths such as, for example, a local area network, a public switched telephone network, a wireless personal, local or wide area network, and a cellular or paging network, to name only a few possibilities. Although not shown in the illustration of FIG. 1, the electronic device 107 also comprises interfaces used to communicate over the communications paths 143, 153, 155, 169, and 145, which have been omitted from the illustration solely to improve clarity to aid in understanding the figure. Rao '815 at [0020] As shown in FIG. 1, the electronic device 107 may comprise a diagnostic client 121 that facilitates remote diagnosis. The diagnostic client 121 may have been installed at the time of manufacture of the electronic device 107, or be downloaded at a later time using a wired or wireless link of the electronic device 107. The electronic device 107 may also comprise a diagnostic agent 171 that runs on the electronic device 107 when required by conditions, or on a continuing basis to perform monitoring, and which manages and collects tracing information for transmission to a server such as, for example, diagnostic server 129 using a cellular data network part of communication path 145. The electronic device 107 of FIG. 1 also comprises a traps client 125 that facilitates the setting of traps and retrieving of collected information. The term "trap" may be used herein to refer to an action taken outside of operation of the electronic device for its intended use, by executable code in the electronic device 107 (e.g., the traps client 125) when one or more specified conditions are met. Traps can be used to collect data such as errors, faults encountered while operating the mobile device 107, network performance data, and call setup data, to name just a few examples. Such conditions may be remotely defined by, for example, messages sent by a server such as the diagnostic server 121 or DM server 109, for example. In one representative embodiment of the present invention, the traps client 125 and the diagnostic agent 171 are combined into one embedded diagnostic client component capable of supporting traps as well as collecting diagnostic data and configuration information for eventual transfer to the diagnostic server 129 or the customer care server 157. Rao '815 at [0029] As described briefly above, the network 105 of FIG. 1 is able to conduct remote diagnostics on the electronic device 107. This is desirable when a user of the electronic device 107 experiences operational issues that he/she cannot resolve. Some operational anomalies may be resolve by analysis of settings in the electronic device 107, which may be retrieved by the customer care server 155 and/or the diagnostic server 129, for example. In some situations, a customer care representative may employ a representative embodiment of the present invention to download and install executable code in the electronic device 107,

Claims	
	to actively monitor applications and diagnose problems. Rao ’815 at [0033] In a representative embodiment of the present invention, a server such as, for example, the DM server 209 or diagnostic server 229 accesses one or more management objects (MOs) representing key performance indicators in a management tree, such as the management tree 267, to determine the performance or operating behavior of one or more layers of a communication protocol used in supporting an application on the electronic device 207. For example, different layers of functionality of a communication protocol in an electronic device such as a network layer, a service layer, and an application layer may each have its own set of key performance indicator (KPI) values. Rao ’815 at [0049] In some representative embodiments of the present invention, each bearer-specific NetworkLevelKPI MO 510 comprises a collection of nodes such as those shown in FIG. 5. The content of the first of these illustrated nodes, Network Bandwidth for Uplink/Downlink 512, comprises information identifying the amount of network bandwidth currently in use by the electronic device using the associated bearer. The context of the next node, Latency 514, enables a remote server to determine the delay or latency currently being experienced by content exchanged via the associated bearer. The CorruptPackets node 516 may be retrieved to access a measure of the number of corrupted packets received by the electronic device when using the associated bearer. The DroppedConnection node 518 shows a frequency/count of connections that are unintentionally dropped or lost following establishment. The BurstRate node 520 contains a measure of the data rate for burst rate traffic, and the OtherQoSParameters node 522 may contain other quality of service measures and parameters that may be verified when retrieved from the electronic device 207 and compared with a network subscriber information database, to verify correct settings in the electronic device 207. Rao ’815 at [0050] FIG. 6 is a block diagram illustrating an exemplary arrangement of the application level, service level, and network level management objects within the hierarchy of a management tree of an electronic device such as, for example, the management tree 267 of the electronic device 207 of FIG. 2, of management objects for key performance indicators contained in an application level MO, ApplicationLevelKPI MO 610, a service level MO, ServiceLevelKPI MO 612, and a network level MO, NetworkLevelKPI MO 614, in accordance with a representative embodiment of the present invention. As FIG. 6 shows, in some representative embodiments of the present invention, a management object comprising a collection of

Claims	
	application level key performance indicators such as, for example, the ApplicationLevelKPI MO 610, has as one element a management object comprising a collection of service level key performance indicators, illustrated in FIG. 6 as the ServiceLevelKPI MO 612. In addition, the management object containing the collection of service level key performance indicators, ServiceLevelKPI MO 612, has as one of its elements a management object comprising a collection of network level key performance indicators, NetworkLevelKPI MO 614. It should be noted that although illustration of FIG. 6 shows only one management object containing service level key performance indicators as an element of the ApplicationLevelKPI MO 610, and only one management object containing network level key performance indicators as an element of the ServiceLevelKPI MO 614, these are not specific limitations of an embodiment of the present invention. Applications that involve the use of multiple services may have multiple management objects for service level key performance indicators, one for each service. Similarly, each management object for service level key performance indicators may have multiple management objects comprising network level key performance indicators, one for each bearer network used. Rao ’815 at [0051] FIG. 7 is a block diagram illustrating another exemplary arrangement of management objects of key performance indicators within the hierarchy of a management tree of an electronic device such as, for example, the management tree 267 of the electronic device 207 of FIG. 2, in accordance with a representative embodiment of the present invention. As shown in the illustration of FIG. 7, in some representative embodiments of the present invention, a management object such as the KPIs MO 710 comprises a root node of a collection of nodes containing all key performance indicators. In various representative embodiments, such a collection could be organized as a logical tree. As shown in FIG. 7, collection of nodes of the KPIs MO 710 contains node Network A KPI 712 and node Network B KPI 714, which contain network-level key performance indicators for Network A and Network B, respectively. For each network, a KPI may be retrieved when needed from the Network A KPI 712 MO node and the Network B KPI 714 MO node. The collection of nodes of the KPIs MO 710 also comprises nodes Service A KPI 716 and Service B KPI 718, which contain service-level key performance indicators for Service A and Service B, respectively. Each service may provide its own KPI information, such as broadcast service, streaming audio service, etc. The example of FIG. 7 also illustrates that the KPIs MO 710 has as one of its element a node Application A KPI 720 that contains application-level key performance indicators. In a representative embodiment of the present invention, each application such as, for example, a broadcast client application MobiTV or a DVB-H client may provide its own KPIs that may be retrieved via a DM client and an associated management object. A representative embodiment of the present invention may

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	also comprise a quality of service (QoS) parameters node, OtherQoSParameters 722. Rao ’815 at [0053] In a representative embodiment of the present invention, a network level KPI may comprise bearer-specific content, and an electronic device such as the electronic device 207 of FIG. 2, for example, may support multiple networks (i.e., bearers) at the same time. For example, the electronic device 207 may support a variety of networks such as a General Public Radio Service (GPRS) network, an SPRS network, a wireless local area network (WLAN), to name only a few examples. In one representative embodiment of the present invention, each network supported by the electronic device 207 has its own KPIs, and management objects supporting access to such KPIs by a remote server such as the device management server 209 and diagnostic server 229 of FIG. 2, or the customer care server 157 of FIG. 1, for example. Rao ’815 at [0054] In a representative embodiment of the present invention, each software application in an electronic device (e.g., the application software 127 in the electronic device 107) may enable retrieval of its KPIs, via a device management (DM) client such as the DM client 263 of FIG. 2. For example, one representative embodiment of the present invention may support registration of an application's KPI node (i.e., a management object (MO) having the KPIs of the application as elements of the MO) with a DM client such as the DM client 263 of FIG. 2. Another representative embodiment of the present invention may employ an application manager to effect registration of an application with the DM client 263 of FIG. 2, or with a registry in the electronic device 207. Such registration may, for example, be performed as part of the installation of the application onto the electronic device during an update of software/firmware of the electronic device 207. For example, installation of a new software application (e.g., application software 227 of FIG. 2) may comprise not only adding new program code to memory in the electronic device 207 for the functionality of the application, but may also comprise the addition/creation of new management objects for the key performance indicators of the software application, any program code and/or data needed to permit the collection of the data of the key performance indicators for the software application, and any program code and/or data for making the key performance indicator values/content accessible via the associated management object(s). In a representative embodiment of the present invention, the update information for updating the software/firmware of the electronic device may include, for example, program code for suitable software/firmware components such as drivers, functions, routines, dynamic link libraries, and application program interfaces to permit the application to provide or expose KPI values/contents via the elements/nodes of the management object of the application. In a similar fashion, support for new services and networks may add new management objects, program code and data that

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	enables access to service level and network level KPIs for the added service(s) and network(s). Stenton ’260 at [0016]–[0017] The growing proliferation of wireless local area networks 3 especially within urban environments, airports, train stations and the like, means that there is growing coverage allowing connection of mobile communication devices to wireless LANs 3. Preferably, the wireless LANs are IEEE 802.11a, 802.11b or 802.11e wireless LANs. The wireless LANs 3 may be entirely independent of one another or be owned by businesses or individuals within a location and may be primarily intended for use of those businesses or individuals. However, the wireless LANs 3 may each be connected over a private data network 9 (virtual private network) to the Internet 10 for connection to services but also for administration and billing purposes to a wireless Internet service provider 11. Stenton ’260 at [0018] In this embodiment of the present invention, the wireless Internet service provider 11 may own, or control access to, or be able to authorise access by third parties to the wireless LANs 3 meeting the wireless Internet service provider's quality of service and security criteria. The wireless LANs 3 therefore make up a matrix of wireless LANs 3 offering considerable coverage. The controlling function of the wireless Internet service provider allows mobile communication devices 7 equipped with wireless LAN cards or chip sets 12 to communicate with wireless LANs 3 and via the private data network 9 provided by the wireless LAN 3 to communicate with remote servers or other service providers accessible over the Internet or the like. Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11 and transmitted to the cellular telecommunications network 2 operator. Lim ’402 at [0013] The present invention relates to a remote diagnosis system of a mobile communication terminal and an operating method thereof and, more specifically, to a remote diagnosis system of a mobile communication terminal and an operating method thereof, wherein the remote diagnosis system is connected to a remote

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	diagnosis server when the mobile communication terminal malfunctions or needs help for a specific function and is diagnosed with failure by a simple operation. Lim ’402 at [0019] DISCLOSURE Technical Problem Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a system and a method for remotely diagnosing a mobile communication terminal, which are connected to a remote diagnosis server according to a wireless communication method to remotely diagnose information on malfunction of the mobile communication terminal and whether the mobile communication terminal has a malfunction even with a simple operation and to check a result thereof. Lim ’402 at [0021] In addition, the method for operating a remote diagnosis system of a mobile communication terminal according to the present invention comprises: a first step of performing a remote diagnosis program to access a remote diagnosis server; a second step of transmitting operation data of the mobile communication terminal to the remote diagnosis server to diagnose whether a failure has occurred through a data search for an operation and a function of the corresponding mobile communication terminal; and a third step of receiving diagnosis result data of the mobile communication terminal. Lim ’402 at [0023] As shown in FIG. 1, a remote diagnosis system of a mobile communication terminal according to the present invention includes: a remote diagnosis server 20 which receives operation data of a connected mobile communication terminal to diagnose whether a failure has occurred and transmits a help message such as a coping method; and a mobile communication terminal 10 which is connected to the remote diagnosis server 20 through a wireless communication module according to pre-stored connection information to diagnose whether a failure has occurred. Lim ’402 at [0025] The original dog diagnosis server 20 receives operation data of the mobile communication terminal 10, determines whether a failure has occurred according to each operation state of the mobile communication terminal 10, and transmits information about the failure to the mobile communication terminal 10.

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	Lim ’402 at [0026] In addition, the remote diagnosis verser 20 receives a reception destination for the diagnosis result from the mobile communication terminal 10 and transmits the result to the mobile communication terminal or the service center 30 of the mobile communication terminal 10. Lim ’402 at [0027]–[0028] In this case, the service center 30 is a service center operated by a business operator or a manufacturer of the mobile communication terminal, and when the mobile communication terminal fails, the service center 30 is repaired. That is, the remote diagnosis server 20 transmits the diagnosis result to the mobile communication terminal 10 or the service center 30 according to the data received from the server-connected mobile communication terminal 10, so that the user can check the state of the mobile communication terminal 10, and when the result is transmitted to the service center 30, the service center 30 receives the state of the mobile communication terminal 10 so that the mobile communication terminal 10 can be repaired. Lim ’402 at [0041]–[0042] When a menu for accessing the remote diagnosis server 20 is called, the remote diagnosis processing unit 11a reads access information from the remote diagnosis setting unit 12a and accesses the remote diagnosis server 20 through the wireless communication module 13a. In addition, the remote diagnosis processing unit 11a transmits operation data related to a malfunction or an abnormal phenomenon of the mobile communication terminal 10 to the remote diagnosis server 20 with respect to a service to be diagnosed after accessing the remote diagnosis server 20. Lim ’402 at [0047] Meanwhile, as illustrated in FIG. 3, the remote diagnosis server 20 includes a communication module 23 configured to transmit and receive data to and from the external mobile communication terminal 10 connected through a wired/wireless method, a remote diagnosis database 22 configured to store data on the operation of each mobile communication terminal in order to diagnose a failure, and a server control unit 21 configured to receive operation data of the mobile communication terminal 10 connected through the communication module 23 and determine whether a failure has occurred based on the remote diagnosis database 22. Lim ’402 at [0048] The remote diagnosis database 22 stores data on each mobile communication terminal operator or manufacturer, model information of each mobile communication terminal, etc., and also stores data on the

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	operation and function of the mobile communication terminal according to each model. Lim ’402 at [0062]–[0063] The mobile communications terminal selectively inputs the service item to be diagnosed and the remote diagnosis server receiving a message this is proceed the corresponding service. (S4, S12) The remote diagnosis server receives operation data of the mobile communications terminal and data about the function of the corresponding mobile communications terminal and operation are searched based on the , terminal information. Chmaytelli ’453 at [0032] FIG. 1 illustrates a block diagram of one exemplary embodiment of a wireless system 100 in accordance with at least one embodiment of the invention. System 100 can contain client devices, such as cellular telephone 102, in communication across a wireless network 104 with at least one application download server 106 that selectively transmits software applications and components to wireless devices across a wireless communication portal or other data access to the wireless network 104. As shown here, the wireless (client) device can be a cellular telephone 102, a personal digital assistant 108, a pager 110, which is shown here as a two-way text pager, or even a separate computer platform 112 that has a wireless communication portal. The embodiments of the invention can thus be realized on any form of client device including a wireless communication portal or having wireless communication capabilities, including without limitation, wireless modems, PCMCIA cards, personal computers, access terminals, telephones, or any combination or sub-combination thereo Chmaytelli ’453 at [0033] The application download server 106 is shown here on a network 116 with other computer elements in communication with the wireless network 104. There can be a stand-alone server 122, and each server can provide separate services and processes to the client devices 102, 108, 110, 112 across the wireless network 104. There is preferably also at least one stored application database 118 that holds the software applications that are downloadable by the wireless devices 102, 108, 110, 112. However, those skilled in the art will appreciate that the configuration illustrated in FIG. 1 is merely exemplary. Accordingly, embodiments of the invention can include one or more servers that can each perform all the described functions and contain all necessary hardware and software, or can contain only selected functionality. Chmaytelli ’453 at [0034] In FIG. 2, a block diagram is shown that more fully illustrates system 100, including the components of

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	the wireless network 104 and interrelation of the elements of the exemplary embodiments of the invention. System 100 is merely exemplary and can include any system that allows remote client devices, such as wireless client computing devices 102, 108, 110, 112 to communicate over-the-air between and among each other and/or between and among components connected via a wireless network 104, including, without limitation, wireless network carriers and/or servers. The application download server 106 and the stored application database 118, along with any other servers such as ad dispatch server 130 which are used to provide cellular telecommunication services, communicate with a carrier network 200, through a data link, such as the Internet, a secure LAN, WAN, or other network. In the embodiment shown, a server 120 can include the application download server 106, ad dispatch server 130 and the stored application database 118. However, these servers can also be independent devices. The ad dispatch server 130 can provide additional ad services based on the configuration of each of the client devices 102, 108, 110, 112. Chmaytelli '453 at [0080] Alternatively, in another embodiment of the invention, an ad contains location information that can be used to define a geographic area. Client devices within the targeted area (i.e., the defined geographic area) can be identified from the location information stored on a server in the carrier network. For example, a CAM enabled client device can periodically report the location of the client device or execute an application to provide location data to a remote server that can calculate the location of the client device. The stored location information can be a table, for example, containing longitude and latitude coordinates for each client device. When an ad is generated containing location information to define a geographic area of interest (e.g., longitude and latitude coordinates of four points defining a rectangular area), a server can use the stored client location information to identify the client devices in the targeted area. Then the ad can be sent to the client devices that are identified. Although the ad location information does not have to be transmitted to the client device in this embodiment, the location information can still be used by the CAM system on the client device for inbox maintenance (e.g., to delete messages when the client device is out of the targeted area) as discussed above. Alternatively, if the client device location is monitored at a remote server, then the ad generation system can generate another message that directs the CAM system on the client device to delete the previously sent ad when the client device location is outside the targeted area. Additionally, a message that directs the CAM system on the client device to delete a specific previously sent ad can be event-based, such as deleting a promotional ad once all available promotional items are sold. Accordingly, this aspect can be used regardless of whether the client device location data is maintained locally or remotely.

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	Chmaytelli ’453 at [0085] FIG. 8B is a flowchart illustrating a method for identifying client devices based on the geographic area defined by the location data in the ad. In block 822, the targeted geographic area is determined using the location data contained in the ad. As discussed above, this determination can be performed at the client device, a server on the carrier network, and/or other remote server. The client device location information is accessed, in block 824. Once again this can be performed at the client device, a server on the carrier network, and/ or other remote server, as previously discussed. Further, accessing the data can include any of the methods discussed herein (e.g., accessing previously stored geographic position data in the client device or on a server remote to the client device, initiating a location API resident on the client device to obtain the location of the client device (e.g., using gpsOne®), and the like). Then, in block 826, the geographic position of the client device can be compared with the targeted area to determine if the client device is within the targeted area. Likewise, this determination can be performed at the client device, a server on the carrier network, and/ or other remote server, as previously discussed. Zellner ’749 at 4:17–26 The present invention also contemplates an unblocking option where the user may access on Internet a website for one or more service promoters to “unblock” disclosure of the user's identity and/or location information. In alternative embodiments, various identity-blocking and location-blocking services may “unblock” transmission of respective identity and/or location information when the user (or the mobile subscriber) dials an emergency phone number (e.g., “911”) or indicates a desire to access an emergency service provider (e.g., a fire station, a hospital, or the police). Zellner ’749 at 6:33–51 In addition to the determination of the MS's location, the service provider 16 may also ascertain the identity of the mobile subscriber through, for example, the cell phone data (e.g., the mobile identification number or MIN) received by the SP 16 (e.g., through a mobile switching center operated by the SP 16) when the SP 16 authenticates the cell phone 10 as part of the cell phone registration process as is known in the art. The identity of the mobile subscriber (e.g., the subscriber's name, address, contact phone number, employment status, etc.), along with the associated MIN, may already have been previously stored in a database (e.g., the subscriber's home location register or HLR) maintained by the SP 16. Alternatively, the mobile subscriber identity information may temporarily reside in a visitor location register (VLR) associated with the serving MSC (mobile switching center) for a roaming MS. Such identity information may be obtained by the SP 16, for example, when the MS initially signs up for the

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	cellular service offered by the SP 16. Zellner ’749 at 14:20–41 FIG. 4 depicts an exemplary flowchart for an identity-blocking service provided by a cellular service provider (e.g., the service provider 16 in FIGS. 1 and 2). Initially, at block 70, the cellular service provider 16 may periodically receive (or track) the location information for the cell phone 10 using one of the methods mentioned hereinbefore. Here, the location information can be considered to be “in the network.” Alternatively, the location information may be “in the cell phone” as discussed hereinbefore. For example, a cell phone with a built-in location identifier (e.g., the cell phone 10 with the built-in GPS receiver 56 as shown in FIG. 3) may transmit its location information to the wireless network 12 (and, hence, to the service provider 16) periodically, for example, every 30 seconds after the cell phone 10 is activated (or powered up) by the MS. In another embodiment, the MSC (mobile switching center) (not shown) serving the cell phone 10 may be programmed to periodically “query” the cell phone 10 to extract current location information therefrom. In both cases, the PCU 52 may be configured with appropriate software which, when executed, transmits the cell phone location information via the NIU 60 to the MSC (not shown) operated by the service provider 16. Tolz ’933 at 14:2–8 Figures 3(a)-3(c) illustrate the search procedure conducted by the auction/classified ad software implementing the methodology of the invention. It is assumed that the bidder/Buyer have previously entered their address, and all vital information such as the buyers location, distance etc. are stored in the database 18c (Figure 1(a)). Further, the 18c maintains records of Sellers, their goods and services for sale/auction, and the address locations of the items for sale/auction.
10[b] a memory or database configured to store the received mobile device location information and quality or service information;	It was well known and routine at the time of the alleged invention for a system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “a memory or database configured to store the received mobile device location information and quality or service information.” To the extent a clearinghouse system for communications networks disclosed in any of Defendants’ other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify an existing system of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “a memory or database configured to store the received mobile device location information and quality or

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	service information" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "a memory or database configured to store the received mobile device location information and quality or service information" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 ("Daley '800") 700-A02 U.S. Pat. Pub. No. 2008/0186882 ("Scherzer '882") 700-A03 U.S. Pat. Pub. No. 2008/0305747 ("Aaron '747") 700-A04 U.S. Pat. Pub. No. 2003/0216953 ("Dawson '953") 700-A05 U.S. Pat. Pub. No. 2007/0178911 ("Baumeister '911") 700-A06 U.S. Pat. Pub. No. 2007/0111748 ("Risbood '748") 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 ("Roundtree '237") 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server The Loopt, Smaato, or Digital Envoy systems.

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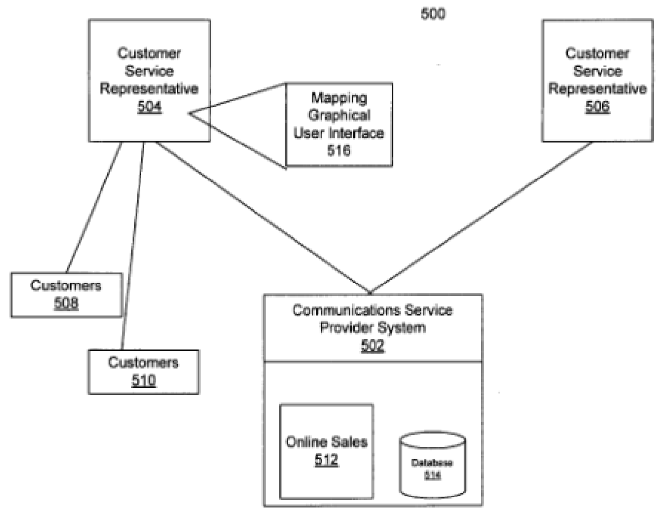
	Howarter ’897 at Figure 5 *FIG. 5*  Howarter ’897 at [0005] To provide a system and method for identifying potential customers for communications services. In one embodiment a latitude and longitude associated with an address of a potential customer may be identified. The availability of the communications services may be indicated based on the latitude and longitude. An availability map and services offers may be displayed to the potential customer. A communication service is added for the potential customer. Howarter ’897 at [0006]–[0007] Another embodiment includes a server for determining availability of communications services. The server may include a memory with a set of instructions. The server may also include a processing unit for executing the set of instructions to identify a latitude and longitude associated with an address of a potential customer of a communication service provider, indicate availability of the communication services based on the latitude and longitude, display an availability map to the potential customer, and add a communication service for the potential customer. Yet another embodiment includes a method for expanding communications resources. Multiple potential customers that are unable to receive a communication service may be identified. Latitudes and longitudes

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	associated with the address of the multiple potential customers are identified. A location for a network device is determined that may provide the communication service to a portion of the multiple potential customers based on the latitudes and longitudes. The network device is installed to provide the communication service to the portion of the multiple potential customers. The communications services are marketed to the multiple potential customers. Howarter ’897 at [0020] The services 118, 120 and 122 represent the communications services provided by the communications service provider for each geographic location shown in the system map 100. The communications service provider may provide or distribute any number of services, such as wireless telephone and data services, television, standard telephone service, cable television service, IP television service, Internet service, and satellite television. In one example, footprint 102 provides services 120 which may include telephone and cellular services for Customer C 112. The system map 100 illustrates the different services 118, 120 and 122 that may be available to each customer based on the geographic location of the customer. In some cases, the customer may travel throughout the area or system map 100 during the regular course of life and/or business. However, the actual geographic locations shown for each customer illustrate the services that may be available at the customer's residence, educational, business, or other location. For example, Customer C 112 may work out of the office and, as such, may need telephone service when performing the regular aspects of his or her job. Howarter ’897 at [0022] In one embodiment, the system map 100 may be displayed to a customer service representative (CSR) that works for the communications service provider using a data processing system, such as a desktop computer. The system map 100 may be used by the CSR to determine which services 118, 120 and 122 are available to the customer based on the customer's address and corresponding latitude and longitude coordinates. Howarter ’897 at [0027] Map 300 includes service locations 304 and 306, customers 308, 310, 312, 314, 316, and 318, network device 320, boundaries 322 and 323, potential customers 324 and 326, proposed line 328, and proposed devices 330 and 332. The map 300 may be displayed to a customer/potential customer or customer service representative by a server, through a program, or on the service provider's website in order to answer service availability questions. The map 300 may be displayed using a graphical user interface or as part of a program application or website. In one example, customers 308, 310, 312, 314, 316, and 318 may initiate contact with a customer service representative during a given day for adding, deleting, or

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	modifying a communications service. The customers 308, 310, 312, 314, 316, and 318 may be current customers or potential customers Howarter ’897 at [0041] In one embodiment, the map 300 may be revised to expand the service locations 304 and 306 based on the proposed network devices 330 and 332. The map 300 with revisions or proposed modifications may be displayed in real-time to a customer, CSR, or executive of the communication service provider in order to make decisions regarding network expansions. For example, the communications service provider may determine that once a predetermined number of potential customers 324 and 326 is reached, fixed plans for adding proposed network devices 330 and 332 may be implemented. Before the changes are made, the map 300 may be modified to show proposed expansion based on the new network resources and/or a timeline for installation. Howarter ’897 at [0042] In one embodiment, the proposed placement of a new length of fiber, new cell tower, new hot spot, power adjustment to a cell tower, or other network addition or adjustment may be automatically reflected on map 300 to show the new addition or adjustment and/or the geographic footprint impacted by the change. In another embodiment, the customers falling within the impacted geographic footprint may be displayed, reported, stored, or determined. In one embodiment, customers who have generated inquiries for a requested service may be highlighted on the map 300 when an adjustment or addition would render the requested service available to the customer. In such a manner, an operator may immediately see the number of customer inquiries that would be addressed by a network adjustment or addition. In another embodiment, once a change is approved, an email, mailing or other automatic or manual notification may be initiated to the customers who have inquired letting them know that the service is available or will be available by a certain date. Howarter ’897 at [0046]–[0048] The map 400 may illustrate various distances for each customer. For example, the straight line distance 410 between the network device 403 and the customer B 406 represents the direct point-to-point distance between the two points. The straight line distance 410 may be calculated using the latitude and longitude of the network device 403 and the customer B 406. The straight line distance 410 may be particularly useful for determining availability to wireless services from a central broadcasting device, such as WiFi® or WiMAX®. The network distance 408 represents the actual distance that a communications service would take as

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	buried or otherwise routed to the address of the customer. For example, a new communication service may be run through, around, or along existing right-of-ways, roads, bridges, parks, easements, alleys, in a route that is not point-to-point. The network distance 408 may be used to determine whether the customer may add a service based on a determined, calculated, or inferred network distance. In some cases, although the customer may appear to be within the boundary 412, the customer may be unable to receive a service because the determined network distance from the nearest network device 403 exceeds distance limitations. If the communications service is a wireless network or other similar service the straight line distance and network distance for each customer may be the same. The network distance 408 may include different segments or paths of the communications line. For example, the network distance 408 may be for fiber optics which includes a customer premise segment between a splice box and the customer's home, a segment between the splice box and a central junction box, and a distance between the central junction box distance and a network device. The network distance 408 may be calculated by summing the three different segments. The network distance 408 may include any number of segments that may be combined to determine whether a network limitation is exceeded. The network distance 408 and the different segments may have distance limitations that effect whether the customer is eligible to receive applicable services. Additionally, the customer may subscribe to multiple services each of which may have a different network distance that may be calculated to determine service eligibility. Howarter ’897 at [0053] The database 514 stores information regarding the services provided by the communications service provider. The database 514 may store geographic information, service availability maps, population and demographic information, network device locations, footprint maps, potential customers, addresses, and other information that is used by the communications service provider system 502 to both provide and administer the communications services that are provided to customers 508 and 510. Howarter ’897 at [0055] The customer service representatives 504 and 506 represent the persons and/or devices providing user information to customers 508 and 510. The customer service representative 504 uses the mapping graphical user interface 516 to view the customer's geographic location by latitude and longitude, and also to determine the availability of services based on the physical location, available network devices, and other factors that may not be automatically evaluated. The mapping graphical user interface 516 may be part of the communications service provider system 502 or may be a separately executed application that allows the customer service representative 504 to determine the availability of services based on the physical location of the customer, service footprints the network distance, the straight line distance, or the

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	distance to the nearest node or access point, and other routing data. The customers 508 and 510 may communicate with the customer service representative 504 through a network connection, such as an Internet website, a chat tool, a phone line, or other communications method. In one example, the customer 508 may call the customer service representative 504 using a cellular telephone. In another example, the customer 510 may go to the webpage of the communications service provider and request a chat session with the customer service representative 504 in order to initiate communication. Howarter ’897 at [0056]–[0057] FIG. 6A is a mapping graphical user interface 600 in accordance with an illustrative embodiment of the present invention. FIGS. 6A and 6B are a particular implementation of the mapping graphical user interface 516 of FIG. 5. The mapping graphical user interface 600 may be displayed to a customer service representative on a computing device, such as a desktop computer, personal digital assistance, wireless device, or other data processing system. The mapping graphical user interface 600 may be part of a program application accessible to the customer service representative or provided from a communications service provider system. The mapping graphical user interface 600 may include any number of fields, icons, check boxes, data, or other means of displaying information and receiving user input from the customer service representative. The mapping graphical user interface 600 may include a name 602, and an address 604, for allowing the customer's information to be input into the mapping graphical user interface 600. The name 602 and address 604 may be associated with a residence or business address of the customer. For example, the name 602 and address 604 may correspond to Customer A 108 of FIG. 1. In one embodiment, the mapping graphical user interface 600 of FIG. 6A allows a customer service representative to verify availability 606, add service 608, and change or remove service 610. The verify availability 606 may allow the customer service representative to determine whether the customer has access to services such as Customer A 108 of FIG. 1. Howarter ’897 at [0058] In other embodiments, the verify availability 606 may be used to determine the customer does not have access to services such as Customer B 110 of FIG. 1. The address 604 may be converted into a latitude and longitude address that is used to determine network and straight-line distances to the nearest network device or node. In the event that the customer is available to receive the services, the customer service representative may add services 608. Alternatively, the customer service representative may change or remove services 610 in accordance with the customer's needs. In the event the customer may not receive information the name 602 and address 604 may be stored in a database, such as database 514 of FIG. 5. This information may be used by the communications service provider for marketing, network expansion,

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	or strategic planning. Howarter ’897 at [0060] The registered services 614 may show an additional indicator that informs the customer service representative that the customer currently subscribes to the one or more services, such as wireless phone and data 618, satellite television 622, broadband internet, 624 and IP television 628. In addition, the mapping graphical user interface 600 may indicate the services that are not currently available, such as WiMAX 620, and cable television 626. As previously mentioned, the mapping graphical user interface 600 may be used by a customer service representative to individualize the services provided to the customer. In another embodiment, the mapping graphical user interface 600 may be displayed directly to the customer for allowing the customer to easily upgrade, modify or delete services as needed. Howarter ’897 at [0063] Next, the communications service provider system indicates service footprint map, availability of services, and availability map (step 704). The different data displayed in step 704 may be used to determine the services available based on location and the footprint of the available services. The footprint map an availability map may be overlaid with the location of the customer's address to allow the customer and/or CSR to make informed decisions. The service footprint map may also include a proposed service map that may allow a user to specify whether he or she would be interested if the wireless service provider expanded to the latitude and longitude of the customer. As a result, the customer's contact information may be added to a call list or direct marketing campaign based on subsequent communications network expansions. Howarter ’897 at [0068] Next, the communications service provider system retrieves and sends available services information to the customer service representative (step 802). The available services information may specify the services available to the customer based on the geographic location of the customer's residence or business location. In another embodiment, the available services information may be displayed directly to the customer through a graphical user interface. Howarter ’897 at [0071]–[0072] The process begins by receiving an address on the service provider web interface (step 900). The address may be entered by a user using any number of standard user input devices, such as a keyboard, mouse,

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	keypad, touch screen, or other input/output device. Next, the customer service representative identifies the latitude and longitude (step 902). The latitude and longitude may be determined based on the address previously entered. The customer service representative displays the map location of the customer in relation to the service provider footprint (step 904). The location of the customer may be the location that relates to the address specified in step 900. For example, the address may be linked to the residence or business of the customer. Next, the customer service representative determines whether the customer is within the service provider territory (step 906). The determination may be made based on the service provider footprint displayed in step 904. If the customer is within the service provider territory, the customer service representative displays the map and available services to the customer (step 908). Next, the customer service representative determines whether to add a service (step 910). One or more services may be added in step 910, based on user input. For example, the user may verbally provide a confirmation to add a high speed Internet connection. If the customer service representative determines to add a service in step 910, the customer service representative adds the service and submits an order (step 912). Howarter ’897 at [0073] Next, the customer service representative provisions the service (step 914) with the process terminating thereafter. If the customer service representative determines not to add service, the service is not added (step 916). If the customer service representative determines the customer is not within the service provider territory in step 906, the customer service representative displays the map to the customer and a message indicating that they are outside of the service provider footprint (step 918). The information of step 918 may be displayed to the customer through a graphical user interface, or a chat tool, or verbally communicated to the customer over the telephone. Howarter ’897 at [0074] Next, the customer service representative updates a potential customer database (step 920), and does not add the service (step 916) with the process terminating thereafter. The potential customer database may be updated in step 920, in order to provide the communications service provider information with regard to potential customers and provide marketing and strategic expansion information. For example, the potential customer database may be used to determine locations in which potential customers exist so that the communications service provider may use future expansion and growth to cover those areas, thereby capturing more market share, and improving profitability.

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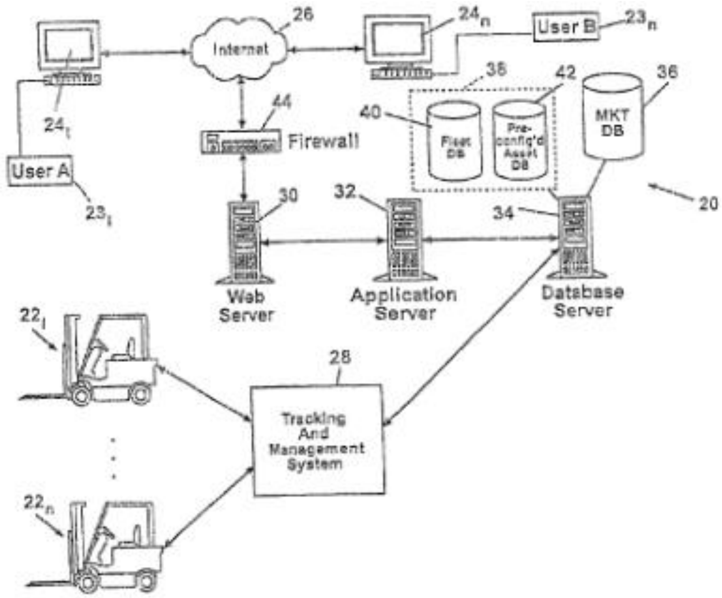
	Bly '944 at Figure 1  Bly '944 at [0013] Through the foregoing, a dealer or the like is provided access to a "virtual" rental fleet of assets, some of which are not owned or controlled by the dealer. The system allows a user, such as a dealer, to satisfy the requirements of the dealer's end-user customer without having to maintain infrequently used items in the dealer's own rental fleet (which experience low utilization rates and thus return on investment.) Additionally, the electronic system also allows a user, such as a dealer, who has its own under-utilized assets to consign such assets for rental by third parties, thereby allowing an increased, effective utilization rate. Bly '944 at [0014] In another aspect of the present invention, an electronic system is provided for facilitating transactions, including, for example, assets disposal. The system, according to this aspect of the present invention, provides detailed information concerning an asset including the maintenance history data so that the user, a potential purchaser, rentee or lessee, may evaluate the asset. The system includes a first database, a market search module, and a communications interface.

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	Bly ’944 at [0015] In a preferred embodiment, the first database is configured to store information associated with a plurality of assets, such as pieces of industrial equipment. The market search module is configured to search the first database, based on search parameters specified by the user in anticipation of at least one of a purchase, rental and lease transaction. The market search module is also adapted to generate an identification of assets in accordance with the specified search parameters. At least one of the identified assets has a description that includes maintenance history data of the asset. The communications interface is configured to facilitate electronic remote access of the system by the user, which, in one embodiment, occurs over the Internet. Bly ’944 at [0038] Referring now to the drawings wherein like reference numerals are used to identify identical components in the various views, FIG. 1 is a simplified diagrammatic and block diagram view showing an electronic system 20 for managing, tracking and conducting electronic commerce, with respect to a plurality of assets designated 221, . . . , 22n. The assets 221, . . . 22n are illustrated as being a plurality of pieces of movable industrial equipment, such as a plurality of conventional forklifts or similar machinery, used in the manufacture of goods in a typical factory environment. It should be understood, however, that system 20 is configured for operation with a wide variety of assets. System 20 is further configured to manage, and facilitate commercial transactions involving other assets (i.e., those not tracked) that are consigned or otherwise made available on an electronic market established by system 20. Bly ’944 at [0040] Electronic system 20 overcomes a problem identified in the Background, namely, the inability of prior systems to significantly facilitate business transactions that could increase utilization of infrequently rented assets in a user's rental fleet. Electronic system 20 includes functionality that allows users, in-effect, to consign assets on an electronic market in a manner that makes detailed information, such as maintenance history, readily available. Through the foregoing, users of system 20 having under-utilized equipment may use system 20 to “post” such equipment on the electronic market for rental, lease, or the like by other users of the system. Not only does system 20 enable some users to increase utilization of under-utilized assets, other users, (e.g., dealers) who have an occasional need for some equipment (e.g., to provide to their end-user customers), can rent or lease equipment from the market in contemplation of sub-rental or sub-lease, without having to actually own the equipment. Detailed information, such as maintenance history data, allow users to make informed decisions. Equipment selection efficiency is significantly improved since it is commonplace for users such as dealers to be responsible for the

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	maintenance of equipment they sub-rent. Well-maintained and problem free equipment will likely be in the highest demand, and draw the highest lease and rental rates. Bly ’944 at [0043] Referring now to FIG. 1, system 20 is configured for electronic remote access by a plurality of remote users, designated 231, . . . , 23n, through remote client computers 241, . . . ,24n, over a global computer network, such as Internet 26. Private networks or dial-up connecting may also be used. Inasmuch as system 20 performs a variety of functions, such as tracking and management of assets, as well as facilitating electronic commerce, the users 231, . . . , 23n may fall into a plurality of user classes, which are accommodated within system 20. Bly ’944 at [0045] System 20 interfaces with a tracking and management system 28, and preferably includes a first computer system, such as a web server 30, a second computer system, such as an application server 32, and a third computer system, such as a database server 34. One or more of the servers may be combined, depending on the size and complexity of system 20. Database server 34 is coupled to a market database 36 and a global asset database 38 comprising a fleet database 40 and a preconfigured asset database 42. In the client-server architecture described herein, the “server” provides the information to the “clients”. Electronic system 20 may further include, in an alternative embodiment, a firewall system 44. Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to automatically update individual records associated with each of the assets with information received, including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled “APPARATUS AND

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	METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS", hereby incorporated by reference in its entirety. Bly '944 at [0047] Web server 30 operates as a communications interface for facilitating electronic remote access of system 20 by users 231, . . . , 23n via client computers 241, . . . , 24n when using Internet 26. Web server 30 is preferably compatible with the ubiquitous HyperText Transfer Protocol (HTTP 1.1), and includes the capability of establishing a secure connection with client computers 241, . . . , 24n via, for example, the publicly available Secure Sockets Layer (SSL) protocol. Version 3.0 of the SSL protocol is commercially available from Netscape Communications Corporation. Web server 30 may comprise suitable hardware configured to handle anticipated traffic (e.g., requests, responses) therethrough, and may further execute conventional, commercial software, such as Windows NT 4.0 operating system software running Microsoft Internet Information Server (IIS 4.0) software, both commercially available from Microsoft, Redmond, Wash. U.S.A. Bly '944 at [0049] Database server 34 is configured for executing all database serving within electronic system 20, and may comprise suitably adapted hardware selected, in part, on anticipated traffic and data access response-time standards set for system 20. Database server 34 may include conventional, commercially available software, such as Windows NT 4.0 operating system software, and Microsoft SQL server 7.0 database server software, both from Microsoft, Redmond, Wash. U.S.A. Bly '944 at [0050] Web server 30, application server 32, and database server 34 define a multi-tiered computing environment configured to achieve and implement the functionality to be described in greater detail hereinafter. It should be understood that alternate architectures may be employed, achieving the same functionality, yet remain within the spirit and scope of the present invention. Bly '944 at [0051] System 20 organizes asset information into several logical groups. Market database 36, shown diagrammatically in FIG. 1, is configured for storing a plurality of asset profiles, associated with a corresponding plurality of assets, destined for disposal on an electronic market. Contemplated transaction types include sale, rental and lease. The asset profile includes two parts: asset specification data and a bid

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	definition. The asset specification data includes a variety of details about the asset, as well as its maintenance history. The bid definition outlines the parameters associated with the above-described commercial transactions contemplated for the asset. Market database 36 is illustrated as a logically separate database, although it should be understood that market database 36, in alternative embodiments, may be implemented together on the same physical hardware as the global asset database 38. Market database 36 is configured for rapid retrieval of asset information, as desired to facilitate the electronic commerce functionality of electronic system 20. Bly ’944 at [0052] Fleet database 40 is configured to store asset specification data for assets contained in fleets being managed by system 20. As used herein, “fleet” is a logical grouping or association of one or more assets, which may include assets 221 , . . . , 22n being tracked and managed by system 28. A “fleet” may be either (i) a current fleet, or (ii) a simulated or “Fantasy” fleet. An existing fleet is a fleet containing assets under the control of a user, for example, through ownership or lease. A “Fantasy” fleet may contain (i) any assets in any of the user's existing fleets (“held assets”), (ii) new or used assets not held or controlled by the user such as may be available for purchase, rental, or lease from third-parties via the market, or (iii) fictional assets having a predetermined usage, and performance profile, from the preconfigured asset database 42. Bly ’944 at [0059] With continued reference to FIG. 2, fleet module 48 is configured to allow members and dealers to add their current fleet information into electronic system 20 for reporting, tracking and analyzing by module 62. It should be understood that such activities provide much information regarding the status of the fleet, and upon which important business decisions can be based. Simulated fleet module 50 is configured to allow a user 23 to access, add, view, edit and delete assets in a simulated fleet. According to the invention, the “Fantasy fleet” feature allows accurate and immediate “what if” analysis, unavailable through the use of conventional systems. Current fleet module 52 allows a member or dealer to access, add, view, edit, or delete assets in one or more existing/actual fleets associated with the registered member or dealer. Bly ’944 at [0062] The “Home” button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The “MY FLEET” button 84 invokes fleet module 48, taking the user

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	to the user's start page 66. The “FLEET BUILDER” button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The “STORE” button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access questions and answers of interest to the users of system 20. Bly ’944 at [0066] Current fleet information pane 76 comprises the interface through which a user interacts with electronic system 20 to create an actual or a current fleet, and to edit or delete a fleet. Fleet information pane 76 includes, in the illustrated embodiment, a “Create Fleet” button 98, an Edit button 100, a Delete button 102, a radio button 104, and a link 106. Selecting (i.e., “clicking”) on the “Create Fleet” button 98 causes fleet module 48 to create a new fleet record in fleet database 40. In one embodiment, the record includes a fleet name, and a location. Edit button 100, when selected by the user, invokes current fleet module 52, which is configured to allow the user to edit the fleet name and/or location of the fleet selected by radio button 104. Note that in FIG. 3, only one existing fleet (i.e., the “Denver Division”) is illustrated; however, when two or more existing fleets are displayed, each have a corresponding radio button 104 associated therewith, and only one of the radio buttons may be selected at a time (i.e., is darkened). The fleet having a darkened radio button is the “selected” fleet for purposes of Edit button 100, and Delete button 102. Selecting the delete button 102 causes current fleet module 52 to delete the selected fleet from database 40. In the fleet information pane 76, in the illustrated embodiment, each existing fleet under the heading “Fleet Name” is configured to operate as a link to another page generated by system 20, particularly current fleet module 52. This “linked” page provides an identification of the assets contained in the fleet. The portion of the “linked” page that shows the asset identification is illustrated in FIG. 4 (portions of the “page” have been omitted for clarity, like the Navigation pane 68, which has was already been shown in FIG. 3). Bly ’944 at [0068] FIG. 4 shows a screen output current fleet module 52, responsive to a user's selection of link 106 in FIG. 3. FIG. 4 includes an identification of the individual assets included in the “Denver Division” fleet. In an illustrated embodiment, the identification includes a listing of the following parameters for each asset: a serial number, a make, a model, a capacity (pounds), an asset type, an application rating, a usage

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	parameter, a utilization parameter (percent), and a cost/hour (U.S. Dollars). Bly ’944 at [0071] In step 136, current fleet module 52 obtains basic asset specification data responsive to input data provided by user 23. While the particular types of information contained in the asset specification data will vary depending on the particular asset type involved, in the illustrated embodiment where the asset comprises an industrial piece of equipment, namely a forklift, the asset specification data is divided into four subgroups: “basic”, “additional”, “usage”, and “performance”. In one embodiment, the “basic” asset specification data may include an asset type (e.g., a standard forklift), a make/model designation, a serial number, a year of manufacture, a capacity (e.g., in pounds), and commentary text. In a constructed embodiment, “clicking” the “Add Asset” button causes a dialog box to be presented to the user having four tabs labeled “basic”, “additional”, “usage” and “performance”. The user moves from tab to tab, filling out respective forms, comprising input boxes and pull down menus. When complete, the user “clicks” on a “SAVE” link. The method then proceeds to step 138. Bly ’944 at [0072] In step 138, module 52 obtains “additional” asset specification data, which in the illustrated embodiment of a forklift may include a mast type (e.g., quad, standard, STD, TSU, etc.), a tire type (e.g., cushion, foam filled, non-marking, pneumatic, polyurethane, etc.), a “fuel type”, a mast height, a tilt selection, an attachment description, an asset description, a condition, and an accounting system asset identification (ID) number, and a lease ID number. As will be described below, reporting and analysis module 62 generates reports that include financial parameters, on both a per-asset and a per-fleet basis (e.g., average monthly cost). Part of the cost analysis derives from how much is paid monthly to lease or rent the asset. This cost information, in one embodiment, is derived from information found in a separate accounting/leasing system (not shown), and is identified and retrieved by electronic system 20 using the accounting system asset ID number, and lease ID number, provided as “additional” asset specification data in step 138. In an alternate embodiment, where the asset being added is not an asset covered under a lease in a leasing system in electronic communication with system 20, further financial-option information will be obtained from the user for the asset being added, which may include a purchase price (including applicable depreciation information so as to enable calculation of a monthly cost amount), a lease/rental amount, a lease-life rental-term, and a residual amount for lease/rent. The method then proceeds to step 140.

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	Bly ’944 at [0079] FIG. 6 shows a screen output generated by current fleet module 52 for a configured asset. The configured asset comprises asset specification data 154 including maintenance history data 156. In the example illustrated in the drawing, the user reaches the screen of FIG. 6 by “clicking” on link 132 in FIG. 4. Through the foregoing, a user wishing basic information (i.e., a simple identification) of the assets in the user's fleet need proceed no further than FIG. 4. However, for greater detail, including a description of the asset, the user can “drill down” by clicking on link 132 to reach FIG. 6. Screen output 152 further illustrates an “Add Maintenance Item” button 158, an Edit button 160, a Delete button 162, a plurality of radio buttons 164 and links 166, and 167. Bly ’944 at [0084] Referring now to FIG. 7, in accordance with the present invention, electronic system 20 is configured to facilitate transactions where a first user, such as a dealer, can consign assets, such as forklifts, to the electronic market established by system 20 for sale, rental, or lease. This feature allows the first user, such as the dealer, to increase asset utilization by exposure of the asset to a broader audience than just the end-user customers of that dealer. Additionally, by making assets available that a second user/dealer can rent, with a view towards sub-renting to an end-user customer, electronic system 20 in-effect provides a “virtual” rental fleet. The rental fleet is “virtual” because electronic system 20 enables the second user/dealer to provide equipment to his end-user customer that he does not own. Bly ’944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile 182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment, generating the asset specification data may be performed by executing the “add asset” method described and illustrated in connection with FIG. 5. Bly ’944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is

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	configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly ’944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry of dates, and pricing, where appropriate. Bly ’944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36. Bly ’944 at [0101] First, in a create and define feature, the asset specification data (including maintenance history data), as well as the bid definition are made by the first user directly out of market module 56. That is, when a first user, such as a dealer, wishes to post a piece of equipment on the electronic market, the first user, after logging in, initially selects the “STORE” button 88 (FIG. 3) from the user's start page 66, which invokes market module 56. Market module 56, as one of its available functions, would directly allow configuration of an asset (i.e., input of asset specification data including maintenance history data, as well as the bid definition). When completed, the asset is stored in the market database. Bly ’944 at [0102] Second, if the user wishes to post an asset on the electronic market, but the asset does not presently “electrically” exist in one of the user's fleets, then the user can follow the “add asset” process described above in connection with FIG. 5. Once the asset is created “electrically”, the user then “clicks” the “Add

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	to Market" button. Bly '944 at [0137] In summary, subsystem 300 works as follows. A database is configured and information associated with a plurality of assets 22 is stored in the database. Subsystem 300 analyzes the information in accordance with a set of pre-defined conditions. When a pre-defined condition is met, the subsystem recommends asset disposition using a hierarchy of disposition options, and the conditions and the options are selected to reduce expense and to maximize the return on investment for the asset user. The hierarchy of options are typically manually checked and confirmed, and a rejection of the hierarchy of options generates feedback with the system modifying as appropriate the availability of future options. Barkan '859 at [0112]–[0113] To achieve a cost reduction according to the present invention, MicroCells are to be possibly purchased and installed in private residences in exchange for incentives to the resident. These incentives might include economic incentives, new services for the resident such as cordless phone without range limit. For example, while using cellular services payment may be executed, or a cut from the revenues that are generated to the operator through the usage of these MicroCells may be transferred to the said purchaser. The MicroCell may use the home facilities, similarly to the way a cordless phone does it. Barkan '859 at [0271]–[0272] While engaged in a conversation, the mobile station scans beacon frequencies of neighboring cell in case it will have to switch cells. The frequencies to be scanned are provided to the mobile station by the MSC controlling the cell. The MSC is not aware of the actual deployment of the MicroCells and of their beacon frequencies. For this reason, the MCCIU directs the IU1 to replace the frequency list provided by the MSC by a list that includes frequencies of both GSM cells and MicroCells beacon frequencies in the area. This procedure is used whether the cell conducting the call is a GSM cell or a MicroCell. The mobile station uses the replaced list to perform pre-synchronization with the neighboring cells. The mobile station measures signal level and reception quality of cell having beacon frequency that is included in the list. The results are averaged and transmitted to the BTS through the SACCH (Slow Associated Control Channel) channel. The information ends up at the BSC that makes the decision whether to switch cells (handover) and to what target cell the call is to be transferred. Barkan '859 at [0353] In one embodiment of a billing method, the centers 31 are also responsible for price setting, as determined by an operator there. The information regarding prices of use of the net and the additional, private base

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	stations, is disseminated as digital documents encrypted so as to prevent tampering with. Barkan ’859 at [0354]–[0355] The centers 31 are also responsible for tracking down malfunctions in the cellular network. If a base station would not respond or would not operate correctly, that information is brought to the attention of the center by related parties. The center will disseminate that information, to help user form communication links with reliable channels and base stations only. The new centers may initiate calls to the various base stations, to verify their correct operation. Thus, the new cellular centers correlate and guide the operation of the users in the net, in real time. Barkan ’859 at [0357]–[0368] The new center 31 coordinates the operation of the new base stations like 41 and 43 as illustrated. The duties of the cellular centers 31 include, among others: a) Network integration and planning b) Implementing a price policy. c) Network operability. d) Manager of phone locator. (In case of incoming calls). Detailed Description: a) The Cellular center 3 knows the current physical location of all add-on base stations, and is aware of the status of each base station (i.e. is available or not available, optionally processing a call etc.). b) The cellular center is possibly responsible for the price policy. It determines and publishes the cost for each operation over the network. The updated information may be transferred over an Internet, or may be available to add-on base stations. The information may be dispersed between units in the network. In each transaction, the parties thereto will check the date of each price list. The more updated price list will be transferred to the other party. Thus, the new price list or policy will gradually expand throughout the network. c) The cellular center is responsible to actively check, once in a while, the availability of base stations and their operability (see if they work properly). d) One of the main tasks of the cellular center is to give the function: when given a “cellular phone number”, it is able to return the IP address of a base station, that has radio contact with it. Alternately, it may return a message that the phone is in the “out of coverage area”. Barkan ’859 at [0369]–[0371] The new system and method provides means for paying to the owner of the add-on base station for his/her services. This provides the incentive for acquiring and operating these base stations. Encrypted sessions can be used. The base station includes means for accepting a payment and for

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	displaying to the user information relating to the payments received. Using encryption and digital documents, it is possible to reliably implement the payment method as detailed, while protecting from impostors or others who may present false payment means. This may help prevent stealing of calls, that is a problem in present systems. Barkan ’859 at [0373]–[0376] A possible method of billing is by way of money or tokens. Digital documents may be used that correspond to cash money or to a credit or right to use the network at someone's expense, or may represent phone tokens having a specific monetary value each. These documents may be encrypted or signed so as to allow the owner of the base station to receive payment for services rendered. The phone may download tokens or money from the center or from a plastic card or a smart card or by other means. These payment means may be stored in the phone for subsequent use. When originating a call, or otherwise as stated in the cellular center policy, the phone would send tokens to the base stations in the way to the other phone. In this way he pays for the session on—line and in real time. The center can profit since for a certain amount of money it will give a certain amount of tokens (and take its profit). Base stations receive payment, and can later redeem the tokens from the cellular center back to money, or receive new tokens for their owner instead, for the owner's use in his/her communications over their cellular phone. Barkan ’859 at [0390]–[0393] Cellular systems are easier to install in sparsely populated areas. It is more difficult to install cellular base stations in towns or other highly populated areas, where there are the problems cited above. The present invention helps solving the problem of cellular installation and achieves best performance in the densely populated areas that were difficult to address in the past. The very population that may have opposed to the cellular net, are now helping the setting up of the new cellular network. According to the new concept, small cells are thus created in cities or other populated areas. The maintenance cost is greatly reduced. The system operator is no longer responsible for the maintenance of a multitude of base stations located in a highly populated urban area. Rather, each owner of a private base station is interested to keep his/her equipment in working order. If there is a problem, the owner will see to repairs or a replacement. In a preferred embodiment, simple and low cost base stations are used, that are expendable—when a malfunction is detected in a base station, the unit is discarded and replaced with a new one. The new add-on base station, together with the system and method for its effective integration in the existing cellular system, can help achieve a more cost-effective, gradual expansion of cellular networks.

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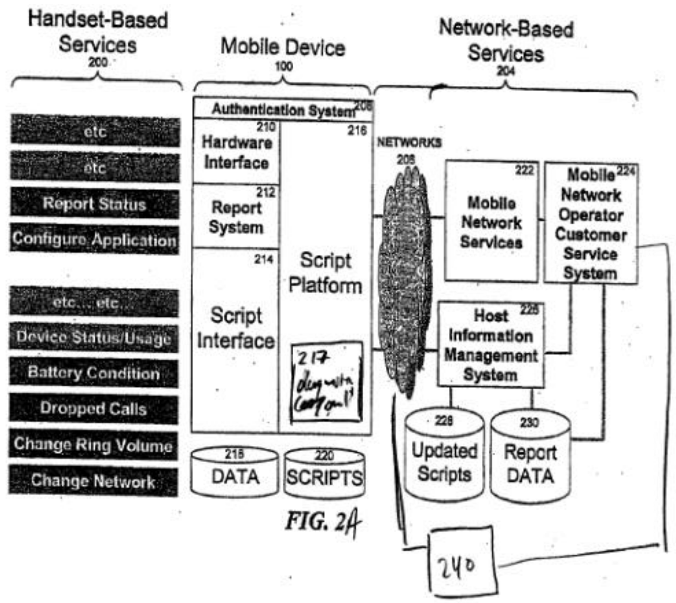
	Barkan ’859 at [0428]–[0431] Let us assume that a mobile phone has a link with a first base station. It may happen, during the conversation, that the phone detects that it receives the first base station at a low power, that is at a power lower than a predefined threshold. In that case, a program in the phone may run a background search for an alternate base station. If it finds a second base station at a higher received power, then the phone will ask it to continue the call. It will send packets from the new station, and try to inform the old station of the change. Alternately, the new base station can inform the old base station of the transfer of the call to it. The other party's base station is informed by the phone or by the base station of the new IP address of new base station. Thus the link is disconnected from the first base station and a new connection is established with the second base station, to improve the quality of the link. It is assumed that a higher received power indicates a link with an improved communication quality. Roundtree ’997 at Figure 2A  FIG. 2A

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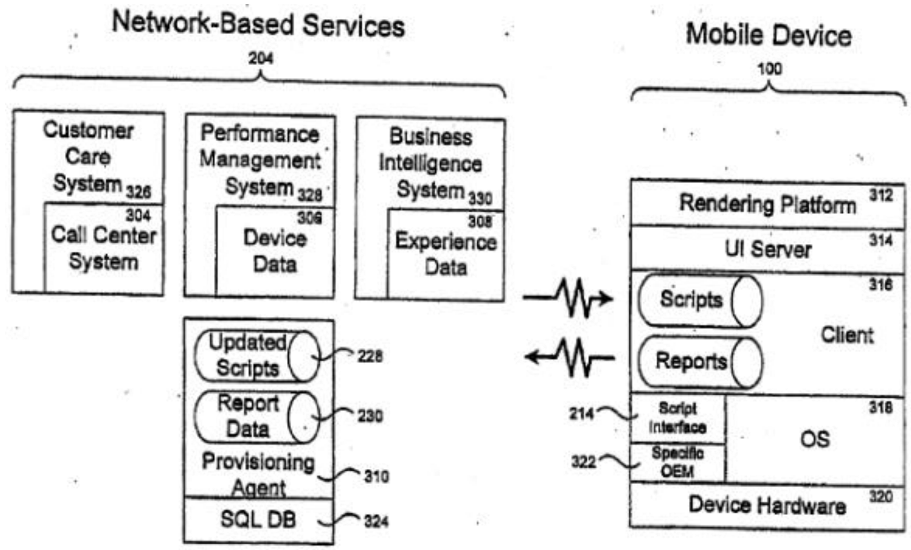
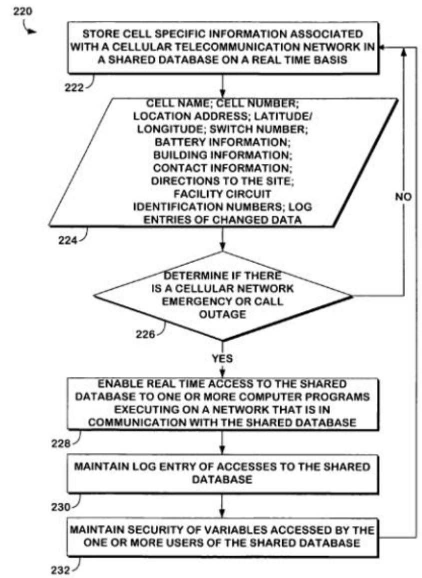
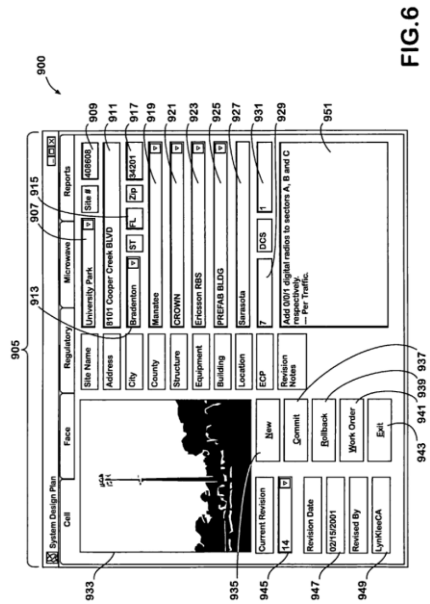
	Roundtree '997 at Figure 3  *FIG. 3* Roundtree '997 at [0018]–[0022] The handset-based services 200 may include executable software, software configurations, hardware configurations and controls, and handset operating system interfaces. As disclosed herein, executable software may include, without limitation, any software program stored on the mobile device or associated memory device, both permanently and temporarily connected via hardware or wireless connectivity. The mobile device 100 may include an authentication system 208 (e.g., via a SIM), a hardware interface 210, a report system 212, a script interface 214, a script platform 216, data 218, scripts 220, and a device management component 217. The network-based services and/or components 204 may include a network or networks 206, mobile network services 222, a mobile network operator customer service system 224, a host information management system 226, updated scripts 228, report data 230 and device management component 240. The components of the mobile device 100 and the network-based services 204 will be described below. The components within the mobile device 100 allow the device to integrate both handset-based services 200 and network-based services 204. The authentication system 208 can implement SIM (Subscriber Identity Module) card-based or standalone authentication to meet network requirements for desired levels of security. Authenticating a system to meet network requirements may not be required but is often recommended.

Claims	
	The hardware interface 210 may retrieve hardware interface elements required for interfacing with network or phone-based customer support services. Examples of hardware interface elements include changing volume, changing frequency, retrieving SIM (Subscriber Identity Module) ID, connection status from the SIM or radio hardware, and others. The report system 212 may collect and forward the data reported by the mobile device to the network 206. The report system 212 can also encrypt the handset identification information to provide increased security. The information can be encoded so that only the host information management system 226 can decipher the handset identification information. The script interface 214 serves as a standard application programming interface for customer support services. More specifically, the script interface 214 provides an interface between scripts 220 and the various hardware-specific and executable, program-specific functions. The script interface 214 allows a single customer service script to be deployed across multiple operating systems and hardware configurations. In addition, the script interface 214 includes a standard API (Application Programming Interface) for both the hardware/OS side and the script interface. The script platform 216 can mix and match calls through the script interface to acquire information, to change or correct settings on the phone, and to perform additional functions as described below. The script platform 216 authenticates, runs, and updates all scripts 220, manages reporting updates and changes, communicates with the host information management system 226, communicates with the GUI (Graphical User Interface), and manages customer surveys and interviews. The host information management system 226 can push a notification to the script platform 216 via USSD (Unstructured Supplementary Services Data), SMS (Short Message Service), IP (Internet Protocol), or any other network connectivity that the mobile device supports. The script platform 216 can run the scripts 220 after authentication, and the scripts 220 can be authenticated to the network 206 or to the phone. Roundtree ’997 at [0023]–[0024] The components within the network-based services 204 allow the mobile device 100 to communicate with and to retrieve data from the network 206. The network-based services 204 may include wired and wireless systems. The mobile network services 222 may consist of one or more systems including billing, CRM (Customer Relationship Management), provisioning, and others. Furthermore, mobile network services 222 are able to return data calls made by mobile devices via standard network protocols (e.g., IP, DTMF (Dual-Tone Multi-Frequency), SMS, USSD, etc.). The mobile network operator customer service system 224 may also consist of one or more systems relating to customer service, including billing, CRM, provisioning, and others. The host information management system 226 controls interactions between the mobile device and the host customer support system. The host information management system 226 can transmit updates to the mobile device. The mobile device typically employs a unique handset ID or serial number, and a mobile phone number. The report data 230 provides storage for report information gathered from the mobile device. The updated

Claims	
	scripts 228 consist of scripts that the host customer support system provides to the mobile device. The updated scripts 228 can be managed and versioned as desired by the host information management system 226, can be targeted at specific subscribers or groups of subscribers, and can include requests for reports and customer interview surveys. Roundtree ’997 at [0025]–[0027] The device management component 240 may communicate with the mobile device 100, such as via a diagnostic component within the script platform 216. FIG. 2B illustrates a component architecture for implementing diagnostic management methods as network-based services 204. The device management component 240 includes an actions database 241 that contains one or more actionable scripts, a message component 242 capable of receiving messages from the mobile device 100, translating or identifying data from within the messages, and transmitting messages back to the mobile device 100. The component 240 may also include a customer service component 243 that interacts with other customer service functions provided by the network based services 204. For example, the customer service component 243 may request information from the mobile network operator customer service system 224, or may provide information to system 224. The component 240 may include other additional components or modules 244, such as components that contain user specific or device specific data, components that contain configuration updates and settings, and so on. FIG. 3 illustrates a system architecture for the network-based services 204 and the mobile device 100. The network-based services 204 include a call center system 304, device data 306, subscriber experience data 308, and a provisioning agent 310. The call center system 304 may be part of a customer care system 326, the device data 306 may be part of a performance management system 328, and the subscriber experience data 308 may be part of a business intelligence system 330. The call center system 304 can manage settings remotely and can collect data OTA (over the air) from the mobile device 100 without asking the subscriber for permission. The call center system 304 can also automatically collect device data (e.g., handset ID and mobile phone number) 306 and subscriber experience data (e.g., the nature of the customer service problems) 308 from the mobile device 100. The device data 306 and the subscriber experience data 308 may be integrated into network-based services or used standalone. The provisioning agent 310 interacts with the updated scripts 228 and report data 230. The provisioning agent collects report data 230 associated with the device data 306 and subscriber experience data 308 from the mobile device 100. The provisioning agent also corrects subscriber problems in real-time by transmitting appropriate scripts to the mobile device 100. The transmission of scripts to, and the collection of data from, the mobile device 100 may be hosted within the network or externally. In addition, the updated scripts 228 and the report data 306 may be stored in an SQL (Structured Query Language) database 324.

Claims	
	Roundtree ’997 at [0033]–[0035] There are many ways in which the system identifies a problem with the mobile device. For example, in step 512, a running application identifies a problem with the configuration of the mobile device. The running application may be a guide application providing a tutorial to a user of available services and functions provided by the device or may be a customer care application that acts to diagnose help requests initiated by a user by intercepting calls and/or messages to a customer care center. The running application can automatically identify the configuration of the mobile device without input from a user or customer care agent. A user may also identify a problem with the mobile device, as shown in step 514. For example, when the user attempts to connect to a wireless network and is unsuccessful, the system may present a number of options to be selected by the user that define a possible problem. The system presents, via a graphical user interface or via a audio user interface, one or more choices that describe the problem faced by the user. In this example, the user interface may present options such as “Are you having a problem connecting to the internet?” or “Are you having a problem connecting to a wireless network?” Based on receiving input from the user about an encountered problem, the system can diagnose and/or determine any configuration errors or problems without relying on the user to attempt to solve the problem his or herself. A customer service agent may also identify a problem with the mobile device, as shown in step 516. For example, a user may call a customer service center related to a provider of services for the user when the user encounters a problem. The customer service agent, upon receiving information from the user or from the mobile device (such as during an over the air diagnosis of the mobile device), may then be able to identify a problem with the device.

Claims	
	Boehmke '997 at Figure 4  FIG. 4

Claims	
	Boehmke '997 at Figure 6 

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>Boehmke ’997 at Figure 8

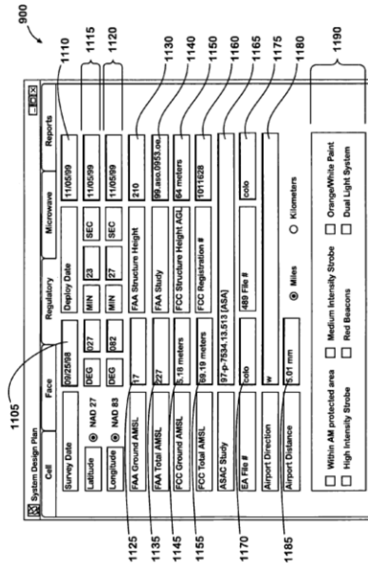
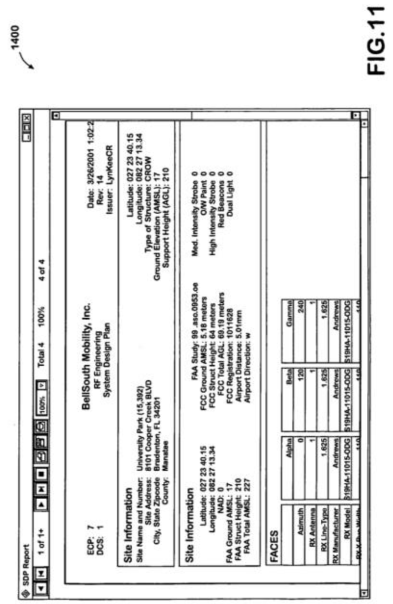


FIG.8</td></tr>
</table>

Claims	
	Boehmke ’997 at Figure 11  Boehmke ’997 at 1:54–2:7 In different embodiments, the invention comprises a system, method and apparatus for maintaining cellular telephone network site information. A distributed database management system may provide a user with several items of real-time information regarding a cellular telephone network site such as: cell name, cell number, location code, address, latitude/longitude, switch number, battery information (e.g., type, manufacturer, model) for all strings, building information (e.g., building and tower type, gate codes, generator information), contact information (e.g., fire, police, landlord etc.), directions to the site, facility circuit identification numbers and log entries for audits of changed data. In one embodiment, the user can be provided with emergency data associated with the telecommunication network. A common database is provided for storing the information from various entities within an organization responsible for maintaining the cellular telephone network site. Once the information is stored in a common database, it can be made available to users associated with the various entities as well as to various other computer software programs residing on the distributed system. Boehmke ’997 at 3:10–59 The distributed information system for data and processes in accordance with one embodiment of the

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	invention includes one or more databases and processes, such as computer software programs, that share a common database. In one embodiment, the distributed information system for data and processes can utilize a structured query language (SQL) common database for providing a distributed database management system. For example, a MICROSOFT SQL™ server can be used to provide a common database function whereby a plurality of general-purpose computers in communication with the SQL server can carry out the manipulation of data stored on the SQL server while the SQL server performs other operations associated with the distributed database management system. Those skilled in the art will appreciate that the SQL server can be coupled to or be in communication with one or more storage devices for storing data or computer software programs. In accordance with one embodiment of the invention, any changes that are made to a particular set of data by the one or more computer software programs in one process, or by one or more users, are reflected into and are accessible by other computer software programs within the distributed information system on a real-time basis. Referring now to FIG. 1, where one embodiment of one set of components that can be used to carry out the system, method and apparatus is illustrated in diagram form. In one embodiment, the system components comprising the distributed information system 10 include an application server 12, a shared server 14, a database server 16, a general-purpose computer 18 and a workstation 26. The application server 12 provides access to one or more computer software programs 20 stored therein or stored in a database 22 in communication with the application server 12. Further in one embodiment, the application server 12 is in communication with one or more other components of the other distributed information system 10, such as the shared server 14, the database server 16, the general-purpose computer 18 and the workstation 26, for example. The one or more system components also can communicate with each other via well-known communications hardware and software. Still further in one embodiment, the one or more system components can be interconnected in a network 24 configuration in accordance with various well-known network topologies. For example, the components of the distributed information system 10 can be interconnected in a bus topology, ring topology, a star topology or combinations thereof. Those skilled in the art will appreciate that any one of these network topologies, or combinations thereof, can provide an adequate implementation of the system, method and apparatus. Boehmke ’997 at 6:59–7:67 Referring now to FIG. 4, where one embodiment of the distributed information system 10 is illustrated which can be utilized as part of a telecommunication distributed database management system 56. In one embodiment, the general-purpose computer 18 can be in communication with one or more other general-purpose computers configured and adapted as the database server 16 component of the telecommunication distributed database management system 56. The database server 16 can be configured as a distributed database management server for creating, maintaining and viewing database data. Those skilled in the art will appreciate that, in addition to the data, the database 22″ can also include one or more computer

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	software programs 20 therein. In one embodiment, the database server 16 of the telecommunication distributed database management system 56 can utilize a structured query language (SQL) database for creating, viewing and maintaining database data. MICROSOFT, ORACLE, GUPTA, INFORMIX, POWERSOFT, ORACLE and SYBASE can all supply SQL databases, for example. Accordingly, the database server 16 can implement an SQL database server such that one or more general-purpose computers 18, workstations 26 or other servers can access and manipulate the data stored in the database 22″ that is accessible by the database server 16. In addition, the database server 16 can manage and coordinate the data stored in the database 22 while also performing calculations locally. For example, as discussed above, the database server 16 can be comprised of a general-purpose computer 18 or workstation 26 that includes one or more central processing units 52 for executing instructions according to one or more software programs 20 and a memory 54 for storing such instructions. The database server 16 also can be configured and adapted to perform additional functions and execute additional algorithms in addition to manipulating data within the database 22″. For example, in one embodiment, the database server 16 can execute instructions of a software program 20 for carrying out tasks such as managing the storage and retrieval of database 22″ data, generating reports, displaying data, transmitting data to one or more peripheral devices such as printers 38, plotters, facsimiles, modems 36 and other similar devices. In addition, in one embodiment, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as transmitting database data or specific reports to one or more other general-purpose computers 18 or workstations 26 that are in communication therewith. Further, in one embodiment, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as communicating database 22″ data or reports to one or more other computer software programs 20 whose instructions are executed on other general-purpose computers across the telecommunication distributed database management system 56. In addition, the database server 16 can execute instructions of one or more software programs 20 for carrying out tasks such as sending database data or reports to a network address or electronic mail (e-mail) address in response to a query or in response to a predetermined set of conditions. Still further in one embodiment, the database server 16, or for example any one of the one or more general-purpose computers 18 in communication with the network 24, can execute instructions of a software program 20 for carrying out the function of broadcasting a wireless signal to be received by one or more users carrying a wireless device or to be received by other devices having incorporated therein a device in response to a predetermined set of conditions. Those skilled in the art will appreciate that the wireless device can be, for example, a pager receiving a paging signal. Those skilled in the art will recognize that the above-enumerated tasks to be performed by the database server 16 can be performed by other components within

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	the telecommunication distributed database management system 56. Also, such tasks are illustrative in nature and are not intended to limit the scope of the invention. Boehmke '997 at 8:17–30 Referring now to FIG. 4, where one embodiment of a logic flow diagram 220 for obtaining real-time information associated with a telecommunication network 25 is illustrated in block diagram form. At block 222, cell site 86 specific information associated with a telecommunication network 25 is stored in a shared database 22 on a real-time basis. For example, at block 224, a list of the type of cell site 86 specific information is listed. The cell site 86 specific information illustrated in block 224 includes the cell name, the cell number, the location code, the address, the latitude/longitude, the switch number, the battery information, the building information, the contact information, directions to the site, the facility circuit identification numbers and log entries of any changed data, for example. Boehmke '997 at 10:41–54 One embodiment of the distributed database management system 56 can provide a user with several items of information regarding a cellular telephone network site. For example, the user can be provided with real-time information associated with a telecommunication network such as: cell name, cell number, location code, address, latitude/longitude, switch number, battery information (e.g., type, manufacturer, model) for all strings, building information (e.g., building and tower type, gate codes, generator information), contact information (e.g., fire, police, landlord etc.), directions to the site, facility circuit identification numbers and log entries for audits of changed data. In one embodiment, the user can be provided with emergency data associated with the telecommunication network. Boehmke '997 at 11:9–48 If the user selects cell numbering, a cell number will be provided. Furthermore, the user can look for a particular site by selecting that option or clicking on an icon displayed on a system 56 output device. Accordingly, the system 56 will provide the user with the name of the cell site, the number of the cell site, the location code of the cell site, the last time the code was modified, the company number, the switch 58 that the cell site is located in, who the responsible field engineer is, address, city, state, zip, latitude, longitude and the facility information associated with that cell site. Those skilled in the art will appreciate that "facilities" are provided to make a connection between the cell site and the switch 58 for various data links, such that the switch 58 can communicate with the cell site 86. Moreover, the system will provide the user with information that can be retrieved from other computer software programs 20, for example a facility management program. Those skilled in the art will appreciate that the above list is not exhaustive and should not be considered as limiting the invention. Those skilled in the art will appreciate that the

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	information can be initially populated in a table 100 from a common table 100 that is shared by all the computer software programs throughout the system 56. For example, if the user selects to review generator or battery information of a particular cell site 86, the system 56 will provide the user with information associated with the generator and the battery. One embodiment of the system 56 provides the user with a string for identifying a 24-volt battery including the battery type, the battery manufacturer, the battery model number, the number of active cells there are and where they are physically located. The same information can be provided in a string for identifying a 48-volt battery. If the user selects to review building information of a particular cell site 86, the system will provide the telephone information, the building type, the company number, the tower type, whether there is a gate at the tower, the gate key, if there is a gate key, and if there is, whether there is a gate code. In addition, the system can provide different types of information about the generator, fuel loads and the like. Boehmke ’997 at 11:49–67 If the user selects to review contact information relating to a particular cell site 86, the system will provide police, fire, water, Federal Aviation Administration (FAA), gas company, landlord and electric company contact information, the meter number, the account and various other pieces of contact information. In addition, the system can provide the name of the RF Engineer, the name of the Cell Manager and the like. In addition, the system provides logging and tracking of data associated with a particular cell site 86 in case there is ever a need to roll back the data. Moreover, a complete history of a particular cell site 86 can be provided to the user. The information discussed above is by no means exhaustive. For example, the system can provide additional pieces of information associated with a particular cell site 86 such as maintenance of routine history, the last time the generator was run, the last time the generator was inspected, when the warranty will expire and the like. Therefore, from one software program 20, the user can obtain a variety of information about a particular site. Boehmke ’997 at 12:44–65 Referring now to FIG. 5, an illustration of a user accessing a system design plan software application 20 via the distributed database management system 56 will be described. The system design plan software application may display much of the information described above for a particular cellular telecommunications network site. The system, method and apparatus provide a user with information regarding the maintenance of cellular telecommunications network sites across a geographic region on a real-time basis. The distributed information system main menu 800 includes a plurality of region fields 805. The user may select one of these region fields 805 to access different functionality for a particular region. For example, as illustrated in FIG. 8, the user has selected the West Florida region field. After

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	selecting one of the region fields 805, a drop down menu 810 is displayed to the user. To access the system design plan software application 20, the user selects drop down menu selection 815 entitled SDP (System Design Plan). After selecting the SDP software application 20 via the drop down menu selection 815, the SDP software application 20 displays a SDP main menu 900 to the user as illustrated in FIG. 6. Boehmke ’997 at 12:66–13:9 Referring now to FIG. 6, the SDP main menu 900 comprises a plurality of tabs 905 that provide access to different information about cellular telecommunications network sites within the selected region field. For example, as illustrated in FIG. 6, the tabs 905 include a cell tab, a face tab, a regulatory tab, a microwave tab and a reports tab. Each of these tabs, when selected, causes different information regarding a cellular telephone network to be displayed to the user. For example, as illustrated in FIG. 9, when the cell tab is selected, location information and other information regarding a particular cellular site is presented to the user. Boehmke ’997 at 13:10–20 Referring to FIG. 6, when the cell tab is selected, the system design plan software application may display information such as a site name 907, a site number 909, an address 911 of the cell site, a city 913, state 915 and zip code 917 of the cell site, the county 919 of the cell site, the structure 921 of the cell site (such as the type of tower), the equipment 923 deployed at the cell site, the building type 925 of the cell site, the location 927 of the cell site, the electronic control processor (ECP) 929 of the cell site, and the digital cellular switch (DCS) 931 of the cell site. A photograph 933 of the cell site may also be displayed. Boehmke ’997 at 13:64–14:8 Referring now to FIG. 8, when the regulatory tab is selected, particular regulatory information regarding a cell site may be displayed such as information used for FAA/FCC filings. In one embodiment of the invention, the regulatory information includes a survey date 1105, a deploy date 1110, the latitude of the cell site 1115, the longitude of the cell site 1120, FAA ground AMSL 1125, FAA structure height 1130, FAA total AMSL 1135, FAA study 1140, FCC ground AMSL 1145, FCC structure height AGL 1150, FCC total height AGL 1155, FCC registration number 1160, ASAC study 1165, EA file number 1170, 489 file number 1175, airport direction 1180, and airport distance 1185.

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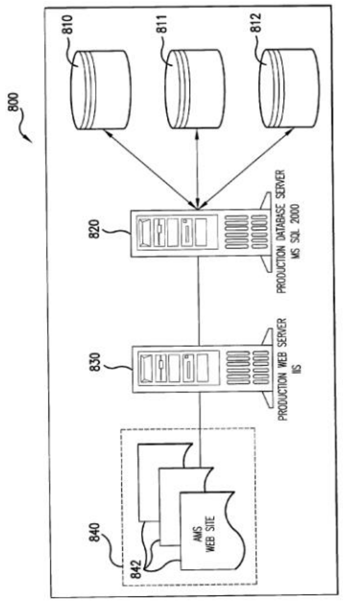
	Dawson ’953 at Figure 8  FIG.8 Dawson ’953 at [0019] In its broadest sense, the invention is a system and method for organizing the information necessary for an enterprise offering wireless services. This information relates to all aspects of the business and includes information pertaining to portfolios of roof rights (as used herein, “roof rights” refers to a legal right to install a wireless infrastructure, which is typically, but not necessarily, installed on the roof a building) held by the wireless service provider and roof rights that can be obtained by the wireless service provider, commissions, inventories and locations of wireless infrastructure equipment, engineering data, leases, contacts, and other types of information. Dawson ’953 at [0021] The process begins with marketing data 110, which is a list of sites that has been identified as containing potential customers. As used herein, the term site refers to a location at which a wireless infrastructure may be installed. Typically, but not necessarily, a site refers to a single building. However, there are instances in which a site is different from a building. For example, in some buildings that include an addition, it is cheaper and/or easier to install two separate wireless infrastructures rather than attempting to service the entire building with a single infrastructure as running cables between the original building

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	and the addition may be difficult. The information used to identify the list of sites can come from a variety of sources, including responses to mass-mailed advertisements from potential customers, sales leads, the fact that a site not currently being served by the wireless service provider is owned and/or operated by the same owner as another site to which services are provided and various other sources. Dawson ’953 at [0022] In the preferred embodiment, the invention is site-centric in that the site is used as the primary method of data organization. Thus, a site rather than a specific customer, is what appears on the marketing data list even though only a single potential customer from that site (which may include several other, distinct potential customers) has indicated interest in the wireless service provider's service offerings. This is not to say that data concerning individual customers is not maintained; rather, it is primarily grouped and accessed by site. Dawson ’953 at [0024] The user interface 200 also includes a site identification field 204, a site address field 206, a field 208 indicating the number of tenants, and a sales volume field 210. Other fields 212 and 214 indicate the closest base station to the site and the distance to the site from that base station, respectively. Notes pertaining to real estate aspects of the site, such as the name of the landlord and/or management company for the site, permit requirements for the site, and/or, if known, the cost of obtaining roof rights, are maintained in field 216. Field 218 allows the real estate group user to indicate the real estate friendliness of the site. Possible choices in some embodiments are “in review,” “accepted” and “reject.” The user presses the save button 220 when the appropriate indication as to real estate friendliness has been made. Dawson ’953 at [0026] Referring now back to FIG. 1, in addition to the determination of real estate friendliness at step 112, a determination as to whether a serviceable signal can be provided to the site is made at step 116. In preferred embodiments, this determination is made using commercially available programs sold under the trademarks deciBel Planner (Marconi Corporation) and MapInfo (MapInfo Corporation); however, other tools could be used in other embodiments of the invention. Generally speaking, the deciBel Planner program integrates electromagnetic wave propagation models that interface with a MapInfo spatially-enabled terrain database. The terrain databases can be obtained from commercial entities such as MapInfo Corp. that perform fly-overs of a desired area to obtain photographs and terrain information for the desired area. An example of a screen output 300 from the deciBel Planner program is shown in FIG. 3. The screen output includes a photograph 302 of an urban area including a potential site in the form of a

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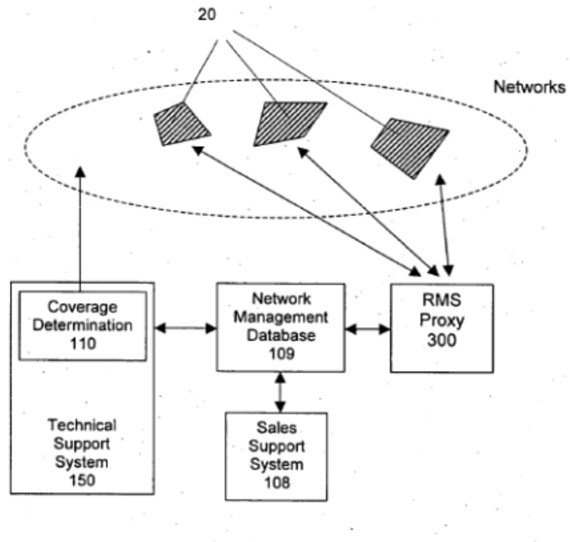
	building 310. The screen output 300 includes color coded (with the colors representing signal strength) representations of a coverage area 312 over the building 310 as well as other coverage areas 313. The coverage area 312 over the building 310 signifies that the building 310 is serviceable by the wireless service provider's network and that an antenna for a wireless infrastructure may be placed in the coverage area 312 on the roof of the building 310. Dawson ’953 at [0027] Also shown in FIG. 3 is the address 314 of the building 310. In one embodiment the address information was obtained by sending out a person with a handheld GPS (global position sensor) device and recording GPS coordinates for potential sites. Once the deciBel planner has been initially configured (including entering the location of the wireless service provider's hubs, specification of hub transmitting power and required signal strength, and preparing the terrain/picture database), the only input that is required to obtain an output such as the screen output 300 is the specification of a desired latitude/longitude. By preparing a database of site addresses and associated GPS coordinates, it becomes possible to obtain the output screen 300 of FIG. 3 by simply specifying the address and using the aforementioned database to translate the address into latitude and longitude coordinates. In some embodiments, the deciBel planner is integrated with the other portions of the program such that an address can be specified to the deciBel planner by simply clicking on it; in other embodiments, the deciBel planner is a stand-alone application and a user is required to manually enter the address into the deciBel planner and an indication as to whether a serviceable signal can be supplied to the site must be entered manually at step 116. Dawson ’953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. Dawson ’953 at [0030] The invention provides a home page 400 for the sales group as shown in FIG. 4. As indicated by the user field 405, the home page requires the sales group user to log in, both to protect the confidentiality of the sales data and to allow the system to track actions performed by each user. The home page 400 includes a plurality of links 410 to other information and system resources, as well as a number of information fields 420, 430. The home page 400 also includes a ‘My Buildings’ button that allows the sales group member (which may be a regional sales manager or account executive) to view sites that have been assigned to that member. A ‘My Buildings With No AEs’ button allows a regional sales manager user to view only those sites to which no account executive has yet been assigned. Finally, window 460 allows sites to be selected on the basis of the account executive to which the site is assigned and/or applicable geographical

Claims	
	market (e.g., city). Dawson ’953 at [0031] When sites are selected via either of the site buttons 440 or 450 or via the window 460, they are presented to the user in a sites window 500 as shown in FIG. 5. The sites window 500 includes a field 510 that identifies the site identification number, a field 520 that identifies the site name, fields 522, 524, 526 that identify the address of the site, a field 530 that identifies the base station, or hub, through which the site is connected to the wireless service provider's network, a field 540 that identifies the number of tenants at the site, a field 550 that identifies any current sales promotions directed toward a site, and fields 560 and 570 that identify the account executive and regional sales manager to which the site has been assigned. Another field 580 indicates the site status: On Net (meaning a wireless infrastructure has been installed and the site is in communication with the service provider's network), Leased (meaning that a lease for the site has been signed and the process of installing a wireless infrastructure is underway); Target (indicating that the site has been approved by engineering and is real estate friendly), Coverage Optimization, and Reject. A Customers field 590 serves as a link to a list of current customers at the site. Some of the fields in the window 500 also include links to further information. For example, clicking on the number of tenants field 540 will produce a tenants window 600 that provides information for all tenants at the associated site. This information may be used for, among other things, producing a mailing list for a site-specific sales promotion. Dawson ’953 at [0032] FIG. 7 is a screen shot of a site information web page 700 illustrating another site-centric information display. The web page 700 includes a site basics tab 710, a customers tab 720, a leases tab 730, a dB Planner tab 740 and a files tab 750. Selecting the site basics tab 710 calls up the window 712, which displays various information relative to a site, such as the site address, real estate information related to the site, and an identification of the nearest and next-nearest base station (hub) to the site. Selecting the customers tab results in the display of a list of customers for the site. Selecting the leases tab will provide images of lease documents pertaining to legal rights for the site. Selecting the dB Planner tab will result in the display of a propagation model image for the site such as the image 300 of FIG. 3. Finally, selecting the Files tab will result in a display of any other miscellaneous files associated with the site. Dawson ’953 at [0033] FIG. 8 is a hardware diagram of a system 800 according to one embodiment of the present invention. The system 800 comprises a plurality of storage devices 810-812 that store the various databases (e.g., the

Claims	
	information used by the deciBel Planner application, site information, etc.) used by the system 800. The storage devices 810-812 are connected to a database server 820 (in preferred embodiments, the storage devices 810-812 are physically located inside the server 820). The database server 820 is connected to a web server 830. The web server 830 is connectable to a display device 840 (such as a personal computer with a web browser) for providing various web pages 780, such as the pages illustrated in FIGS. 2-7, to users of the system. It should be understood that the system 800 is exemplary only and that any number of modifications (e.g., replacing either server 820, 830 with a cluster of servers; implementing the system on a single physical device) are possible. Dawson '953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson '953 at claim 1 A method for classifying a potential customer for a wireless communications service comprising the steps of: identifying a site in a target area the target area including portions that are currently served by a wireless communications service provider and portions that are not currently served by the wireless communications service provider, the site having associated therewith at least one potential customer; accepting, from a user, an indication as to whether legal rights to provide or gain access to a wireless infrastructure for the site can be or have been obtained; accepting, from a user, an indication as to whether the site is in a portion of the target area that can be served by the wireless communications service provider; assigning a priority classification to the site if the site is in a portion of the target area that can be served by the wireless communications provider and the legal rights for the building can be or have been obtained; and

Claims	
	classifying potential customers at the site as priority potential customers of the site is classifies as a priority site. Dawson ’953 at claim 6 6. A system for managing data for a wireless service provider, the system comprising: a storage device for storing a database, the database comprising information pertaining to a plurality of sites, each of the sites having associated therewith at least one potential customer; a processor connected to the storage device, the processor configured to perform the steps of accepting, from a user, an indication as to whether legal rights to provide or gain access to a wireless infrastructure for a site can be or have been obtained; accepting, from a user, an indication as to whether the site is in a portion of the target area that can be served by the wireless communications service provider; assigning a priority classification to the site if the site is in a portion of the target area that can be served by the wireless communications provider and the legal rights for the building can be or have been obtained; and classifying a potential customer associated with the site as a priority potential customer if a priority classification has been assigned to the site. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates; sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate.

Claims	
	Korpela ’484 at Figure 2  Fig. 2 Korpela ’484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Korpela ’484 at [0043] Furthermore, a Technical Support System (TSS) 150 is provided for connecting to the network

Claims	
	management database 109 to access coordinate and performance data of the installed and/or planned wireless routers. Using the locations of the routers and some performance data (e.g. transmit power, antenna installation height or the like), a coverage determination functionality or unit 110 of the TSS 150 calculates the combined coverage area of the wireless routers. The calculation can be based on a concept of finding points having a line of sight to at least one of the other wireless routers. This concept may thus be a viewshed concept or any other suitable concept for determining a coverage of a wireless connection. In particular, the dynamical coverage area calculation may be based on a viewshed analysis of a three-dimensional map including building heights and statistical information about the existing network. Korpela ’484 at [0045]–[0053] The information retrievable from the network management database 109 may consist for example of all or some of the following parts: a) Line-of-sight to existing network nodes (wireless routers) within a high link speed coverage area; b) line-of-sight to existing network nodes (wireless routers) within a low link speed coverage area; c) line-of-sight to planned network nodes (routers); d) planned coverage areas, i.e. detailed location of wireless routers which are missing for the time being but where network coverage is to be built; e) line-of-sight sensitivity to antenna height (this information can be used to compensate for errors in map material like missing trees), tolerance in antenna location and estimated quality of the link; f) likely antenna radiation directions as deduced from other links in the area (e.g. to compensate for antennas located on one side of the building); g) availability of other technologies to connect the user (e.g. to create a fixed line connection if for some reason the wireless router connection against the calculated predictions cannot be created); h) the capacity of the existing airhoods (i.e. cluster of subscriber routers in a neighbourhood, controlled by an Air Operating System, wherein the connections from the subscriber routers in the airhood to an Internet access point are organized via a single or multiple airheads)). Korpela ’484 at [0054] In the coverage determination unit 110, a combined network coverage of the wireless mesh network is calculated. This may be achieved by calculating geographical polygons 20 indicating geographical areas having a line-of-sight connection to at least one wireless router. The combined coverage areas 20 of the wireless network are constantly changing as new network nodes (e.g. wireless routers) are installed. Since the node locations depend on the customer's purchase decisions preplanning the network coverage area is not possible. Instead, it is important to be able to analyze what is the coverage at any given point in time to plan network changes, to understand how good is the coverage on a particular target area, and to make

Claims	
	marketing and other business decisions. Korpela '484 at [0056] The RMS Proxy 300 constantly or regularly monitors the network and updates the network management database 109 with new nodes and their coordinates. To achieve this, the RMS Proxy or management engine regularly or constantly reads node specific data stored in memories of the wireless routers 10. The node specific data is essential from the planning viewpoint, since it reflects the current network situation. In particular, the node specific data may comprise the name, geographical coordinates and link statistics of the respective wireless router. Thus, the actual cumulative coverage area can be calculated at any moment due to the fact that the network management database 109 is constantly updated based on any changes derived from the node specific data stored at the individual wireless routers. Consequently, the wireless routers 10 are at all times aware of all possible links to their neighbouring routers. Furthermore, information about poor links having a quality not sufficient to be utilized as links may be stored as well. Thus, even if only a view links are actually used for data processing, the wireless routers 10 know the characteristics of several possible links. This information (e.g. link statistics) is then stored by the RMS Proxy 300 in the network management database 109. Korpela '484 at [0062]–[0063] The automatically measured information about possible links improves the accuracy of the coverage area. Line-of-sight calculation results based on map data and measured information about all available links each wireless router 10 can detect are combined automatically. The calculation of the cumulated or combined coverage area can then be based on the viewshed concept and the link statistics. In this case, the geographical areas can be further differentiated by the number of neighbouring routers that can be accessed in each area. Korpela '484 at [0066] Due to the continuously changing network environment, consistency among plans in different phases and ability to use performance data collected from already implemented parts of the network is essential. For expansion planning all the existing network data must be always available. This process is essential as the network coverage is extended by each router in the network and as the routers are customer equipment there are continuous changes in the network. The following network planning process guarantees the network service availability.

Claims	
	Korpela ’484 at [0080] In a subsequent implementation phase S203, the candidate locations that have been identified in the master plan phase S202 gradually become actual. As the actual locations depend on the buying behaviour of the consumers in the area, the actual locations are typically different from the planned ones. Therefore it is essential to use the up-to-date data that is collected from the network by the RMS proxy 300. The master plan gradually becomes an implementation plan which supports the mass roll-out. Korpela ’484 at [0082]–[0083] To reuse the transmission frequencies as efficiently as possible, a frequency band optimization step which may focus on having as low antennas and as low transmission power as possible could be initiated. Thus, a unique new network solution which incorporates planning and administration features is provided. In other technologies, different parts have been planned with separate tools, which may cause inconsistency and requires resources, when the data from earlier phase or existing network is manually collected. Because of the unpredictable nature of customers joining the network, the process can adapt to deviations from the initial plans. Moreover, it is essential to get up-to-date snapshots of the network status at any point of time. Aufricht ’781 at [0042] Fleet management for centrally administering information in a handheld network environment that includes, but is not limited to, user data, user groups, group channels, channel data, personal channels, commercial channels, user accounts, corporate account, software groupings, personal information management, form delivery, form management, device configuration, device databases, device contents, and devices parameters. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory Available storage space

Claims	
	Screen size User profile(s) Color depth Applications on device Buttons on-device Data markers (e.g., cookies, tokens) Preferences Fonts Font specifications Sync type Synchronization types Supported data types Supported mime types Connection/Network profile Aufricht ’781 at [0102] The server 104 includes an administration module 122, a database module 126, a user interface 130, a web synchronization module 124, a server extension module 156, a fleet management module 154, a notification module 132, and a server communication module 114. Other embodiments of server 104 may include a subset of these modules, and/or may include additional modules. Aufricht ’781 at [0104] The database module 126 controls access to databases associated with the server 104. The database module 126 maintains information relevant to the clients 108, as well as information relevant to the modules contained in the server 104. The database module 126 manages information on the collection of channels maintained by server 104. These and additional functions performed by the database module 126 are described in co-pending application entitled “System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices,” Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht ’781 at [0105] The user interface 130 is, in an embodiment, a graphical user interface (GUI) that enables users and clients 108 to access functions and modules offered by the server 104. More generally, the user interface

Claims	
	130 within server 104 provides access to server 104 and the modules and resources contained therein. Aufricht ’781 at [0106] The invention supports various server web sites that are available through any communication medium, such as but not limited to the Internet, intranets, direct dial up links, etc. The UI 130 enables such web sites. Aufricht ’781 at [0109] fleet management module 154 performs functions associated with fleets of clients 108, which are groups of clients 108. For example, fleet management module 154 may perform global or mass operations on groups (fleets) of clients 108, such as loading or updating an application on groups (fleets) of clients 108. Another example of a mass operation is retrieval of information on clients 108 in a fleet, such as the free memory in clients 108 in a fleet (this would help an organization determine if its clients 108 need a memory upgrade). These and additional functions performed by the fleet management module 154 are described in co-pending application entitled “System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices,” Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht ’781 at [0110] The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API. Aufricht ’781 at [0111] For example, the web synchronization module 124 and the fleet management module 154 (as well as other types of synchronization modules, not shown in FIG. 1A) may interact with databases on the server 104 via the database module 126 by going through the server extension module 156. The web synchronization module 124 and the fleet management module 154 may not be able to interact directly with the database module 126 for a number of reasons. For example, they may support different data formats, or simply “speak different languages.” However, they can interact via the server extension module 156 as well as other server modules as long as they conform to the API of the server extension module 156. This is true

Claims	
	of any modules in the server 104, or that interact with the server 104. Aufricht ’781 at [0112] Server communication module 114 enables communication between the server 104 and entities external to the server 104, such as clients 108, adapters 118, providers 128, work stations, etc. The server 104 communicates with these entities via communication mediums 120, which may be any type of wireless or wired communication using any protocol. It is noted that multiple server communication modules 114 may execute in a single server 104. For example, in one embodiment, server communication module 114 is a TCP/IP stack. In another embodiment, server communication module 114 is a secure socket layer stack or a compression stack. The invention is not limited to any implementation examples discussed herein. These and additional functions performed by the server communication module 114 are described in co-pending application entitled “System, Method, and Computer Program Product for Enabling On-Device Servers, Offline Forms, and Dynamic Ad Tracking On Mobile Devices,” Ser. No. 09/559,964, filed on Apr. 28, 2000 (Atty. Docket No. 1933.0010001). Aufricht ’781 at [0114] An alternative representation of server 104 is shown in FIG. 1B. FIG. 1B illustrates, for example, that messages from entities outside of server 104 are received by server extension interface/module 156 via server communications modules 114. Generally, such messages represent requests for the server 104 to perform various functions. The server extension module 156 conceptually operates as a dispatcher who routes such messages to other modules contained in the server 104, such as web synchronization module 124 (who handles requests to synchronize with web content), notification module 132, fleet management module 154 (who handles fleet related requests), and/or third party modules 155 (such as other synchronization modules). Thus, the invention supports modules 155 generated by third parties to perform various functions. Such modules 155 “plug-in” to the server 104 via the server extension module 156. Aufricht ’781 at [0147] The data processing unit 103A may also include an interface 103J which may receive objects (such as data, applications, software, images, etc.) from external entities 103N via any communication mediums including wired and wireless communication mediums. In such cases, the objects 103L are transported between external entities 103N and interface 103J via signals 103K, 103M. In other words, such signals 103K, 103M include or represent control logic for enabling a processor or computer to perform functions of the invention. According to embodiments of the invention, such signals 103K, 103M are also considered to be computer program products, and the invention is directed to such computer program

Claims	

products.

Geranio ’871 at Abstract

An integrated property database and search engine for matching properties with buyers has a computer that includes a master database and a search engine. The master database includes a property for sale database and a buyer's database. The property for sale database includes a property identification, a property location, and a property price. The buyers database includes a buyer's identification, a location of interest, and an offer price. A request is sent to the buyer for ascertaining information to be contained in the buyers database. An inquiry is sent to ascertain information to be contained in the property for sale database. A search engine is used to identify properties in the property for sale database that have a property location within the location of interest for a buyer, and have a property price that is equal to or lower than the offer price.

Geranio ’871 at Figure 1

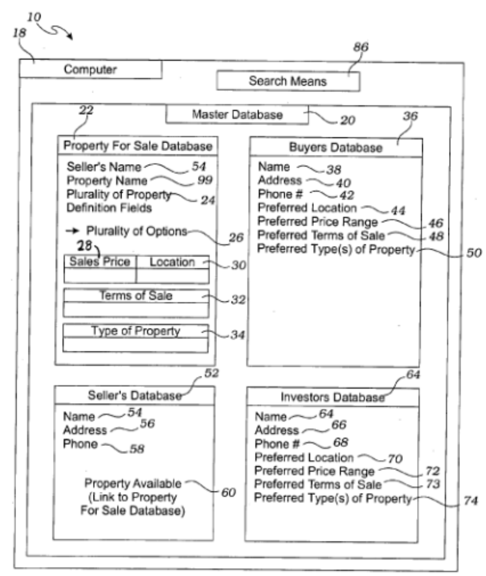
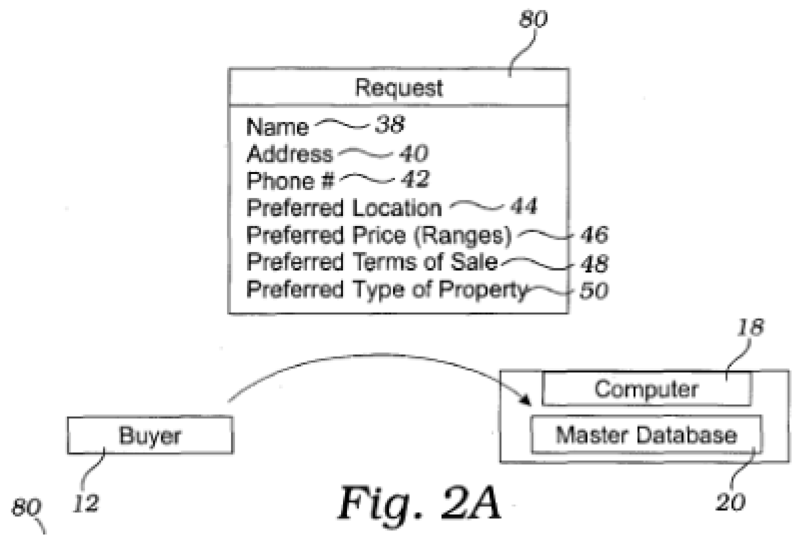
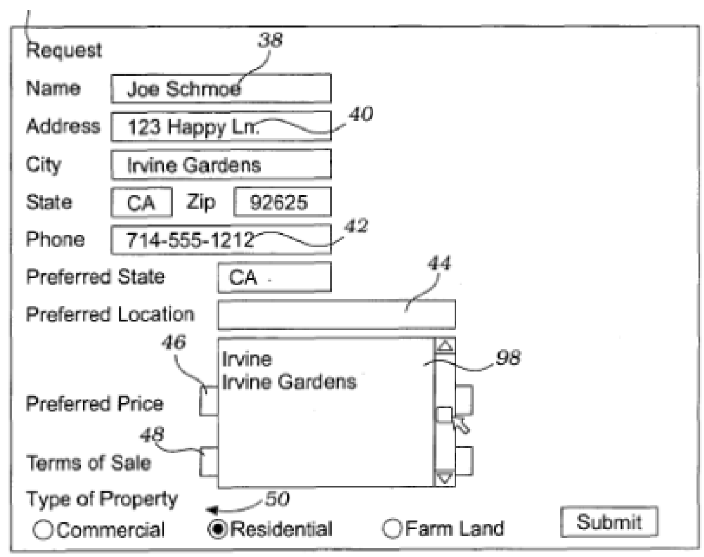


Fig. 1

Claims	
	Geranio '871 at Figure 2A  Fig. 2A Geranio '871 at Figure 2B  Fig. 2B

<table>
<tr><th>Claims</th><th></th></tr>
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Geranio ’871 at Figure 3B

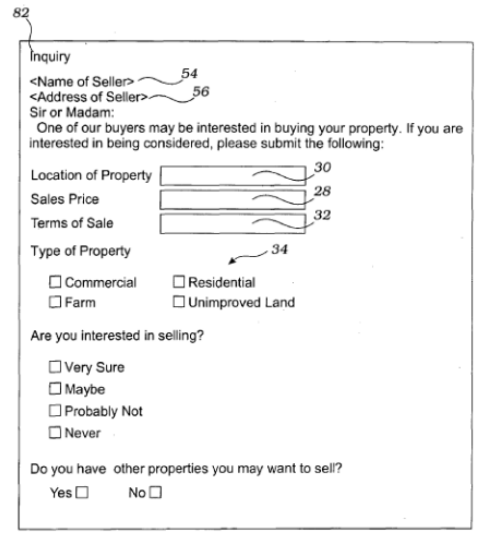

Fig. 3B

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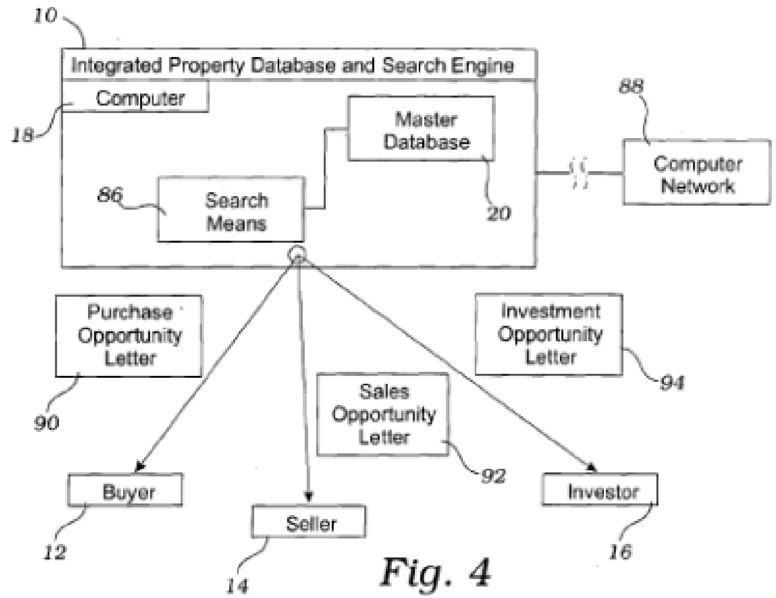
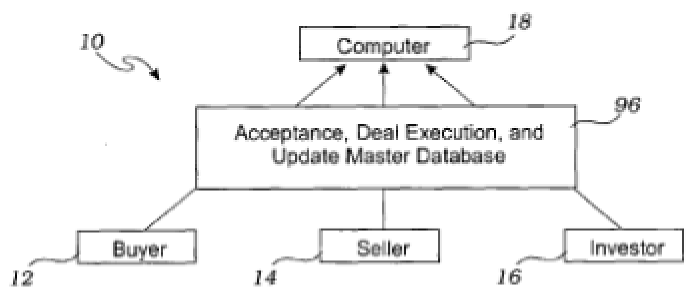
Claims	
	Geranio ’871 at Figure 4  Fig. 4 Geranio ’871 at Figure 5  Fig. 5 Geranio ’871 at [0013] The present invention provides an integrated property database and search engine for matching properties with buyers. The integrated property database and search engine is executed on a computer having a master database and a search means. The master database includes a property for sale database and a buyer's database. The property for sale database has a plurality of property definition fields that include a

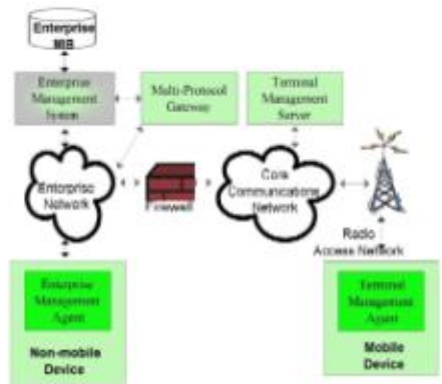
Claims	
	property identification, a property location, and a property price. The buyers database has a plurality of buyers definition fields that include a buyer's identification, a location of interest, and an offer price. The integrated property database and search engine further includes a means for generating and transmitting a plurality of requests to the buyers for ascertaining information to be contained in the buyers database; a means for generating and transmitting a plurality of inquiries to the properties for ascertaining information to be contained in the property for sale database; a means for incorporating information from the plurality of requests into the buyers database, and for incorporating information from the plurality of inquiries into the property for sale database; and a search means for identifying properties in the property for sale database that have a property location within the location of interest for a buyer, and have a property price that is equal to or lower than the offer price. Geranio ’871 at [0028] As shown in FIG. 1, the integrated property database and search engine 10 is executed on a computer 18 that includes a master database 20 and a search means 86. The master database 20 includes a property for sale database 22 and may also include a buyers 12 database, a sellers 14 database, and an investors 16 database. The property for sale database 22 has a plurality of property definition fields 24, each of the property definition fields having a plurality of options 26. The plurality of property definition fields 24 may include a sales price 28, a location 30, and terms of the sale. The plurality of options 26 for the sales price 28 could include any dollar amount, or could be rounded to the nearest 10 or 100 dollars. The plurality of options 26 for the location 30 could be by state, region, county, area code, or by custom region, or any other scheme that suits the needs of the buyers 12 and sellers 14. Geranio ’871 at [0035] The integrated property database and search engine 10 further includes a means for generating and transmitting a plurality of requests 80 to the buyers 12 for ascertaining information to be contained in the buyers database 36. As shown in FIG. 2A, in one embodiment the request 80 is a form that is adapted to be completed by the buyer 12 and submitted for entry into the computer 18. Geranio ’871 at [0036] The request 80, an example of which is shown in FIG. 2B, may have been printed and mailed or faxed, or it may be a form that is electronically generated and emailed to the buyer 12, or the buyer 12 may have accessed the request 80 via the computer network 88 (shown in FIG. 4). In another embodiment, the request 80 may be completed by a real estate specialist (not shown) during a phone consultation with the buyer 12. The request 80 enables the buyer 12 to select one of the plurality of options 26 for each of the

Claims	
	plurality of property definition fields 24. In an electronic format, the request 80 could include a drop down menu 98 of options; and in paper format, the request 80 may include pre-printed responses that the buyer 12 circles or checks; or the request 80 may be a paper that includes blanks that are filled in by hand. Geranio ’871 at [0037] The integrated property database and search engine 10 further includes a means for incorporating information from the plurality of requests 80 into the buyers database. Foe example, the buyer 12 may mail, fax, email, or otherwise transmit the request 80 to an office associated with the computer 18 for data entry or direct integration into the master database 20. In another embodiment, the request 80 may be completed over the phone, when the seller 14 is speaking with a property specialist, who can take the necessary information over the phone and input the information directly into the master database 20. Those skilled in the art can devise many methods of scanning or otherwise entering the data into the computer 18. Geranio ’871 at [0041] As discussed above, the integrated property database and search engine 10 includes a means for incorporating information from the requests 80 into the buyers database 36, and for incorporating information from the inquiries 82 into the property for sale database 22. This can include directly entering data into the master database 20, scanning the data in using technology known in the art, or having the interested parties enter the information directly over the computer network 88. Sharma ’925 at Abstract An illustrative method provides information to a user on wireless communication coverage. A wireless availability server receives a user request for coverage information where the request includes specific geographic location data provided by the user. A determination is made if the location data is in the form of latitude and longitude coordinates. Upon a determination that the location data is not in the form of latitude and longitude coordinates, the location data is converted into corresponding latitude and longitude coordinates. A query is made to a database containing wireless coverage data based on the latitude and longitude coordinates. A response to the query contains wireless coverage information for the latitude and longitude coordinates. A reply is transmitted to the user responding to the user request where the reply contains the wireless coverage information.

Claims	
	Sharma ’925 at [0021] The Internet 28 supports communications with a variety of information providers. Maps and travel services are available to Internet users from a variety of providers. One such provider utilizes a URL host site that includes map/travel server 46 and an associated database 48 that stores a variety of map, highway and other geographic related information that can be retrieved in response to inquiries from users received by the server 46. Maps showing roadways and other geographic landmarks, as well as aerial views that can be scaled to show areas of interest can be accessed by users. Users typically select areas of interest by inputting a street address, city, state and/or ZIP code. Assuming a specific address in an urban setting is known by the user, such an input provides a reasonably specific geographic location as a target query. However, in a rural environment it becomes increasingly harder to identify a specific geographic location, e.g. a particular rest stop along a rural section of an interstate highway. Sharma ’925 at [0022] Most if not all wireless communication providers provide some information to subscribers by Internet access. For example, one such provider utilizes a URL host site that includes a wireless carrier server 50 and an associated database 52. This communication provider stores service coverage information in the database 52. This information may be provided in response to a query by user in the form of the map typically showing colored regions designated by the communication provider where coverage is provided. However, such information is generally limited in terms of the granularity made available to the user. For example, a circular areas or a series of intersecting circular areas may be shown in which it is to be assumed that coverage is provided throughout these areas. However, a specific geographic location even within such a designated circular area may have poor or no coverage due to any number of factors adversely impacting RF signal propagation between a handset at the specific geographic location and the cellular base station antenna designed to cover of that region. Alternatively, a wireless communication provider may elect to provide a map showing the location of its base stations and leave the areas of service coverage to the user's interpretation. In yet another method, the communication provider, especially for smaller communities or towns, may provide a list of cities or towns for which service is stated to be provided. None of these methods provided by communication carriers provide sufficient granularity (geographic specificity) to permit a user to determine with any certainty whether service is actually available at specific geographical locations, especially those in more rural locations. Sharma ’925 at [0023] In accordance with an illustrative embodiment of the present invention, a wireless availability server 54 with an associated database 56 is coupled to the Internet 28 and serves as a URL host that receives user

Claims	
	queries requesting communication service coverage information at specific geographic locations as provided by one or more communication service providers. Based on information obtained from servers 46 and 50, as well as from information contained in its database 56, the wireless availability server 54 provides a response to the user's query as to communication service coverage at the specific geographic location(s) and/or along a travel route defined in the user's query. Details concerning functioning of the wireless availability server 54 are provided below. Depending upon the particular application and permission having been received from the proprietors of servers 46 and 50, wireless availability server 54 may obtain direct access to information contained in databases 48 and 52 as indicated by the dashed line paths, i.e. access to these databases other than by transmitting a query by the Internet to their respective servers. Some or all of the information contained in databases 48 and 52 could be stored or temporally cached in database 56 for faster access. Sharma ’925 at [0025] FIG. 4 shows steps of an illustrated method in accordance with an embodiment of present invention in which users can obtain information about whether wireless coverage exists for a specific location. Although this method is explained with reference to FIG. 1, it will be apparent that other architectures and configurations of apparatus could be utilized to perform these steps. In accordance with step 60, a user logs onto wireless availability server 54. The user may communicate with the server over a wireline communication channel such as by desktop computing apparatus 34 or by a wireless communication channel that supports a wireless enabled laptop computer, PDA, data enabled cellular telephone, or other types of wireless handsets. Although the Internet 28 is shown as supporting communications with the wireless availability server 54, it will be apparent that other types of communication networks could be utilized to transport communications between the wireless availability server and users. In this example it will be assumed that the user employs the desktop computing apparatus 34 to communicate through the Internet 28 with the wireless availability server 54 which serves as a host for URL queries addressed to it. Sharma ’925 at [0026] In step 62 the user inputs information based on a request for geographic information from the server displayed on his screen. A request may include, for example, multiple input boxes for receiving alphanumeric characters entered by the user that identify specific locations, e.g. addresses or geographic coordinates. Alternatively, the request may comprise a map, which preferably can be scaled to obtain the desired degree of granularity, permitting the user to select specific locations of interest such as by clicking on the corresponding locations of the map. Or the request may include latitude and longitude information such as determined by a built-in GPS receiver to specify a current or previously stored location. In step 64

Claims	
	the user may also identify the user's communication carrier, a particular communication carrier of interest, or request that all communication carriers serving the specific locations of interest be considered. Sharma ’925 at [0029] A NO determination by step 66 or completion of step 68 results in continued processing in accordance with step 70. The latitude/longitude coordinates of the specific locations specified by the user are utilized to query one or more communication coverage databases. If available in database 56, this information can be most efficiently and directly retrieved by server 54. Alternatively, server 54 may generate a query transmitted by the Internet to the server, e.g. wireless carrier server 50 hosting database 52, to obtain coverage information concerning the specific location (s), or if permission has been granted and communication channels are available, the server 54 made directly access the database 52 such as indicated by the dashed lines coupled to server 54 in FIG. 1. Depending upon the granularity of information made available by the wireless carriers, it may be necessary to compile and store separate coverage information such as in database 56 for specific geographic locations identified by latitude/longitude coordinates. Such information can be compiled by empirical testing such as by determining signal strengths available at specific latitude and longitude coordinates for wireless carriers either by professional engineering signal strength studies or by obtaining such information from reports provided by users of the various wireless carriers indicating signal strength readings/communication quality at specific locations. Sharma ’925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each

Claims	
	displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76. Sharma ’925 at [0033] FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well. Adwankar 2004 at Figure 1  Figure 1 The Universal Manager Architecture

Claims	
	Adwankar 2004 at 3–4 SNMP is the IETF standard for operations and maintenance protocol for the Internet. SNMP is based on the manager/agent model consisting of a manager, an agent, a database of management information, managed objects and the network protocol. The manager and agent use MIB and a relatively small set of commands or protocol operations (e.g. GET, SET) to exchange information through SNMP PDUs. The MIB is organized as a tree structure with individual variables, such as point status or description, being represented as leaves on the branches. The SNMP data model defines an object identifier (OID) that is used to distinguish each variable uniquely in the MIB and in SNMP messages. For example, OID 1.3.6.1.2.1.1.1.0 is associated with MIB variable system description. The SNMP data modeling language is a subset of Abstract Syntax Notation Number One (ASN.1), defined as SMIv2. SNMP uses ASN.1 BER encoding as the data representation. SNMP is commonly implemented over Transport Control Protocol (TCP) or User Datagram Protocol (UDP) transport layers. Adwankar 2004 at 8 (1) Terminal Management Operation For a terminal management action, such as the querying of the manufacturer name of a GSM terminal, the enterprise management system is unaware of the presence of such a terminal and either of the following operations takes place. 1. The enterprise management system based on additional information such as IMEI decides to route management action to multi-protocol gateway, or 2. Multi-protocol gateway advertises addressability to that IMEI as a certain IP address and terminal management action takes place on this proxy IP address. In either case the enterprise management system routes the SNMP PDU for the corresponding management action to the Multi-Protocol Gateway instead of sending the SNMP PDU directly to the wireless device. The SNMP PDU's host and port are set to the host and port (in our case 15003) that the Multi-Protocol Gateway is listening on as opposed to the host and port of the wireless device. The SNMP Packet thus sent contains the Operation Name (e.g. Get, Get Next, Set), the OID to be queried, (optionally IMEI of the GSM terminal and the value of the OID if it is a Set Operation), SNMP credentials and a request ID of the SNMP Packet. Figure 8 shows the result of querying the Object ID "./DevInfo/Man" of a mobile device from the enterprise management system. The result that is the manufacturer name is shown in the result panel.

Claims	
	Adwankar 2004 at Figure 8

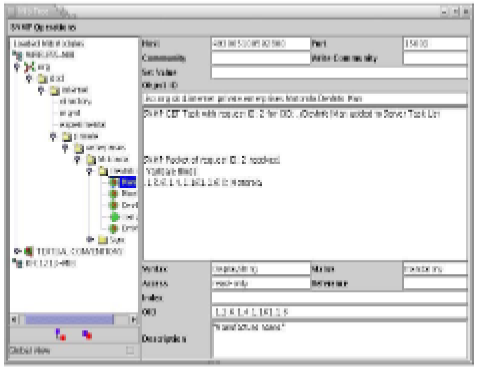


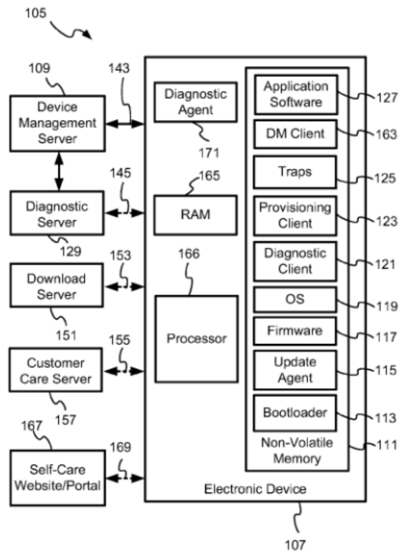
Figure 8 Management of mobile device using the Universal Manager

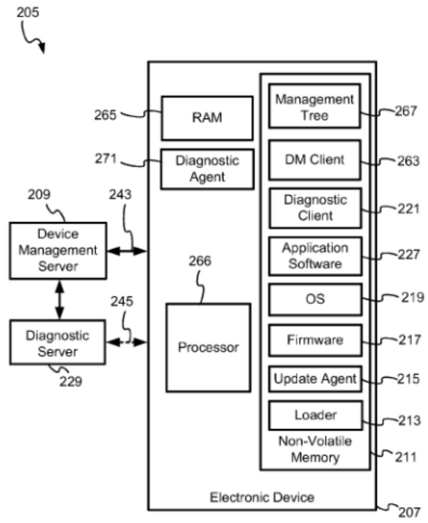
Adwankar 2004 at Figure 10 part 1

```
WIRELESS-MIB DEFINITIONS ::= BEGIN
IMPORTS MODULE-IDENTITY,
            OBJECT-TYPE, Integer32,
            enterprises
            FROM SNMPv2-SMI
            DisplayString, PhysAddress
            FROM SNMPv2-TC;

WIRELSS-MIB MODULE-IDENTITY
     LAST-UPDATED "200310200000Z"
     ORGANIZATION "Motorola"
     CONTACT-INFO  "Sandeep Adwankar... "
     DESCRIPTION
        "This MIB module defines a MIB which
         provides mechanisms to perform SNMP
          management operations on mobile devices."
          ::= { enterprises xxx }

DevInfo     OBJECT IDENTIFIER
         ::= { WIRELESS-MIB 1 }
DevDetail OBJECT IDENTIFIER
         ::= { WIRELESS-MIB 2 }
Ext    OBJECT IDENTIFIER ::= { DevDetail 1 }
```

Claims	
	Adwankar 2004 at Figure 10 part 2

```
WAP    OBJECT IDENTIFIER ::= { Ext 2 }

-- the DevInfo group

Man     OBJECT-TYPE
        SYNTAX          DisplayString (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION     "Manufacture name."
        ::= { DevInfo 1 }
Mod     OBJECT-TYPE
        SYNTAX          DisplayString (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION "Model name."
         ::= { DevInfo 2 }
DevID   OBJECT-TYPE
        SYNTAX          DisplayString (SIZE (0..255))
        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION "Device serial number."
         ::= { DevInfo 3 }

-- the DevDetail group

OEM     OBJECT-TYPE
         SYNTAX          DisplayString (SIZE (0..255))
         MAX-ACCESS         read-only
         STATUS          current
         DESCRIPTION "Specify OEM of the
                         device (e.g., Motorola)."
         ::= { DevDetail 1 }
FwV        OBJECT-TYPE
         SYNTAX          DisplayString (SIZE (0..255))
         MAX-ACCESS         read-only
         STATUS          current
         DESCRIPTION
               "Firmware version."
         ::= { DevDetail 2 }

-- the WAP group

Defaultwebsession OBJECT-TYPE
         SYNTAX           DisplayString (SIZE (0..255))
         MAX-ACCESS   read-write
         STATUS          current
         DESCRIPTION
               "Set default web session on phone."
         ::= { WAP 1 }
...
END
```

Claims	
	Rao ’815 at Figure 1  FIG. 1

Claims	
	Rao ’815 at Figure 2  FIG. 2 Rao ’815 at [0033] In a representative embodiment of the present invention, a server such as, for example, the DM server 209 or diagnostic server 229 accesses one or more management objects (MOs) representing key performance indicators in a management tree, such as the management tree 267, to determine the performance or operating behavior of one or more layers of a communication protocol used in supporting an application on the electronic device 207. For example, different layers of functionality of a communication protocol in an electronic device such as a network layer, a service layer, and an application layer may each have its own set of key performance indicator (KPI) values. Rao ’815 at [0051] FIG. 7 is a block diagram illustrating another exemplary arrangement of management objects of key performance indicators within the hierarchy of a management tree of an electronic device such as, for example, the management tree 267 of the electronic device 207 of FIG. 2, in accordance with a representative embodiment of the present invention. As shown in the illustration of FIG. 7, in some representative embodiments of the present invention, a management object such as the KPIs MO 710 comprises a root node of a collection of nodes containing all key performance indicators. In various

Claims	
	representative embodiments, such a collection could be organized as a logical tree. As shown in FIG. 7, collection of nodes of the KPIs MO 710 contains node Network A KPI 712 and node Network B KPI 714, which contain network-level key performance indicators for Network A and Network B, respectively. For each network, a KPI may be retrieved when needed from the Network A KPI 712 MO node and the Network B KPI 714 MO node. The collection of nodes of the KPIs MO 710 also comprises nodes Service A KPI 716 and Service B KPI 718, which contain service-level key performance indicators for Service A and Service B, respectively. Each service may provide its own KPI information, such as broadcast service, streaming audio service, etc. The example of FIG. 7 also illustrates that the KPIs MO 710 has as one of its element a node Application A KPI 720 that contains application-level key performance indicators. In a representative embodiment of the present invention, each application such as, for example, a broadcast client application MobiTV or a DVB-H client may provide its own KPIs that may be retrieved via a DM client and an associated management object. A representative embodiment of the present invention may also comprise a quality of service (QoS) parameters node, OtherQoSParameters 722. Stenton ’260 at [0016]–[0017] The growing proliferation of wireless local area networks 3 especially within urban environments, airports, train stations and the like, means that there is growing coverage allowing connection of mobile communication devices to wireless LANs 3. Preferably, the wireless LANs are IEEE 802.11a, 802.11b or 802.11e wireless LANs. The wireless LANs 3 may be entirely independent of one another or be owned by businesses or individuals within a location and may be primarily intended for use of those businesses or individuals. However, the wireless LANs 3 may each be connected over a private data network 9 (virtual private network) to the Internet 10 for connection to services but also for administration and billing purposes to a wireless Internet service provider 11. Stenton ’260 at [0018] In this embodiment of the present invention, the wireless Internet service provider 11 may own, or control access to, or be able to authorise access by third parties to the wireless LANs 3 meeting the wireless Internet service provider's quality of service and security criteria. The wireless LANs 3 therefore make up a matrix of wireless LANs 3 offering considerable coverage. The controlling function of the wireless Internet service provider allows mobile communication devices 7 equipped with wireless LAN cards or chip sets 12 to communicate with wireless LANs 3 and via the private data network 9 provided by the wireless LAN 3 to communicate with remote servers or other service providers accessible over the Internet or the like.

Claims	
	Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11 and transmitted to the cellular telecommunications network 2 operator. Lim ’402 at [0027]–[0028] In this case, the service center 30 is a service center operated by a business operator or a manufacturer of the mobile communication terminal, and when the mobile communication terminal fails, the service center 30 is repaired. That is, the remote diagnosis server 20 transmits the diagnosis result to the mobile communication terminal 10 or the service center 30 according to the data received from the server-connected mobile communication terminal 10, so that the user can check the state of the mobile communication terminal 10, and when the result is transmitted to the service center 30, the service center 30 receives the state of the mobile communication terminal 10 so that the mobile communication terminal 10 can be repaired. Lim ’402 at [0047] Meanwhile, as illustrated in FIG. 3, the remote diagnosis server 20 includes a communication module 23 configured to transmit and receive data to and from the external mobile communication terminal 10 connected through a wired/wireless method, a remote diagnosis database 22 configured to store data on the operation of each mobile communication terminal in order to diagnose a failure, and a server control unit 21 configured to receive operation data of the mobile communication terminal 10 connected through the communication module 23 and determine whether a failure has occurred based on the remote diagnosis database 22. Lim ’402 at [0048] The remote diagnosis database 22 stores data on each mobile communication terminal operator or manufacturer, model information of each mobile communication terminal, etc., and also stores data on the operation and function of the mobile communication terminal according to each model. Chmaytelli ’453 at [0032] FIG. 1 illustrates a block diagram of one exemplary embodiment of a wireless system 100 in accordance with at least one embodiment of the invention. System 100 can contain client devices, such as cellular

Claims	
	telephone 102, in communication across a wireless network 104 with at least one application download server 106 that selectively transmits software applications and components to wireless devices across a wireless communication portal or other data access to the wireless network 104. As shown here, the wireless (client) device can be a cellular telephone 102, a personal digital assistant 108, a pager 110, which is shown here as a two-way text pager, or even a separate computer platform 112 that has a wireless communication portal. The embodiments of the invention can thus be realized on any form of client device including a wireless communication portal or having wireless communication capabilities, including without limitation, wireless modems, PCMCIA cards, personal computers, access terminals, telephones, or any combination or sub-combination thereo Chmaytelli '453 at [0033] The application download server 106 is shown here on a network 116 with other computer elements in communication with the wireless network 104. There can be a stand-alone server 122, and each server can provide separate services and processes to the client devices 102, 108, 110, 112 across the wireless network 104. There is preferably also at least one stored application database 118 that holds the software applications that are downloadable by the wireless devices 102, 108, 110, 112. However, those skilled in the art will appreciate that the configuration illustrated in FIG. 1 is merely exemplary. Accordingly, embodiments of the invention can include one or more servers that can each perform all the described functions and contain all necessary hardware and software, or can contain only selected functionality. Chmaytelli '453 at [0034] In FIG. 2, a block diagram is shown that more fully illustrates system 100, including the components of the wireless network 104 and interrelation of the elements of the exemplary embodiments of the invention. System 100 is merely exemplary and can include any system that allows remote client devices, such as wireless client computing devices 102, 108, 110, 112 to communicate over-the-air between and among each other and/or between and among components connected via a wireless network 104, including, without limitation, wireless network carriers and/or servers. The application download server 106 and the stored application database 118, along with any other servers such as ad dispatch server 130 which are used to provide cellular telecommunication services, communicate with a carrier network 200, through a data link, such as the Internet, a secure LAN, WAN, or other network. In the embodiment shown, a server 120 can include the application download server 106, ad dispatch server 130 and the stored application database 118. However, these servers can also be independent devices. The ad dispatch server 130 can provide additional ad services based on the configuration of each of the client devices 102,

Claims	
	108, 110, 112. Chmaytelli ’453 at [0080] Alternatively, in another embodiment of the invention, an ad contains location information that can be used to define a geographic area. Client devices within the targeted area (i.e., the defined geographic area) can be identified from the location information stored on a server in the carrier network. For example, a CAM enabled client device can periodically report the location of the client device or execute an application to provide location data to a remote server that can calculate the location of the client device. The stored location information can be a table, for example, containing longitude and latitude coordinates for each client device. When an ad is generated containing location information to define a geographic area of interest (e.g., longitude and latitude coordinates of four points defining a rectangular area), a server can use the stored client location information to identify the client devices in the targeted area. Then the ad can be sent to the client devices that are identified. Although the ad location information does not have to be transmitted to the client device in this embodiment, the location information can still be used by the CAM system on the client device for inbox maintenance (e.g., to delete messages when the client device is out of the targeted area) as discussed above. Alternatively, if the client device location is monitored at a remote server, then the ad generation system can generate another message that directs the CAM system on the client device to delete the previously sent ad when the client device location is outside the targeted area. Additionally, a message that directs the CAM system on the client device to delete a specific previously sent ad can be event-based, such as deleting a promotional ad once all available promotional items are sold. Accordingly, this aspect can be used regardless of whether the client device location data is maintained locally or remotely. Chmaytelli ’453 at [0085] FIG. 8B is a flowchart illustrating a method for identifying client devices based on the geographic area defined by the location data in the ad. In block 822, the targeted geographic area is determined using the location data contained in the ad. As discussed above, this determination can be performed at the client device, a server on the carrier network, and/or other remote server. The client device location information is accessed, in block 824. Once again this can be performed at the client device, a server on the carrier network, and/ or other remote server, as previously discussed. Further, accessing the data can include any of the methods discussed herein (e.g., accessing previously stored geographic position data in the client device or on a server remote to the client device, initiating a location API resident on the client device to obtain the location of the client device (e.g., using gpsOne®), and the like). Then, in block 826, the geographic position of the client device can be compared with the targeted area to determine if the client

Claims	
	device is within the targeted area. Likewise, this determination can be performed at the client device, a server on the carrier network, and/ or other remote server, as previously discussed. Zellner '749 at 4:17–26 The present invention also contemplates an unblocking option where the user may access on Internet a website for one or more service promoters to "unblock" disclosure of the user's identity and/or location information. In alternative embodiments, various identity-blocking and location-blocking services may "unblock" transmission of respective identity and/or location information when the user (or the mobile subscriber) dials an emergency phone number (e.g., "911") or indicates a desire to access an emergency service provider (e.g., a fire station, a hospital, or the police). Zellner '749 at 6:33–51 In addition to the determination of the MS's location, the service provider 16 may also ascertain the identity of the mobile subscriber through, for example, the cell phone data (e.g., the mobile identification number or MIN) received by the SP 16 (e.g., through a mobile switching center operated by the SP 16) when the SP 16 authenticates the cell phone 10 as part of the cell phone registration process as is known in the art. The identity of the mobile subscriber (e.g., the subscriber's name, address, contact phone number, employment status, etc.), along with the associated MIN, may already have been previously stored in a database (e.g., the subscriber's home location register or HLR) maintained by the SP 16. Alternatively, the mobile subscriber identity information may temporarily reside in a visitor location register (VLR) associated with the serving MSC (mobile switching center) for a roaming MS. Such identity information may be obtained by the SP 16, for example, when the MS initially signs up for the cellular service offered by the SP 16. Zellner '749 at 14:20–41 FIG. 4 depicts an exemplary flowchart for an identity-blocking service provided by a cellular service provider (e.g., the service provider 16 in FIGS. 1 and 2). Initially, at block 70, the cellular service provider 16 may periodically receive (or track) the location information for the cell phone 10 using one of the methods mentioned hereinbefore. Here, the location information can be considered to be "in the network." Alternatively, the location information may be "in the cell phone" as discussed hereinbefore. For example, a cell phone with a built-in location identifier (e.g., the cell phone 10 with the built-in GPS receiver 56 as shown in FIG. 3) may transmit its location information to the wireless network 12 (and, hence, to the service provider 16) periodically, for example, every 30 seconds after the cell phone 10 is activated (or powered up) by the MS. In another embodiment, the MSC (mobile switching center) (not shown) serving

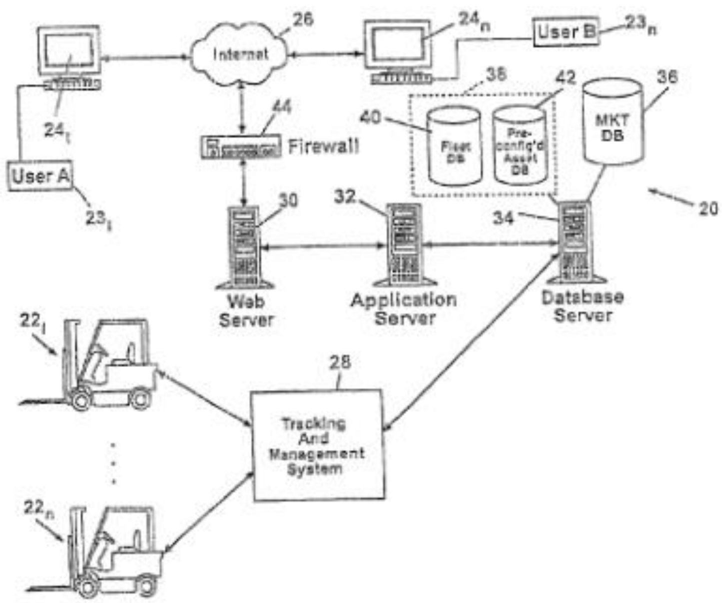
Claims	
	the cell phone 10 may be programmed to periodically "query" the cell phone 10 to extract current location information therefrom. In both cases, the PCU 52 may be configured with appropriate software which, when executed, transmits the cell phone location information via the NIU 60 to the MSC (not shown) operated by the service provider 16. Tolz '933 at 14:2–8 Figures 3(a)-3(c) illustrate the search procedure conducted by the auction/classified ad software implementing the methodology of the invention. It is assumed that the bidder/Buyer have previously entered their address, and all vital information such as the buyers location, distance etc. are stored in the database 18c (Figure 1(a)). Further, the 18c maintains records of Sellers, their goods and services for sale/auction, and the address locations of the items for sale/auction.
10[c] an interface through which one or more end users or one or more end user communication devices, or one or more carriers, or one or more third parties that provide services to said one or more end users or one or more end user communication devices or said one or more carriers, or one or more wireless communications networks may access said quality or service information or mobile device location information stored in said memory or database; and	It was well known and routine at the time of the alleged invention for a system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "an interface through which one or more end users or one or more end user communication devices, or one or more carriers, or one or more third parties that provide services to said one or more end users or one or more end user communication devices or said one or more carriers, or one or more wireless communications networks may access said quality or service information or mobile device location information stored in said memory or database." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify an existing system of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "an interface through which one or more end users or one or more end user communication devices, or one or more carriers, or one or more third parties that provide services to said one or more end users or one or more end user communication devices or said one or more carriers, or one or more wireless communications networks may access said quality or service information or mobile device location information stored in said memory or database" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "an interface through which one or more end users or one or more end user communication devices, or one or more carriers, or one or more third parties that provide services to said one or more end users or one or more end user communication devices or said one or more carriers, or one or more wireless communications networks may access said quality or service information or mobile device location information stored in said memory or

Claims	
	database" would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. *See* limitation 1[d], *supra*.
10[d] wherein said wireless access characteristics comprise one or more of identified perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service.	It was well known and routine at the time of the alleged invention for a system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "wherein said wireless access characteristics comprise one or more of identified perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service." To the extent a clearinghouse system for communications networks disclosed in any of Defendants' other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify an existing system of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include "wherein said wireless access characteristics comprise one or more of identified perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service" as claimed in light of the teachings in the references set forth below and in Defendants' other invalidity charts. These prior art references further demonstrate that the claimed "wherein said wireless access characteristics comprise one or more of identified perceived or measured: radio reception quality, network performance, quality of service, data rate, spectrum availability or suitability, capacity or bandwidth, availability or quality of coverage, availability or quality of capacity, availability or quality of one or more services or carriers, availability or quality of air interfaces, average use profile, average availability profile, statistics on outage or reliability or coverage or capacity carrying capabilities for one or more service providers, frequencies, radio frequency or quality of service or coverage or service map or addresses for one or more service providers, radio frequency or end-user application performance, and cost of service" would

Claims	
	have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. *See* limitation 1[e], *supra*.
12 The system of claim 10, further comprising a server configured to generate and serve data based on mobile device location information and quality or service information stored in said memory or database to one or more end users or one or more end user communications devices.	It was well known and routine at the time of the alleged invention for a system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “a server configured to generate and serve data based on mobile device location information and quality or service information stored in said memory or database to one or more end users or one or more end user communications devices.” To the extent a clearinghouse system for communications networks disclosed in any of Defendants’ other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify an existing system of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “a server configured to generate and serve data based on mobile device location information and quality or service information stored in said memory or database to one or more end users or one or more end user communications devices” as claimed in light of the teachings in the references set forth below and in Defendants’ other invalidity charts. These prior art references further demonstrate that the claimed “a server configured to generate and serve data based on mobile device location information and quality or service information stored in said memory or database to one or more end users or one or more end user communications devices” would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 (“Daley ’800”) 700-A02 U.S. Pat. Pub. No. 2008/0186882 (“Scherzer ’882”) 700-A03 U.S. Pat. Pub. No. 2008/0305747 (“Aaron ’747”) 700-A04 U.S. Pat. Pub. No. 2003/0216953 (“Dawson ’953”) 700-A05 U.S. Pat. Pub. No. 2007/0178911 (“Baumeister ’911”) 700-A06 U.S. Pat. Pub. No. 2007/0111748 (“Risbood ’748”) 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 (“Roundtree ’237”) 700-A08 Bitfone 700-A09 SOTI

Claims	
	700-A10 Blackberry Enterprise Server The Loopt, Smaato, or Digital Envoy systems. Howarter ’897 at [0005] To provide a system and method for identifying potential customers for communications services. In one embodiment a latitude and longitude associated with an address of a potential customer may be identified. The availability of the communications services may be indicated based on the latitude and longitude. An availability map and services offers may be displayed to the potential customer. A communication service is added for the potential customer. Howarter ’897 at [0006]–[0007] Another embodiment includes a server for determining availability of communications services. The server may include a memory with a set of instructions. The server may also include a processing unit for executing the set of instructions to identify a latitude and longitude associated with an address of a potential customer of a communication service provider, indicate availability of the communication services based on the latitude and longitude, display an availability map to the potential customer, and add a communication service for the potential customer. Yet another embodiment includes a method for expanding communications resources. Multiple potential customers that are unable to receive a communication service may be identified. Latitudes and longitudes associated with the address of the multiple potential customers are identified. A location for a network device is determined that may provide the communication service to a portion of the multiple potential customers based on the latitudes and longitudes. The network device is installed to provide the communication service to the portion of the multiple potential customers. The communications services are marketed to the multiple potential customers. Howarter ’897 at [0027] Map 300 includes service locations 304 and 306, customers 308, 310, 312, 314, 316, and 318, network device 320, boundaries 322 and 323, potential customers 324 and 326, proposed line 328, and proposed devices 330 and 332. The map 300 may be displayed to a customer/potential customer or customer service representative by a server, through a program, or on the service provider's website in order to answer service availability questions. The map 300 may be displayed using a graphical user interface or as part of a program application or website. In one example, customers 308, 310, 312, 314, 316, and 318 may initiate contact with a customer service representative during a given day for adding, deleting, or modifying a communications service. The customers 308, 310, 312, 314, 316, and 318 may be current

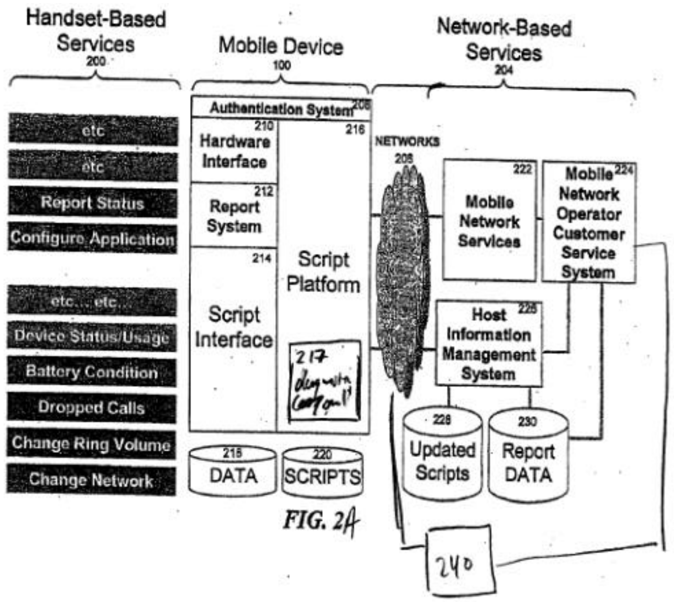
Claims	
	customers or potential customers Howarter ’897 at [0044] FIG. 4 is an exemplary city territory map in accordance with an illustrative embodiment of the present invention. Map 400 is another embodiment of a geographic tool for illustrating service availability of a communications service provider similar to map 300 of FIG. 3. The map 400 may display roads, geographic elements, such as mountains, lakes, and rivers, neighborhoods, and other features that make the map more easily understood. The map 400 is a zoomed in or narrow view of a coverage area 402. The map 400 may be displayed to a potential customer or CSR to better illustrate communication service availability. In particular, the map 400 may be used to illustrate a network device 403, a customer A 404, a customer B 406, a straight line distance 408, a network distance 410, and a boundary 412. In another embodiment, the map 400 may also show proposed network resources and the effect that the proposed network resources may have on the availability of services for each area within the map. Howarter ’897 at [0060] The registered services 614 may show an additional indicator that informs the customer service representative that the customer currently subscribes to the one or more services, such as wireless phone and data 618, satellite television 622, broadband internet, 624 and IP television 628. In addition, the mapping graphical user interface 600 may indicate the services that are not currently available, such as WiMAX 620, and cable television 626. As previously mentioned, the mapping graphical user interface 600 may be used by a customer service representative to individualize the services provided to the customer. In another embodiment, the mapping graphical user interface 600 may be displayed directly to the customer for allowing the customer to easily upgrade, modify or delete services as needed. Howarter ’897 at [0068] Next, the communications service provider system retrieves and sends available services information to the customer service representative (step 802). The available services information may specify the services available to the customer based on the geographic location of the customer's residence or business location. In another embodiment, the available services information may be displayed directly to the customer through a graphical user interface. Howarter ’897 at [0073] Next, the customer service representative provisions the service (step 914) with the process terminating

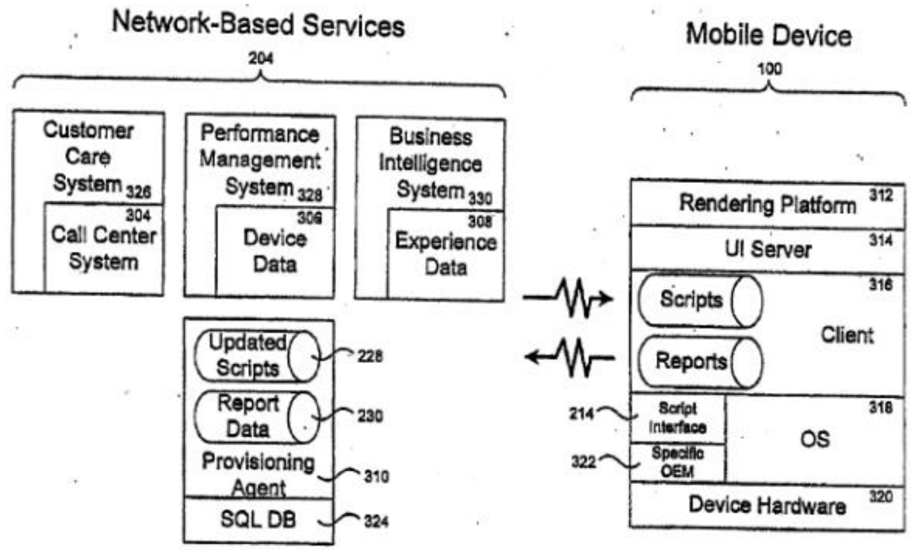
Claims	
	thereafter. If the customer service representative determines not to add service, the service is not added (step 916). If the customer service representative determines the customer is not within the service provider territory in step 906, the customer service representative displays the map to the customer and a message indicating that they are outside of the service provider footprint (step 918). The information of step 918 may be displayed to the customer through a graphical user interface, or a chat tool, or verbally communicated to the customer over the telephone. Bly '944 at Figure 1  Bly '944 at [0013] Through the foregoing, a dealer or the like is provided access to a "virtual" rental fleet of assets, some of which are not owned or controlled by the dealer. The system allows a user, such as a dealer, to satisfy the requirements of the dealer's end-user customer without having to maintain infrequently used items in the dealer's own rental fleet (which experience low utilization rates and thus return on investment.) Additionally, the electronic system also allows a user, such as a dealer, who has its own under-utilized assets to consign such assets for rental by third parties, thereby allowing an increased, effective utilization rate.

Claims	
	Bly ’944 at [0015] In a preferred embodiment, the first database is configured to store information associated with a plurality of assets, such as pieces of industrial equipment. The market search module is configured to search the first database, based on search parameters specified by the user in anticipation of at least one of a purchase, rental and lease transaction. The market search module is also adapted to generate an identification of assets in accordance with the specified search parameters. At least one of the identified assets has a description that includes maintenance history data of the asset. The communications interface is configured to facilitate electronic remote access of the system by the user, which, in one embodiment, occurs over the Internet. Bly ’944 at [0041] Another shortcoming set forth in the Background involves the failure to realize an assets' full value upon disposal at the end of a lease term. Conventional systems are inefficient and inconvenient for making desired information available to new owners, lessees, and renters prior to their making decisions concerning such transactions. In accordance with the present invention, electronic system 20 is configured for facilitating transactions by creating an electronic market. In particular, system 20 is configured to allow remotely located users to electronically search the market based on search parameters they specify, and obtain a detailed description of the assets, including the maintenance history data. System 20 also includes a bidding mechanism configured to allow the user to bid on the assets. The contemplated transactions can be closed electronically. Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to automatically update individual records associated with each of the assets with information received, including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-

Claims	
	pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled "APPARATUS AND METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS", hereby incorporated by reference in its entirety. Bly '944 at [0056] Login 46 provides authentication functions, principally through a user ID/password approach. In one embodiment, electronic system 20 includes several classes of users: a guest class, a member class, and a dealer class. A guest is characterized as having no member privileges, but can view assets available in market database 36, as well as other public areas of electronic system 20. A member has an enhanced set of privileges. A member may create an actual fleet, and/or a simulated fleet, may conduct searches of the assets contained in the members existing and/or simulated fleets, may search market database 36 and bid on selected assets, run reports and conduct analyses, as well as place assets in market database 36 for disposal. A dealer has access to the features available to members, but in addition, has access to a set of dealer tools generally unavailable to members, as discussed further below. Finally, electronic system 20 provides for an administrative class of users having heightened, administrative rights and privileges, for example to perform maintenance or reconfigure system 20. Bly '944 at [0062] The "Home" button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The "MY FLEET" button 84 invokes fleet module 48, taking the user to the user's start page 66. The "FLEET BUILDER" button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The "STORE" button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access questions and answers of interest to the users of system 20. Bly '944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile

Claims	
	182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment, generating the asset specification data may be performed by executing the “add asset” method described and illustrated in connection with FIG. 5. Bly ’944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly ’944 at [0096] Classes of users 194 include a dealer class 196, and a member class 198. With respect to dealer class 196, a logical variable 200 is associated therewith, and may take either of the values “Y”, indicating that dealers are allowed to bid on the asset, or “N”, indicating that the dealers are not allowed to bid on the asset. As illustrated, logical variable 200 is a “Y”, indicating that dealers may bid on the asset. Likewise, with respect to member class 198, a logical variable 202 is provided, and may also assume one of the values “Y” or “N”. In the illustrated embodiment, users who are in the member class may also bid on the asset. It should be understood that other logical arrangements, such as the use of a logical “0” or logical “1” could also be used, being an equivalent thereof. Bly ’944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry

Claims	
	of dates, and pricing, where appropriate. Bly ’944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36. Roundtree ’997 at Figure 2A  FIG. 2A

Claims	
	Roundtree ’997 at Figure 3  *FIG. 3* Dawson ’953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates;

Claims	
	sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate. Korpela ’484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Aufricht ’781 at [0033] Briefly stated, the invention is directed to placing objects such as, but not limited to, Internet or Web content on data processing devices, and more particularly, placing interactive advertisements from the Internet or Web content on data processing devices, such as but not limited to mobile devices. Table 1 lists examples of such Internet content, although the invention is not limited to these examples. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory

<table>
<tr><th>Claims</th><th></th></tr>
<tr><td></td><td>
Available storage space
Screen size
User profile(s)
Color depth
Applications on device
Buttons on-device
Data markers (e.g., cookies, tokens)
Preferences
Fonts
Font specifications
Sync type
Synchronization types
Supported data types
Supported mime types
Connection/Network profile

Aufricht ’781 at [0110]
The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API.

Aufricht ’781 at Table 1
<table>
<caption>TABLE 1</caption>
<tr><th>Internet Content</th></tr>
<tr><td>Internet content includes but is not limited to:
HTML
JavaScript ™
Channels
Java ™
ActiveX
Multimedia:
Images (e.g., JPEG, GIF, PNG, vector graphics, etc.)
Audio Files (e.g. MP3)
Video (e.g. AVI)
Streaming Content: Voice/Data/Video
Binary files
XML
Applications
Data Objects
Documents
Anything that can be delivered via a “browser”</td></tr>
</table>
</td></tr>
</table>

Claims

Geranio ’871 at Figure 2A

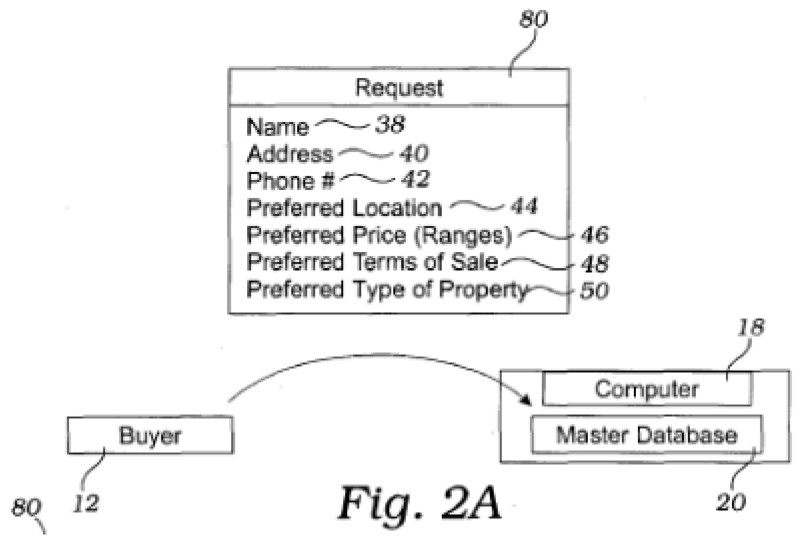


Fig. 2A

Geranio ’871 at Figure 3B

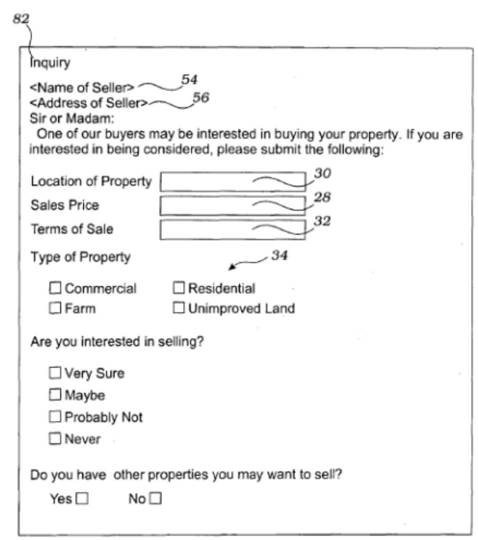
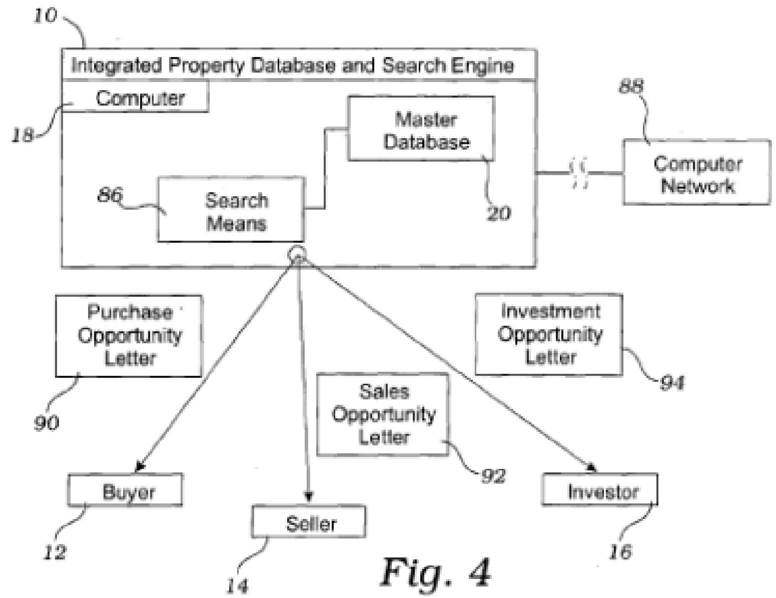
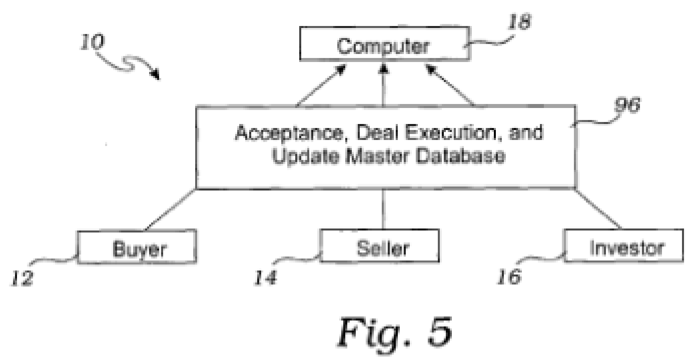


Fig. 3B

Claims	
	Geranio ’871 at Figure 4  Geranio ’871 at Figure 5  Sharma ’925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an

Claims	
	indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76. Sharma ’925 at [0033] FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well. Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11

Claims	
	and transmitted to the cellular telecommunications network 2 operator. Bandera ’127 at 4:61–5:8 The Web server 24 is configured to dynamically generate a requested Web page 26 using a dynamic execution engine (DEE) 28 and one or more Web page content objects. The DEE 28 defines the selection of content objects within the Web page and the layout of those content objects within the Web page 26 when displayed within a Web client (i.e., Web browser). Conventionally, each element of a Web page, including, but not limited to, divisions, sections, headings, paragraphs, images, lists, tables, and hyperlinks, may be represented by a content object. In addition, a content object may include audio and video files. It is understood, however, that a single content object may represent one or more of these Web page elements. Dynamic generation of Web pages is well understood by those skilled in the art and need not be described further herein.
13 The system of claim 12 wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for said one or more end users or one or more of said end user communications devices.	It was well known and routine at the time of the alleged invention for a system for collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for said one or more end users or one or more of said end user communications devices.” To the extent a clearinghouse system for communications networks disclosed in any of Defendants’ other invalidity charts is found not to disclose this limitation, a person of ordinary skill in the art would have found it obvious to modify an existing system of collecting and providing access to quality or service information associated with one or more wireless communications networks, mobile devices, or end users to include “wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for said one or more end users or one or more of said end user communications devices” as claimed in light of the teachings in the references set forth below and in Defendants’ other invalidity charts. These prior art references further demonstrate that the claimed “wherein said data comprises one or more of a recommended operating band, operating mode, communications network and/or carrier for said one or more end users or one or more of said end user communications devices” would have been incorporated into a clearinghouse system for communications networks with reasonable expectation of success. For example: 700-A01 U.S. Pat. Pub. No. 2007/0207800 (“Daley ’800”) 700-A02 U.S. Pat. Pub. No. 2008/0186882 (“Scherzer ’882”)

Claims	
	700-A03 U.S. Pat. Pub. No. 2008/0305747 (“Aaron ’747”) 700-A04 U.S. Pat. Pub. No. 2003/0216953 (“Dawson ’953”) 700-A05 U.S. Pat. Pub. No. 2007/0178911 (“Baumeister ’911”) 700-A06 U.S. Pat. Pub. No. 2007/0111748 (“Risbood ’748”) 700-A07 U.S. PAT. PUB. NO. 2007/0173237A1 (“Roundtree ’237”) 700-A08 Bitfone 700-A09 SOTI 700-A10 Blackberry Enterprise Server Howarter ’897 at [0005] To provide a system and method for identifying potential customers for communications services. In one embodiment a latitude and longitude associated with an address of a potential customer may be identified. The availability of the communications services may be indicated based on the latitude and longitude. An availability map and services offers may be displayed to the potential customer. A communication service is added for the potential customer. Howarter ’897 at [0006]–[0007] Another embodiment includes a server for determining availability of communications services. The server may include a memory with a set of instructions. The server may also include a processing unit for executing the set of instructions to identify a latitude and longitude associated with an address of a potential customer of a communication service provider, indicate availability of the communication services based on the latitude and longitude, display an availability map to the potential customer, and add a communication service for the potential customer. Yet another embodiment includes a method for expanding communications resources. Multiple potential customers that are unable to receive a communication service may be identified. Latitudes and longitudes associated with the address of the multiple potential customers are identified. A location for a network device is determined that may provide the communication service to a portion of the multiple potential customers based on the latitudes and longitudes. The network device is installed to provide the communication service to the portion of the multiple potential customers. The communications services are marketed to the multiple potential customers. Howarter ’897 at [0027] Map 300 includes service locations 304 and 306, customers 308, 310, 312, 314, 316, and 318, network

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	device 320, boundaries 322 and 323, potential customers 324 and 326, proposed line 328, and proposed devices 330 and 332. The map 300 may be displayed to a customer/potential customer or customer service representative by a server, through a program, or on the service provider's website in order to answer service availability questions. The map 300 may be displayed using a graphical user interface or as part of a program application or website. In one example, customers 308, 310, 312, 314, 316, and 318 may initiate contact with a customer service representative during a given day for adding, deleting, or modifying a communications service. The customers 308, 310, 312, 314, 316, and 318 may be current customers or potential customers Howarter ’897 at [0044] FIG. 4 is an exemplary city territory map in accordance with an illustrative embodiment of the present invention. Map 400 is another embodiment of a geographic tool for illustrating service availability of a communications service provider similar to map 300 of FIG. 3. The map 400 may display roads, geographic elements, such as mountains, lakes, and rivers, neighborhoods, and other features that make the map more easily understood. The map 400 is a zoomed in or narrow view of a coverage area 402. The map 400 may be displayed to a potential customer or CSR to better illustrate communication service availability. In particular, the map 400 may be used to illustrate a network device 403, a customer A 404, a customer B 406, a straight line distance 408, a network distance 410, and a boundary 412. In another embodiment, the map 400 may also show proposed network resources and the effect that the proposed network resources may have on the availability of services for each area within the map. Howarter ’897 at [0060] The registered services 614 may show an additional indicator that informs the customer service representative that the customer currently subscribes to the one or more services, such as wireless phone and data 618, satellite television 622, broadband internet, 624 and IP television 628. In addition, the mapping graphical user interface 600 may indicate the services that are not currently available, such as WiMAX 620, and cable television 626. As previously mentioned, the mapping graphical user interface 600 may be used by a customer service representative to individualize the services provided to the customer. In another embodiment, the mapping graphical user interface 600 may be displayed directly to the customer for allowing the customer to easily upgrade, modify or delete services as needed. Howarter ’897 at [0068] Next, the communications service provider system retrieves and sends available services information to the customer service representative (step 802). The available services information may specify the

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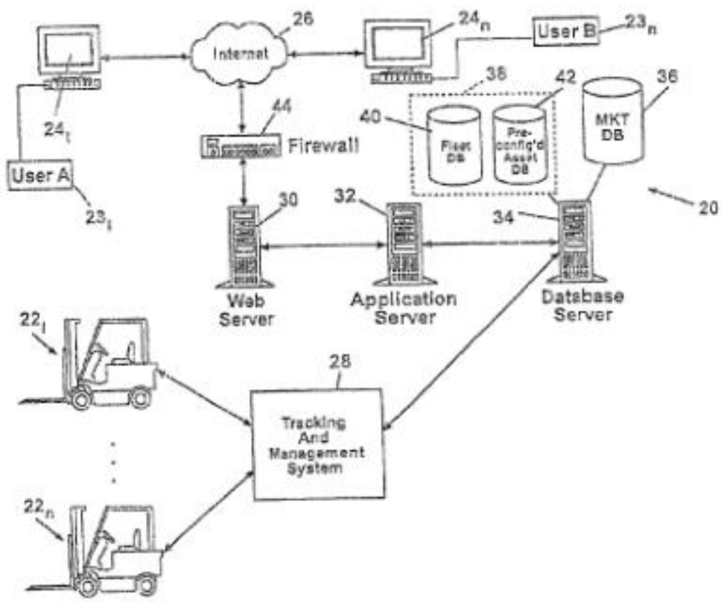
	services available to the customer based on the geographic location of the customer's residence or business location. In another embodiment, the available services information may be displayed directly to the customer through a graphical user interface. Howarter ’897 at [0073] Next, the customer service representative provisions the service (step 914) with the process terminating thereafter. If the customer service representative determines not to add service, the service is not added (step 916). If the customer service representative determines the customer is not within the service provider territory in step 906, the customer service representative displays the map to the customer and a message indicating that they are outside of the service provider footprint (step 918). The information of step 918 may be displayed to the customer through a graphical user interface, or a chat tool, or verbally communicated to the customer over the telephone. Bly ’944 at Figure 1  Bly ’944 at [0013] Through the foregoing, a dealer or the like is provided access to a “virtual” rental fleet of assets, some of which are not owned or controlled by the dealer. The system allows a user, such as a dealer, to satisfy the

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	requirements of the dealer's end-user customer without having to maintain infrequently used items in the dealer's own rental fleet (which experience low utilization rates and thus return on investment.) Additionally, the electronic system also allows a user, such as a dealer, who has its own under-utilized assets to consign such assets for rental by third parties, thereby allowing an increased, effective utilization rate. Bly ’944 at [0015] In a preferred embodiment, the first database is configured to store information associated with a plurality of assets, such as pieces of industrial equipment. The market search module is configured to search the first database, based on search parameters specified by the user in anticipation of at least one of a purchase, rental and lease transaction. The market search module is also adapted to generate an identification of assets in accordance with the specified search parameters. At least one of the identified assets has a description that includes maintenance history data of the asset. The communications interface is configured to facilitate electronic remote access of the system by the user, which, in one embodiment, occurs over the Internet. Bly ’944 at [0041] Another shortcoming set forth in the Background involves the failure to realize an assets' full value upon disposal at the end of a lease term. Conventional systems are inefficient and inconvenient for making desired information available to new owners, lessees, and renters prior to their making decisions concerning such transactions. In accordance with the present invention, electronic system 20 is configured for facilitating transactions by creating an electronic market. In particular, system 20 is configured to allow remotely located users to electronically search the market based on search parameters they specify, and obtain a detailed description of the assets, including the maintenance history data. System 20 also includes a bidding mechanism configured to allow the user to bid on the assets. The contemplated transactions can be closed electronically. Bly ’944 at [0046] Tracking and management system 28 is configured to automatically gather, analyze, and deliver information relating to the procurement and utilization of assets 221, . . . ,22n, so as to maximize productivity and to reduce operating cost and administrative burdens. Each asset may be provided with a data acquisition device for sensing and storing one or more operating characteristics associated with the asset. Such information can be transmitted to a receiver connected to a collection controller contained within system 28 for purposes of storing such information. System 28 may be further configured to

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	automatically update individual records associated with each of the assets with information received, including for example, maintenance history information, and hour-meter readings. System 28 is operatively coupled to electronic system 20, particularly database server 34, as shown in FIG. 1. This coupling allows system 20 to be updated with current information regarding the tracked assets 221, . . . , 22n. Users 231, . . . , 23n may then access and review the status of their fleets, over Internet 26, using system 20 as a gateway. Tracking and management system 28 may be a system as described in co-pending application U.S. Ser. No.: 09/441,289, filed Nov. 16, 1999 entitled "APPARATUS AND METHOD FOR TRACKING AND MANAGING PHYSICAL ASSETS", hereby incorporated by reference in its entirety. Bly '944 at [0056] Login 46 provides authentication functions, principally through a user ID/password approach. In one embodiment, electronic system 20 includes several classes of users: a guest class, a member class, and a dealer class. A guest is characterized as having no member privileges, but can view assets available in market database 36, as well as other public areas of electronic system 20. A member has an enhanced set of privileges. A member may create an actual fleet, and/or a simulated fleet, may conduct searches of the assets contained in the members existing and/or simulated fleets, may search market database 36 and bid on selected assets, run reports and conduct analyses, as well as place assets in market database 36 for disposal. A dealer has access to the features available to members, but in addition, has access to a set of dealer tools generally unavailable to members, as discussed further below. Finally, electronic system 20 provides for an administrative class of users having heightened, administrative rights and privileges, for example to perform maintenance or reconfigure system 20. Bly '944 at [0062] The "Home" button directs system 20 to take the user back to an initial login/registration page, which is then displayed on the user's client computer 24. Search button 82 invokes fleet search module 54, which is configured to search the user's fleets to identify assets based on user specified search criteria (e.g., make, model, and year of manufacture.). The "MY FLEET" button 84 invokes fleet module 48, taking the user to the user's start page 66. The "FLEET BUILDER" button 86 invokes a fleet builder wizard to lead the user through the steps of creating a new fleet of actual assets, or a simulated fleet. The "STORE" button 88 invokes market module 56, providing the user with access to conduct searches of market database 36 to identify assets for purchase, rental or lease. Library button 90 invokes a library module (not shown) that allows the user to visit the on-line library of system 20 for access to downloadable documents. Reporting button 92 invokes reporting and analysis module 62 for obtaining reports containing analysis results for

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	fleet assets or market items. FAQ button 94 invokes FAQ module (not shown), allowing the user to access questions and answers of interest to the users of system 20. Bly ’944 at [0094] FIG. 8 provides greater detail of generating step 168 (producing asset specification data) and generating step 170 (producing bid definition). In particular, FIG. 8 graphically shows in block form an asset profile 182 comprising asset specification data 154, and a bid definition 184. Referring to the upper half of FIG. 8, asset specification data 154 includes a plurality of field values, including maintenance history data 156. Maintenance history data 156, in turn, comprises at least a date parameter 186, and an action 188 may be any of the information referred to above regarding the maintenance item. In the illustrated embodiment, generating the asset specification data may be performed by executing the “add asset” method described and illustrated in connection with FIG. 5. Bly ’944 at [0095] Bid definition 184 defines the parameters associated with the asset being consigned for sale, rental or lease to the electronic market created by system 20. The bid definition 184 defines the bounds of the sale, rental or lease transaction involving the asset. Bid definition module 64 (best shown in FIG. 2) is configured to generate the bid definition 184 as follows. In one embodiment, bid definition module 64, when invoked by the user, prompts the user for a bid date 190, an availability date 192, and information defining the classes of users allowed to bid on the asset 194. The bid date 190 establishes the date when the asset is available for other users to bid on. The availability date 192 defines the date when the asset can be delivered. Bly ’944 at [0096] Classes of users 194 include a dealer class 196, and a member class 198. With respect to dealer class 196, a logical variable 200 is associated therewith, and may take either of the values “Y”, indicating that dealers are allowed to bid on the asset, or “N”, indicating that the dealers are not allowed to bid on the asset. As illustrated, logical variable 200 is a “Y”, indicating that dealers may bid on the asset. Likewise, with respect to member class 198, a logical variable 202 is provided, and may also assume one of the values “Y” or “N”. In the illustrated embodiment, users who are in the member class may also bid on the asset. It should be understood that other logical arrangements, such as the use of a logical “0” or logical “1” could also be used, being an equivalent thereof.

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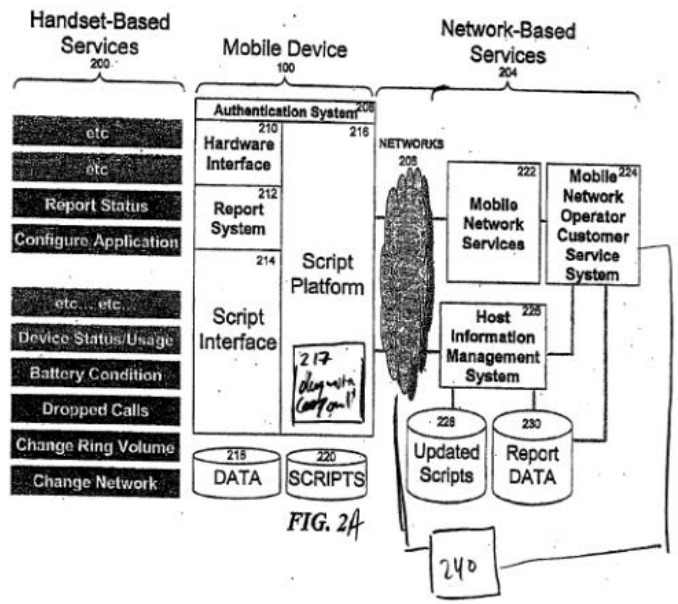
	Bly ’944 at [0098] In a constructed embodiment, the bid definition module 64 executes a bid definition wizard. The information obtained from the first user to populate the fields described above is obtained through a step-by-step process, which leads the user along, allowing the user to click on checkboxes to select the classes of users who will be allowed to bid, as well as what respective transactions will be available to that class of user. In addition, the bid definition wizard, as executed by bid definition module 64, allows direct entry of dates, and pricing, where appropriate. Bly ’944 at [0099] Bid definition module 64 is also configured for storing the asset specification data and the bid definition in an asset profile in a market database 36 when all the needed bid definition information has been collected. This is shown in FIG. 8 by a double arrowhead line to database 36. Roundtree ’997 at Figure 2A 

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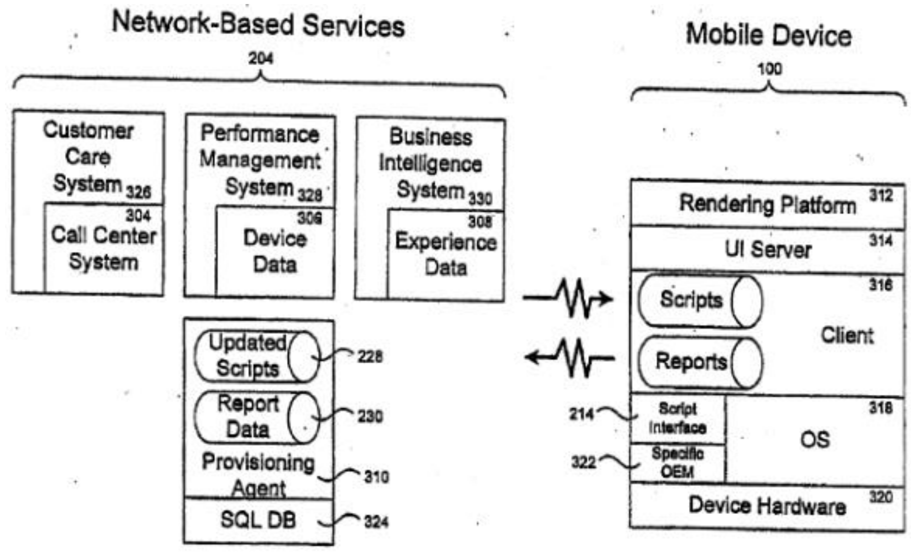
	Roundtree ’997 at Figure 3  FIG. 3 Dawson ’953 at [0034] In the embodiments of the invention described above, the steps are described as being performed by persons associated with (e.g., employed by) the wireless service provider. In other embodiments of the invention, customers are allowed to perform certain steps. For example, in one embodiment, a potential customer who desires wireless service may initiate the process by entering its site on the Market List 110. Additionally, the customer may take other actions, such as indicating that, if a serviceable signal can be provided, legal rights will be granted on the wireless service provider's standard terms and conditions. Customers may also be given access to the deciBel planner to determine whether a serviceable signal can be supplied to that site. The types and amount of access to the system that can be given to potential customers can vary widely from none to total. Dawson ’953 at claim 11 11. The system of claim 6, wherein the database further includes information pertaining to a wireless service provider network and the processor is further configured to perform the steps of: accepting an address from a user; translating the address to latitude and longitude coordinates;

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	sending the latitude and longitude coordinates to a signal coverage estimation routine, the routine having access to the database; receiving an estimate of signal coverage from the routine; and displaying the estimate. Korpela ’484 at [0042] In FIG. 2, a wireless network management system is shown which is used for managing wireless routers as an example of the network nodes 10 in the network system of FIG. 1. A Router Management System Proxy (RMS Proxy) 300 is connected to a network management database 109, which is furthermore connected to a Sales Support System SSS 200 which may continuously be activated to ensure continuous availability. The SSS 200 may be connected to an input interface (not shown) for providing an access e.g. via the Internet or any other network. The SSS 200 is used among others as a direct customer interface for the direct communication with users and end-clients. The user or end-client can enter a street address where he wants to implement a new network node 20, 30. In addition to the street address the user can enter the height of the roof where the antenna of a desired network node, i.e. wireless router, can be arranged. Furthermore the search radius around the entered street address can also be inputted. The street address along with the height of the roof-top is forwarded to the SSS 200 e.g. via the Internet and can be stored in the network management database 109. Aufricht ’781 at [0033] Briefly stated, the invention is directed to placing objects such as, but not limited to, Internet or Web content on data processing devices, and more particularly, placing interactive advertisements from the Internet or Web content on data processing devices, such as but not limited to mobile devices. Table 1 lists examples of such Internet content, although the invention is not limited to these examples. Aufricht ’781 at [0055]–[0075] The invention uses server logic to optimize content. The server assesses the mobile device to optimize web content for the particular device. Factors that the server logic considers when performing this optimization include, but are not limited to (it is noted that the server may consider subsets of the following, depending on the application and implementation): Dynamic memory specifications High memory specifications Protected Memory Storage Memory Database Memory

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	Available storage space Screen size User profile(s) Color depth Applications on device Buttons on-device Data markers (e.g., cookies, tokens) Preferences Fonts Font specifications Sync type Synchronization types Supported data types Supported mime types Connection/Network profile Aufricht ’781 at [0110] The server extension interface/module 156 enables modules, such as third party modules, to operate in or work with the server 104 (and modules contained in the server 104). The server extension module 156 presents an API (application programming interface). Modules in the server 104 may operate with other devices in the server 104 by conforming to the server API. Aufricht ’781 at Table 1

TABLE 1

Internet Content
Internet content includes but is not limited to:
HTML
JavaScript ™
Channels
Java ™
ActiveX
Multimedia:
Images (e.g., JPEG, GIF, PNG, vector graphics, etc.)
Audio Files (e.g. MP3)
Video (e.g. AVI)
Streaming Content: Voice/Data/Video
Binary files
XML
Applications
Data Objects
Documents
Anything that can be delivered via a “browser”

<table>
<tr><th>Claims</th><th></th></tr>
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Geranio ’871 at Figure 2A

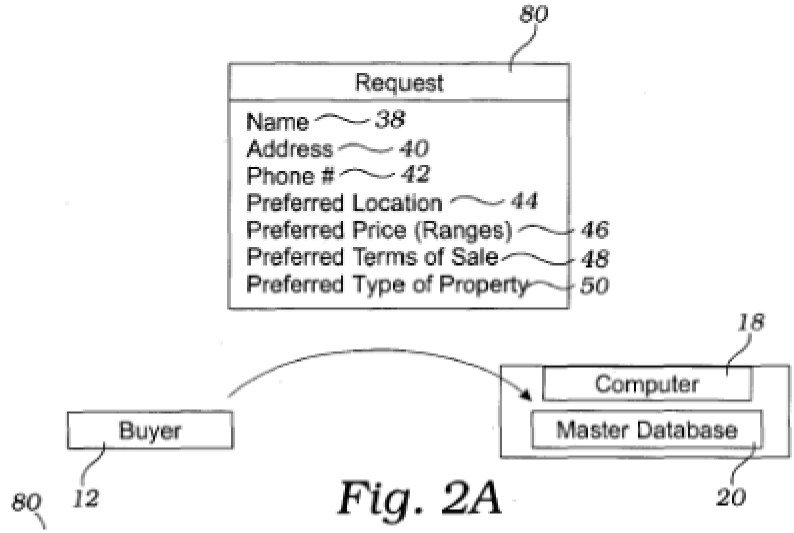

Fig. 2A

Geranio ’871 at Figure 3B

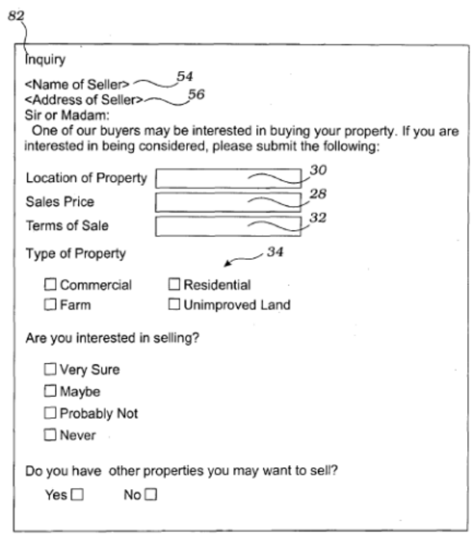

Fig. 3B

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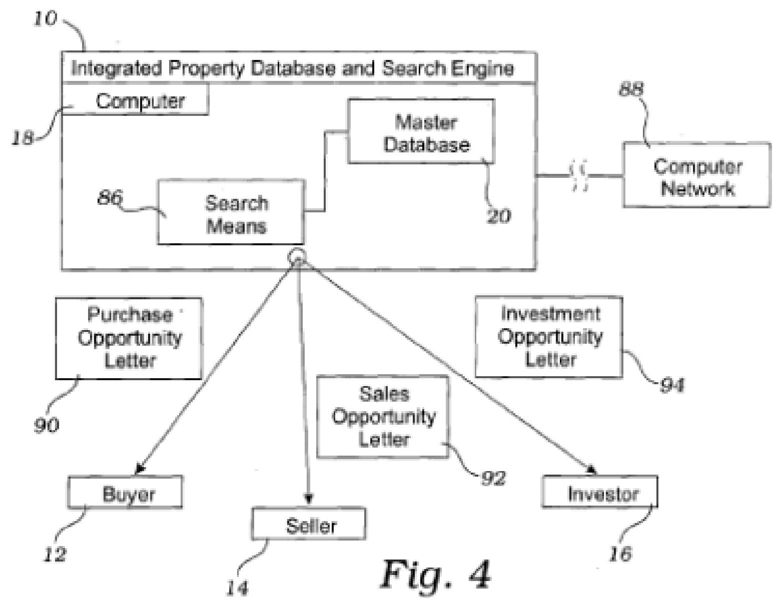
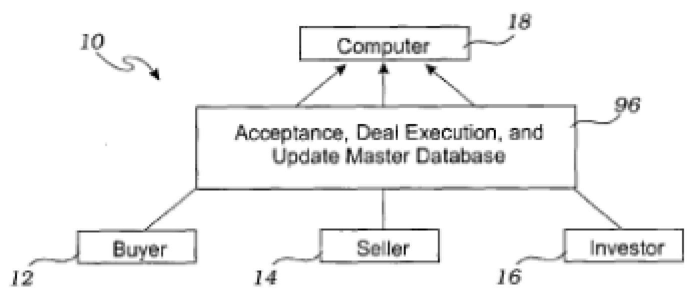
	Geranio '871 at Figure 4  Fig. 4 Geranio '871 at Figure 5  Fig. 5 Sharma '925 at [0030] In step 72 the wireless availability server 54 compiles the results of the wireless coverage at the locations specified by the user. In step 74 the server transmits these results to the user in a mode that may be selected by the user. For example, the results may be presented in the form of a table in which each row indicates the location input by the user, the latitude/longitude coordinates of the location, and an

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	indication of wireless coverage provided by each carrier represented as a separate column. Thus, the user can see for specified locations which carrier or carriers provide wireless coverage. Additionally, the indication of wireless coverage may provide indicia indicating the relative quality of service provided, e.g. a numerical ranking based on a predetermined scale, or a number of stars awarded depending on the quality of service provided by each carrier. Alternatively, the server may provide such information to the user in a map format in which each requested location is indicated by a color code having a predetermined scale, e.g. green representing above average signal strength, blue representing acceptable signal strength, red representing poor signal strength, and white representing out of coverage area. If information has been requested by the user for more than one carrier, numbers assigned to each carrier inserted into each displayed color code near each location on the map can be utilized to distinguish the service coverage provided by the respective carriers. This process terminates at Exit step 76. Sharma ’925 at [0033] FIG. 5 shows steps in an illustrative method in accordance with an embodiment of present invention such as utilized to provide information as explained with regard to FIG. 3. In step 80 user logs onto the wireless availability server utilizing either a wireline or wireless communication channel. In step 82 the user enters information based on a request from the server as displayed on his screen. As explained with regard to step 62, the user may enter alphanumeric information or identify an origination and destination location by clicking on a map showing appropriate roadways as provided by the server. Alternatively, a mobile user may transmit a current location, e.g. based on GPS information, to identify a point of origination, or the current location of the mobile user can be determined independently by the supporting wireless network. In step 84 the user may specify one or a plurality of travel routes between the origination and destination locations such as by designating intermediate locations along specified routes or by tracing each route between the origination and destination with a mouse to identify the different routes of interest or the system may automatically select a variety of routes based on the origination and destination points. The user may further specify whether wireless coverage areas are to be shown only for his primary wireless carrier or for additional carriers is well. Stenton ’260 at [0021] Since the wireless LANs 3 need not necessarily be owned by the wireless Internet service provider 11, the wireless LAN 3 owners would register with the wireless Internet service provider 11 who would impose quality and integrity constraints and compensate the owner of the wireless LANs 3 for the third party or public usage of their wireless LANs 3, such use being logged by the wireless Internet service provider 11

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	and transmitted to the cellular telecommunications network 2 operator. Bandera ’127 at 4:61–5:8 The Web server 24 is configured to dynamically generate a requested Web page 26 using a dynamic execution engine (DEE) 28 and one or more Web page content objects. The DEE 28 defines the selection of content objects within the Web page and the layout of those content objects within the Web page 26 when displayed within a Web client (i.e., Web browser). Conventionally, each element of a Web page, including, but not limited to, divisions, sections, headings, paragraphs, images, lists, tables, and hyperlinks, may be represented by a content object. In addition, a content object may include audio and video files. It is understood, however, that a single content object may represent one or more of these Web page elements. Dynamic generation of Web pages is well understood by those skilled in the art and need not be described further herein.