USER INTERFACE METHODS, SUCH AS FOR CUSTOMER SELF-SUPPORT ON A MOBILE DEVICE

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ABSTRACT

A method for providing a localized, context-sensitive user interface (100) for mobile devices is presented. The mobile device may automatically display (120) information received from the network, and update settings on the device when network status changes. A user interface for readily accessing common functions permits efficient navigation on the mobile device. In addition, help buttons (110) are provided that allow subscribers to access customer support services without dialing a customer support number.
Start

301 Display User Interface

302 Input received?

303 Perform selected operation

304 Subscriber selects option to change display appearance on phone

305 Provide customer with options and alter appearance on phone

306 New or updated information available for mobile device?

308 Download and install information

FIG. 3
You are outside our video service area. You will still be able to make voice calls, send text messages and listen to email using our voice and picture network.
From: Steve Benson

Subj: PARTY this Friday!!

Hey Friends,

I am glad to be hosting a bash at my place (142 S. Yew St.) this Friday. The more the merrier so invite who you like.

Cheers,

Steve
FIG. 11

Add a help specific key to the mobile device to initiate customer careTop, Front, Sides, etc.

Use existing key as a dual mode button "Press & Hold" to initiate

Use existing key as a dual mode button "Press & Hold" or menu display to show selection menu.

Side

TOP

Front

1102

1104

1106

1110
Press the camera button on the [bottom] left of the screen.

OK, do it for me.

No, I want to do it myself.

Cancel, I don't want to finish this now.
USER INTERFACE METHODS, SUCH AS FOR CUSTOMER SELF-SUPPORT ON A MOBILE DEVICE

CROSS-REFERENCE TO RELATED APPLICATION(S)


BACKGROUND

[0002] Current methods for providing technical support to a mobile device often require a subscriber to diagnose and to correct mobile device settings, configurations, and preferences on their own. This often requires a large degree of input from the subscriber and may decrease efficiency in the time it takes for a user to identify and to correct technical issues on their mobile device. Subscribers may be required to contact the network from their mobile device to retrieve updated mobile device configurations or settings. This may congest the network and may increase the time it takes to receive the correct mobile device configurations and settings. In some instances, the mobile device itself may attempt to provide training to the subscriber. However, the training may often be presented at the wrong times and may not necessarily assist the subscriber in resolving setting and configuration issues. The training may not prompt the subscriber at appropriate times with training. In addition, a subscriber attempting to use an application running on their mobile device for the first time may become frustrated by the lack of training for first time use.

[0003] Problems also exist with accessing customer support features. For example, a subscriber may need to dial a customer support number to access customer support. This often requires that the subscriber remember certain customer support numbers (e.g., “611”) and that the subscriber wait for prolonged periods of time to complete customer support calls. In addition, customer support solutions may need to be retrieved from a network, congesting the network and increasing the time it takes to receive customer support solutions.

[0004] Problems associated with navigating screens on a mobile device also exist. A subscriber may typically attempt to navigate screens by using a touch screen. Using a touch screen often requires a large amount of scrolling and a large number of keystrokes pressed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 is a schematic diagram illustrating a mobile device on which call intercept methods, customer self-support, and other techniques can be accessed via various user interfaces.

[0006] FIG. 2 is a schematic diagram illustrating a system architecture for implementing call intercept methods and customer self-support.

[0007] FIG. 3 is a flow diagram illustrating a routine for altering display elements on the mobile device.

[0008] FIG. 4 is a diagram illustrating mobile device screen features that allow for superimposing branding onto background images or dynamically layered over the screen during specific modes and for displaying multiple time zones.

[0009] FIG. 5A is a diagram illustrating a mobile device screen feature that allows the mobile device to display a dynamic list of user interface features.

[0010] FIG. 5B is a diagram illustrating a mobile device screen feature that allows the mobile device to display a notification pane in response to certain events.

[0011] FIGS. 6A through 6C illustrate display screens for three different levels of service for three different groups of subscribers.

[0012] FIGS. 7A through 7C are display screens that illustrate how the mobile device application can automatically detect and correct for roaming on the subscriber's mobile device.

[0013] FIG. 8 is a mobile device display screen illustrating a proactive notification message to a subscriber regarding network changes.

[0014] FIG. 9 is a flow diagram illustrating a method for automatically selecting a network access configuration based on a connected network ID.

[0015] FIG. 10 is a diagram illustrating a mobile device screen feature that allows the mobile device to display an action ribbon for navigating data screens.

[0016] FIG. 11 is a diagram illustrating a mobile handset with a built-in customer care button.

[0017] The headings provided herein are for convenience only and do not necessarily affect the scope or meaning of the claimed invention.

[0018] In the drawings, the same reference numbers and acronyms identify elements or acts with the same or similar functionality for ease of understanding and convenience. To easily identify the discussion of any particular element or act, the most significant digit or digits in a reference number refer to the Figure number in which that element is first introduced (e.g., element 604 is first introduced and discussed with respect to FIG. 6).

[0019] A portion of this disclosure contains material to which a claim for copyright is made. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or patent disclosure (including the Figures) as it appears in the Patent and Trademark Office patent file or records, but the copyright owner reserves all other copyright rights whatsoever.

DETAILED DESCRIPTION

[0020] The invention will now be described with respect to various embodiments. The following description provides...
specific details for a thorough understanding of, and enabling
description for, these embodiments of the invention. How-
however, one skilled in the art will understand that the invention
may be practiced without these details. In other instances,
well-known structures and functions have not been shown or
described in detail to avoid unnecessarily obscuring the
description of the embodiments of the invention.

[0021] It is intended that the terminology used in the
description presented below be interpreted in its broadest
reasonable manner, even though it is being used in conjunc-
tion with a detailed description of certain specific embodi-
ments of the invention. Certain terms may even be empha-
sized below; however, any terminology intended to be
interpreted in any restricted manner will be overtly and
specifically defined as such in this Detailed Description section.

Suitable System

[0022] FIG. 1 illustrates a mobile device 100 on which user
interface methods can be implemented in accordance with
several embodiments of the invention. A receiver/demodulator
104 receives a transmitted signal via an antenna 102 and
reconstructs the original transmitted signal. The transmitted
signal is sent to a microcontroller 106, which consists of a
decoder 108, a processor 112, and RAM (Random Access
Memory) 114. The decoder 108 translates the signals into
meaningful data and interfaces to other devices. Decoded
data, along with subscriber inputs 110, are sent to the pro-
cessor 112. In addition, the mobile device may include optional
components, such as an automated data collection 120 unit
linked to the processor 112, which can include an automated
RFID (Radio Frequency Identification) tag reader, a magnetic
card swipe reader, a bar code reader, and others. Additionally,
or alternatively, the mobile device may include a biometric
reader (e.g., thumbprint reader, voice fingerprint recognition
functionality, etc.), and/or a media output device (e.g., MP3
player, television tuner/player, etc.) 120. The mobile device
may also include a subscriber identity module (SIM) 122. The
output of the processor 112 can be stored in a programmable
non-volatile memory 116 or in the RAM memory 118.

[0023] FIG. 2 illustrates a system architecture for imple-
menting call intercept methods and customer self-support,
which may be accessed or enjoyed by user interface methods
described below. The system architecture includes three com-
ponents: handset-based services 200, the mobile device 100,
and network-based services 204. FIG. 1 and the discussion
herein provide a brief, general description of a suitable tele-
communications or computing environment in which the
invention can be implemented. Although not required,
aspects of the invention are described in the general context
of computer-executable instructions, such as routines executed
by a general-purpose computer, e.g., mobile device, a server
computer, or personal computer. Those skilled in the relevant
art will appreciate that the invention can be practiced with
other communications, data processing, or computer system
configurations, including: Internet appliances, hand-held
devices (including personal digital assistants (PDAs)), wear-
able computers, all manner of cellular or mobile phones,
multi-processor systems, microprocessor-based or program-
able consumer electronics, set-top boxes, network PCs,
mini-computers, mainframe computers, and the like. Indeed,
the terms “computer,” “host,” and “host computer,” and
“mobile device” and “handset” are generally used inter-
changeably herein, and refer to any of the above devices and
systems, as well as any data processor.

[0024] Aspects of the invention can be embodied in a spe-
cial purpose computing device or data processor that is spe-
cifically programmed, configured, or constructed to perform
one or more of the computer-executable instructions
explained in detail herein. Aspects of the invention may also
be practiced in distributed computing environments where
tasks or modules are performed by remote processing
devices, which are linked through a communications net-
work, such as a Local Area Network (LAN), Wide Area
Network (WAN), or the Internet. In a distributed computing
environment, program modules may be located in both local
and remote memory storage devices.

[0025] Aspects of the invention may be stored or distrib-
uted on computer-readable media, including magnetically or
optically readable computer discs, hard-wired or prepro-
grammed chips (e.g., EEPROM semiconductor chips), nano-
technology memory, biological memory, or other data storage
media. Indeed, computer implemented instructions, data
structures, screen displays, and other data under aspects of the
invention may be distributed over the Internet or over other
networks (including wireless networks), on a propagated sig-
nal on a propagation medium (e.g., an electromagnetic wave
(s), a sound wave, etc.) over a period of time, or they may be
provided on any analog or digital network (packet switched,
circuit switched, or other scheme). Those skilled in the rel-
levant art will recognize that portions of the invention reside
on a server computer, while corresponding portions reside on
a client computer such as a mobile or portable device, and
thus, while certain hardware platforms are described herein,
aspects of the invention are equally applicable to nodes on a
network.

[0026] The handset-based services 200 may include execu-
table software, software configurations, hardware con-
figurations and controls, and handset operating system inter-
faces. As disclosed herein, executable software may include,
without limitation, any software program stored on the
mobile device or associated memory device, both perma-
nently and temporarily connected via hardware or wireless
connectivity. The mobile device 100 may include an authen-
tication system 208 (e.g., via a SIM), a hardware interface
210, a report system 212, a script interface 214, a script
platform 216, data 216, and scripts 220. The network-based
services 204 may include a network or networks 206, mobile
network services 222, a mobile network operator customer
database system 224, and a host information management system
226, updated scripts 228, and report data 230. The com-
ponents of the mobile device 100 and the network-based ser-
dices 204 will be described below.

[0027] 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 rec-
ommended.

[0028] The hardware interface 210 may retrieve hardware
interface elements required for interfacing with network or
phone-based customer support services. Examples of hard-
ware 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.  

[0029] 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.

[0030] 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 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.

[0031] The components within the network-based services 204 are 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.).

[0032] The mobile network operator 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 226, and they are targeted at specific subscribers or groups of subscribers, and can include requests for reports and customer interview surveys. Further details regarding customer self-support may be found in PCT Patent Application No. ______________, entitled “Call Intercept Methods, such as for Customer Self-Support on a Mobile Device”, assigned to the assignee of this application, and filed concurrently herewith.

Representative User Interface Displays and Techniques

[0033] Starting with FIG. 3, various representative user interface displays and techniques will now be described that allow a user to readily access desired functions and to receive information. Beginning in block 301, the mobile device displays to the user a user interface, such as those described below. In block 302, the mobile device determines whether user input has been received, and if so performs the desired or selected operation (block 303). The desired operation may in turn cause another user-interface to be displayed.

[0034] If a subscriber selects an option to change the display appearance on the mobile device (block 304), then the mobile device provides the subscriber with options to alter the appearance of the display (e.g., brand name, shading layers, multiple time zones, status of mobile device, status of network, etc.—block 305). This is one example of facilitating user configuration of the device—many others are possible.

[0035] The mobile device may also check to see if new or updated information is available for the mobile device (block 306). For example, information can refer to scripts or other software executables that can be downloaded from the network to the mobile device. If new information is available, then the mobile device downloads and installs the information (block 308). If new information is not available, then the phone proceeds to receiving and processing a dialed number once again.

[0036] Changing the display appearance on the mobile device may include superimposing branding on the mobile device’s wallpaper, displaying two time zones when the mobile device recognizes transition to a new time zone, and others, as described below. For example, in response to accessing customer care, the mobile device can display a ticker across the top of the screen that says, e.g., “Welcome to customer care: the average wait time is five minutes. You may now look at the screen below to help resolve problems or answer questions more quickly.” The message may pertain to the wait time to connect to a call center, may prompt the subscriber to look at the bottom portion of the screen to resolve questions locally, or others. In addition, the mobile device may display dynamic information regarding phone status, network status, the wait time for connecting to a call center, and others. FIG. 4 is a diagram illustrating mobile device screen features that allow for superimposing branding onto background images and for displaying multiple time zones. A subscriber or network service provider may superimpose branding 406 dynamically onto a mobile device display 404 located within a screen 402, continuously, or only during certain modes (e.g., sleep mode). The mobile device may also display multiple time zones 408 in certain instances, such as when the mobile device recognizes a transition to a new time zone, as shown at the top of the screen 402.

[0037] In general, the screen displays of FIG. 4 and other figures represent phone or computer displays, or web pages, or other interfaces for performing certain tasks described herein. While certain ways of displaying information to, and receiving input from, users is shown and described with respect to certain Figures, such as for example, Figures 4 and 5, those skilled in the relevant art will recognize that various other alternatives may be employed. The screens provide facilities to receive input data or display output data, and can include forms with field(s) to be filled in, menu selections, pull-down or drop-down menus or entries
allowing one or more of several options to be selected, buttons, sliders, hypertext links or other known user interface tools for receiving user input. The terms “screen,” “web page” and “page” are generally used interchangeably herein.

[0038] The screens may be stored as display descriptions, graphical user interfaces, or other methods of depicting information on a computer screen (e.g., commands, links, fonts, colors, layout, sizes and relative positions, and the like), where the layout and information or content to be displayed on the page is stored in a database. In general, a “link” refers to any resource locator identifying a resource on a network, such as a display description provided by an organization having a site or node on the network. A “display description,” as generally used herein, refers to any method of automatically displaying information on a computer screen in any of the above-noted formats, as well as other formats, such as email or character-code-based formats, algorithm-based formats (e.g., vector generated), Flash format, or matrix, or bit-mapped formats.

[0039] FIG. 5A illustrates a mobile device screen feature that allows the mobile device to display a dynamic list of user interface features. A mobile device 100 may display a series of user interface features or icons 501 on a mobile device display 404 located within a screen 402. The user interface features 501 may include features relating to ring tones, call registers, cameras, mobile device settings, and others. Selecting a specific user interface feature (e.g., camera) may display a new screen that allows the subscriber to access options regarding that particular feature. Also, once the user touches a button on the mobile device, the device may display the full set of icons 501 shown in the screen 402. Alternatively, software on the mobile device may cause only show a few icons, such as those at the bottom of the screen when the user attempts to scroll down.

[0040] FIG. 5B illustrates a mobile device screen feature that allows the mobile device 100 to display an overlay pane 504 in response to certain events. Certain events, such as a new e-mail or SMS (Short Message Service), can activate or cause the pane 504 to be displayed. The pane 504 may allow the subscriber to view new information and may make the information stand out from the background. Highlighting or the use of color shading can be used to make the pane 504 stand out from the background.

Automatic Data Display and Device Configuration

[0041] The service provider may provide different levels of service to different groups of subscribers. For example, FIGS. 6A, 6B, and 6C show examples of display screens provided to a basic customer, a high average revenue per unit (ARPU) customer, and an enterprise customer, respectively. With the example of FIG. 6A, the service provider can control the experience provided to the subscriber. As shown in an upper portion 602 of the screen of FIG. 6A, the user’s name “Marie Pascal” and associated phone number are displayed, along with certain components of her wireless service, such as current balance, expiration date of purchased minutes, last time minutes were topped up, number of minutes used, and number of messages used. A lower portion 604 provides some common functions the subscriber may wish to perform, such as topping up a number of minutes now, accessing games or other desirable subscriber features (such as ring tones), an entry point into a series of help options, as well as an opportunity to purchase offerings from the service provider.

[0042] Under a mezzanine level of service (depicted in FIG. 6B), the service provider can enhance the high ARPU subscriber experience by providing premium service access, with integrated vendor support. Call backs can be scheduled from a customer service call center, and any service calls can be automatically routed to a premium support group or to a head of any queue. An upper screen portion 606 depicts a chart showing used and allowed voice minutes, SMS messages, and kilobytes of data, while a lower portion 608 depicts options for such a premium subscriber to access his or her billing records, to automatically speak to a premium customer support representative, to access concierge services, as well as to view upcoming events for premium subscribers.

[0043] FIG. 6C extends subscriber experiences to enterprise customers by allowing enterprise customers to have customized offerings and to allow for enterprise applications and vendor support. Enterprise specific services may be provided along with integration to the enterprise’s help desk. As shown in FIG. 6C, an upper portion 610 indicates certain enterprise functionality as being enabled, in this case, that Call Forwarding is on. A middle portion 612 allows the enterprise subscriber to configure data to services, configure voice options, access a list of help or “teach me how” topics, and access a menu of item/services to purchase. A lower portion 614 provides the enterprise subscriber with e-mail, voice mail, and data service support. Thus, the middle portion 612 of the screen is carrier related, while the lower portion 614 is enterprise related (e.g., telling a subscriber how to implement voicemail).

[0044] Overall, data displayed in the screens of FIGS. 6A-6C may be refreshed automatically by the network system so there is no need for the subscriber to call customer care or access a specific network site. If, however, the subscriber does call customer care, then the mobile device may forward relevant data automatically to the call center, and connect to a relevant group such as premium call services, advanced technical services, or a billing department. An audio announcement may be played initially so that the subscriber perceives an immediate response.

[0045] FIGS. 7A-7C illustrate additional examples of mobile device screen displays communicating automated updates to a subscriber. As shown in FIG. 7A, an upper portion 702 of the mobile device display 404 displays a name of a service provider “Vector Mobile,” but as the mobile device roams across a network boundary, software on the mobile device receives messages from a new network. As the mobile device receives registration messages from a new network service provider, “MarquisCom,” the device registers for voice service on the new network, and displays the name of the new network in the upper portion, as shown at 704 of FIG. 7B. Further, the phone automatically establishes a correct access point name (APN) from preferred roaming partners of the subscriber’s service provider, and the subscriber can continue to access data applications. The mobile device may automatically offer to change local clock time, add proper country codes to phone numbers in the mobile device’s address book/speed dial list, and so forth, as shown in FIG. 7C. Overall, scripts running on the mobile device not only detect network availability and status, but also device settings and configuration to automatically react to application errors. In this manner, the mobile device may capture subscriber activities and create standardized, scriptable functions that can be combined to create a context-sensitive service.
FIG. 8 illustrates the mobile device performing active diagnostic monitoring of the device itself, via an appropriate script or mobile device application to monitor a change in network availability and status. The device application on the subscriber's mobile device can automatically monitor device settings, configurations, network availability, and network status. In the example of FIG. 8, the mobile device has roamed outside of a video service area, and thus the subscriber cannot send or receive videos. However, the mobile device provides notice to the subscriber indicating that voice calls, text messages, and many other lower bandwidth applications are still available. The mobile device application displays an instructive dialog 802 on the display 404. Such a helpful message to the subscriber can avoid costly calls to the support center when users may have attempted to send or receive videos outside the service area.

When a mobile device enters a new network, the mobile device may automatically re-configure the network settings to allow a successful connection to a newly entered network and to automatically re-configure aspects of the mobile device. FIG. 9 illustrates a method for locally selecting a network access configuration based on a network ID. This method allows for the selection of network access configuration settings based on a cell tower ID or wireless access point identifier, and allows for correct connection to a newly entered network. This method takes advantage of the fact that mobile operators transmit their unique carrier identification as part of the GSM (Global System for Mobile Communications) network protocol, and similar protocols are being deployed for other networks for improved network roaming. Many network operators are not interconnected and as such do not allow subscribers to roam correctly; subscriber intervention is required to make data services on their mobile devices to work properly. Embodiments of the invention can select the correct configuration based on the network ID and lookup the correct setting in a local database located on the mobile device itself. Network ID's may include a country code, a carrier ID, and a cell-tower ID that is available for use as a database lookup key.

FIG. 9 illustrates three methods for initially retrieving the network ID for the mobile device: retrieving a network ID from a local information database in the mobile device (block 902—method 1), detecting a change in the network connection (block 904) and retrieving the network ID from the database (block 906—method 2), or detecting new information and determining from this information that the network connection has changed (block 908—method 3), or others.

Once the network ID associated with the mobile device has been determined, the mobile device determines locally if the device is still connected to the same network ID or if the device has changed network ID (block 910). If the mobile device is still connected to the same network ID, then the mobile device continues to use the existing network settings (block 912). If the mobile device is connected to a different network ID, then the mobile device queries the local database based on the new network ID (block 914). The mobile device may access a configuration settings database stored on the mobile device to automatically change settings on the device (block 916). The mobile device may also remotely retrieve from the network updated network IDs (and configuration settings) (block 918) to update the locally stored configuration settings database.

After looking up the network ID in the database (block 914), the mobile device may verify if new network configuration settings are available locally on the mobile device based on the network ID (block 920). If the new network configuration settings are not available locally on the mobile device, then the subscriber may receive a message from the mobile device indicating that new settings are not available (block 922), and the mobile device continues to use the existing settings (block 924). However, if new network configuration settings are available locally on the mobile device, then the mobile device may automatically change the network settings and configuration (block 926), and the user may then continue normal use of the mobile device (block 928). Thus the local database stored on the mobile device includes configuration settings associated with multiple network IDs. The mobile device retrieves new configuration settings based on newly received network IDs and automatically changes or updates settings on the mobile device based on the new configuration settings retrieved from the local database. In an alternative embodiment, the mobile device may retrieve network configuration settings from the network, and not store any locally.

User Input Techniques

Various methods for navigating data screens or performing desired functions on a mobile or remote device will now be described. FIG. 10 illustrates a technique that allows a user of the mobile device to easily navigate to desired functions or icons, or between screens, with one hand, which can be particularly useful with smartphones or phones lacking touch screens. As shown in FIG. 10, the mobile device displays a function window portion or “action ribbon” 1002 for navigating data screens. The action ribbon 1002 (shown in the dashed box) may be located anywhere on the display 404 and may span the entire screen width or height. For example, a subscriber may use the standard input buttons on the mobile device, such as a joystick/4-way-pad (physical buttons on the device) to navigate or scroll vertically or out of “focus” of the active ribbon portion and to it, access or modify other regions on the screen. If the subscriber navigates into the action ribbon 1002, then the right and left joystick/4-way-pad (physical buttons on the device) may be used to move in the left or right direction to select or indicate an icon in the active ribbon. The user they then the actuate a center “action” button or switch on the joystick/4-way-pad to select or activate the indicated icon.

In the example depicted in FIG. 10, the action ribbon includes four icons associated with four common functions in an electronic mail (“email”) application, although use with other applications are possible, such as electronic messaging, word processing, spreadsheet, calculator, contacts, or calendaring applications. The subscriber may select one of the action icons 1004 to activate a selected function, which is here to “reply all” to an email. Other depicted icons 1006, 1010 and 1008 correspond to delete, reply and forward functions, respectively.

The mobile device may assist the subscriber in selecting the same functionality as they navigate to multiple screens (“sticky icons”). For example, if the subscriber indicates or highlights the “X” icon 1006 and selects or presses the center action button to select that icon and delete the current item, then the next item displayed (e.g. in a next screen) would be displayed with the “X” icon already highlighted. This is opposed to the usual practice of having
the default icon selected when one file is deleted, but then displaying the next screen with no icon or function highlighted or “queued up.” In this manner, icons can be automatically selected to speed up navigation by reducing the number of keystrokes required for common navigation. The currently highlighted icon may be indicated by a distinguishing color, such as light blue. In an alternate embodiment, if a particular icon is highlighted (e.g., the left hand X icon 1006), then selecting a left button on the joystick/4-way-pad would be defined to have the equivalent function of the center action button. This may allow the subscriber to more easily perform repetitive functions, such as executing multiple “back” operations to go back to a previous screen, or to delete a series of consecutive emails.

[0054] FIG. 11 illustrates a mobile handset with a built-in customer care button or menu option. A customer care button or menu option allows the mobile device subscriber to access customer support without having to remember a customer support number, such as “611.” In addition, a customer care button or menu option allows the subscriber to have faster access to customer support.

[0055] FIG. 11 illustrates three methods for initiating customer support service. In one embodiment, a dedicated or special purpose customer care button is provided on the mobile device to perform a specific function, namely accessing customer care or related functions. As shown, three different mobile devices 1102, 1104, and 1106 each have a dedicated customer care button, but the button is located respectively on the front, top, and side of the devices.

[0056] In an alternative embodiment, an existing special purpose button or key on the mobile device may have a second mode when it is pressed and held, so as to launch and display a menu that includes one or more customer care options. For example, by pressing and holding a power button on a mobile device 1108, the button may perform a different function, namely causing a menu to be displayed that allows subscribers to select one or more customer care menu items or to simply place a customer care call/launch customer help functionality. In a third embodiment, a common button (e.g., number key) that normally performs non-customer care functions may be used to perform customer care functions (mobile device 1110). One method for initiating this dual function would be to press and hold the common button, such as pressing and holding the “0” button.

CONCLUSION

[0057] Unless the context clearly requires otherwise, throughout the description and the claims, the words “comprise,” “comprising,” and the like are to be construed in an inclusive sense, as opposed to an exclusive or exhaustive sense; that is to say, in the sense of “including, but not limited to.” As used herein, the terms “connected,” “coupled,” or any variant thereof, means any connection or coupling, either direct or indirect, between two or more elements; the coupling of connection between the elements can be physical, logical, or a combination thereof. Additionally, the words “herein,” “above,” “below,” and words of similar import, when used in this application, shall refer to this application as a whole and not to any particular portions of this application. Where the context permits, words in the above Detailed Description using the singular or plural number may also include the plural or singular number respectively. The word “or,” in reference to a list of two or more items, covers all of the following interpretations of the word: any of the items in the list, all of the items in the list, and any combination of the items in the list.

[0058] The above detailed description of embodiments of the invention is not intended to be exhaustive or to limit the invention to the precise form disclosed above. While specific embodiments of, and examples for, the invention are described above for illustrative purposes, various equivalent modifications are possible within the scope of the invention, as those skilled in the relevant art will recognize. For example, while processes or blocks are presented in a given order, alternative embodiments may perform routines having steps, or employ systems having blocks, in a different order, and some processes or blocks may be deleted, moved, added, subdivided, combined, and/or modified. Each of these processes or blocks may be implemented in a variety of different ways. Also, while processes or blocks are at times shown as being performed in series, these processes or blocks may instead be performed in parallel, or may be performed at different times.

[0059] The teachings of the invention provided herein can be applied to other systems, not necessarily the system described above. The elements and acts of the various embodiments described above can be combined to provide further embodiments.

[0060] All of the above patents and applications and other references, including any that may be listed in accompanying filing papers, are incorporated herein by reference. Aspects of the invention can be modified, if necessary, to employ the systems, functions, and concepts of the various references described above to provide yet further embodiments of the invention.

[0061] These and other changes can be made to the invention in light of the above Detailed Description. While the above description details certain embodiments of the invention and describes the best mode contemplated, no matter how detailed the above appears in text, the invention can be practiced in many ways. Details of the local-based support system may vary considerably in its implementation details, while still being encompassed by the invention disclosed herein. As noted above, particular terminology used when describing certain features or aspects of the invention should not be taken to imply that the terminology is being redefined herein; to be restricted to any specific characteristics, features, or aspects of the invention with which that terminology is associated. In general, the terms used in the following claims should not be construed to limit the invention to the specific embodiments disclosed in the specification, unless the above Detailed Description section explicitly defines such terms. Accordingly, the actual scope of the invention encompasses not only the disclosed embodiments, but also all equivalent ways of practicing or implementing the invention under the claims.

[0062] While certain aspects of the invention are presented below in certain claim forms, the inventors contemplate the various aspects of the invention in any number of claim forms. For example, while only one aspect of the invention is recited as embodied in a computer-readable medium, other aspects may likewise be embodied in a computer-readable medium. Accordingly, the inventors reserve the right to add additional claims after filing the application to pursue such additional claim forms for other aspects of the invention.
I/We claim:
1. A portable wireless telecommunication apparatus for exchanging communications with a wireless network, the apparatus comprising:
a display screen;
at least one input device that includes a four-way joystick or keypad;
a radio;
memory; and
a processor coupled to the display screen, input device, radio, and memory, wherein the processor is programmed to:
automatically gather information from the wireless network;
automatically display the gathered information on the display screen;
automatically gather additional information from the wireless network;
automatically update the display on the display screen with the gathered additional information without input from a user to request updating of the display;
display multiple icons or commands associated with functions of at least one application executed on the wireless telecommunication apparatus, wherein the multiple icons or commands are displayed in a horizontal row or vertical column on the display screen; in response to user actuation of the four-way joystick or keypad and selection, highlight and select one of the multiple icons or commands;
execute the function associated with the selected one of the multiple icons or commands; and
wherein the wireless telecommunication apparatus includes an input button, coupled to the processor, for initiating a customer support call or local help function when the user actuates the input button.
2. The apparatus of claim 1 wherein the four-way joystick or keypad includes an associated selection button to generate the selection, wherein the multiple icons or commands are associated with functions performed by an electronic mail, electronic messaging, word processing, spreadsheet, calculator, contacts, or calendaring application executed by the processor, and
wherein the additional information gathered includes at least two of the following: local and home location current times, name of new network service provider when accessing a new wireless network, loss of certain functionality when accessing a new wireless network, wireless service plan balance, expiration date of a certain wireless service component, number of wireless service minutes used, number of wireless service minutes remaining, number of SMS messages sent, or number of SMS messages permitted or remaining under the wireless service plan.
3. The apparatus of claim 1, further comprising:
an automated data collection device, a biometric reader, or media output device coupled to the processor.
4. The apparatus of claim 1 wherein the additional information gathered includes at least two of the following: local and home location current times, name of new network service provider when accessing a new wireless network, loss of certain functionality when accessing a new wireless network, wireless service plan balance, expiration date of a certain wireless service component, number of wireless service minutes used, number of wireless service minutes remaining, number of SMS messages sent, or number of SMS messages permitted or remaining under the wireless service plan.
5. The apparatus of claim 1 wherein the four-way joystick or keypad includes an associated selection button to generate the selection, wherein the multiple icons or commands are associated with functions performed by an electronic mail, electronic messaging, word processing, spreadsheet, calculator, contacts, or calendaring application executed by the processor.
6. The apparatus of claim 1 wherein the processor is further programmed to:
display a new screen of data, and
automatically highlight the one of the multiple icons or commands previously selected, and
if a particular one of the multiple icons or commands is highlighted, then a select button or switch on the four-way joystick or keypad to be temporarily reconfigured to have an equivalent function of a center action button of the four-way joystick or keypad.
7. The apparatus of claim 1 wherein the input button is a dedicated button on the wireless telecommunication apparatus, or is a dual-function keypad button that initiates the customer support call or local help function when the user actuates and holds the dual-function keypad button.
8. A method for navigating data screens on a mobile device, the method comprising:
displaying a first screen, within a sequence of screens, containing data and multiple displayed elements for performing particular functions associated with the displayed screen;
receiving user input to indicate one of the multiple displayed elements;
selecting the one indicated element to perform a function corresponding with the one indicated element;
performing the function corresponding with the one indicated element;
after performing the function, displaying a next screen within the sequence of screens; and
indicating for selection, within the next screen, the one element indicated and selected in the first screen.
9. The method of claim 8 wherein the indicating includes using a distinctive color to indicate the one element for selection.
10. A computer-readable medium storing a display description for permitting a mobile device display to provide for navigating and selecting of multiple functions, the display comprising:
a first screen portion displaying data; and
a second screen portion displaying an action ribbon having multiple elements for performing particular functions associated with the displayed data, wherein:
receiving navigation commands from at least one input device on the apparatus permits execution of the navigation commands when a user navigates to an area within the action ribbon of the second screen portion, and disabling the navigation commands when a user selects an area within the first screen portion, but not within the action ribbon of the second screen portion.
11. The computer-readable medium of claim 10 wherein a particular intensity of display indicates a selected area within the action ribbon of the second screen portion, and wherein a selected area within the action ribbon may execute multiple functions.
12. The computer-readable medium of claim 10 wherein
the action ribbon includes multiple icons each associated with
a different function performed by an electronic mail, elec-
tronic messaging, word processing, spreadsheet, calculator,
contacts, or calendaring application running on the apparatus.
13. The computer-readable medium of claim 10 wherein
the second screen portion is overlaid upon the first screen
portion.
14. An apparatus for permitting a user to access customer
support functions associated with wireless telecommuni-
cations service or with operation of a wireless mobile device,
the apparatus comprising:
button means on the mobile device for user-selection;
means for receiving user-selection of the button means, the
selection occurring in a particular manner based upon
how the button means functions; and
means for displaying, in response to the user-selection, an
indication of customer support functions for the mobile
device and for user-selection for execution on the mobile
device.
15. The apparatus of claim 14 wherein the button means
is a special purpose button on the mobile device.
16. The apparatus of claim 14 wherein the button means
includes a dual purpose special button on the mobile device.
17. The apparatus of claim 14 wherein the button means
includes a dual purpose common button on the mobile device,
and wherein the means for receiving includes means for
receiving the user-selection of the dual purpose common
button to initiate the indication of the customer support func-
tions by detecting pressing and holding of the dual purpose
common button.
18. The apparatus of claim 14 wherein the button means
includes a dual purpose common button on the mobile device.
19. The apparatus of claim 14 wherein the button means
includes a dual purpose common button on the mobile device,
and wherein actuation of the common button launches a menu
display that includes the indication of customer support func-
tions.
20. The apparatus of claim 14 wherein the means for dis-
playing includes means for displaying, on the mobile device,
a menu identifying customer support functions for the mobile
device.
21. A computer-readable medium whose contents cause at
least one telecommunication mobile device to perform a
method to provide automatic network access configuration
for the mobile device, the method comprising:
accessing a network using the mobile device;
receiving at the mobile device and from the network a
carrier identification associated with transmission of
wireless signals over the network;
looking up access configuration settings for the network
based on the carrier identification, wherein the access
configuration settings are locally stored in a database on
the telecommunication mobile device; and
automatically configuring the telecommunication mobile
device for communication over the network using the
locally stored access configuration settings.
22. The computer-readable medium of claim 21 wherein
the receiving includes receiving, associated with the carrier
identification, a country code, a carrier identifier, and a cell-
tower identifier.
23. The computer-readable medium of claim 21 wherein
the looking up includes determining that the local database
lacks the access configuration settings, and accessing form
the network new access configuration settings for storage in
the database of the telecommunication mobile device.
24. The computer-readable medium of claim 21 wherein
the computer-readable medium is a memory of the mobile
device.
25. The computer-readable medium of claim 21 wherein
the computer-readable medium is a logical node in a network
receiving the contents.
26. The computer-readable medium of claim 21 wherein
the computer-readable medium is a computer-readable disk.
27. The computer-readable medium of claim 21 wherein
the computer-readable medium is a data transmission
medium carrying a generated data signal containing the con-
tents.
28. A method for automatically displaying information on
a mobile telecommunications device, where the mobile tele-
communications device exchanges communications with a
wireless network, and wherein the wireless network in
coupled to a server that has access to wireless subscriber
information, the method comprising:
automatically gathering information from the wireless net-
work, wherein the information is not, or is in addition to,
wireless signal strength and network status;
automatically providing the gathered information to the
mobile telecommunications device so that the gathered
information may be readily perceived by a wireless sub-
scriber associated with the mobile telecommunications
device;
automatically gathering additional information from the
wireless network, wherein the additional information
includes information associated with an account of the
wireless subscriber; and
automatically providing the additional information to the
mobile telecommunications device so that the additional
information may be readily perceived by the wireless
subscriber without input from the wireless subscriber
requesting the additional information.
29. The method of claim 28, further comprising receiving
input from the wireless subscriber to call a customer service
number before the automatically gathering of the additional
information.