BlackBerry Limited v. Facebook, Inc. et al Doc. 1 Att. 2

EXHIBIT B

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(12) **United States Patent**
Klassen et al.

(10) **Patent No.: US 8,209,634 B2**
(45) **Date of Patent: Jun. 26, 2012**

(54) **PREVIEWING A NEW EVENT ON A SMALL SCREEN DEVICE**

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(73) Assignee: **Research In Motion Limited**, Waterloo (CA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 987 days.

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(22) Filed: **Feb. 24, 2004**

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(51) **Int. Cl.**
G06F 3/048 (2006.01)

(52) **U.S. Cl.** **715/859**; 715/736; 715/739; 715/752; 715/753; 715/758; 715/759; 715/837; 715/861; 715/864; 715/710; 715/842; 715/851

(58) **Field of Classification Search** 715/700, 715/842, 851, 710, 736, 739, 752, 753, 758, 715/759, 837, 859, 861, 864
See application file for complete search history.

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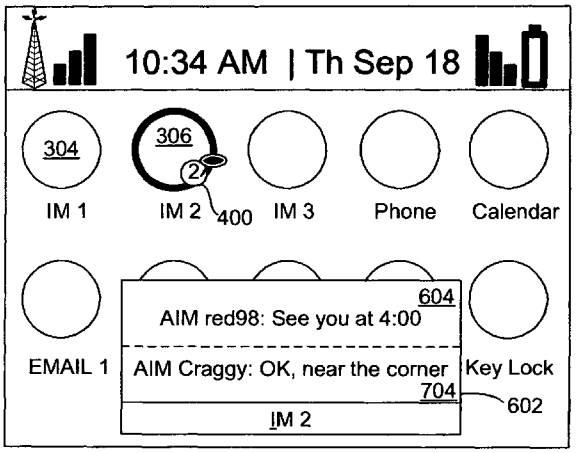
(57) **ABSTRACT**

Method and apparatus for previewing new events in a computing device having a plurality of applications for managing respective events are described. Individual applications are each represented by an application icon on a screen of a graphical user interface for the device. When a new event occurs, particularly when the new event relates to a specific one of a plurality of similar applications, the invention provides a convenient way to denote which application relates to the event. In response to a new event of a one of the applications, the application's icon is visually modified to notify of the new event. A visual modification may be determined in response to the new event, for example, to preview a content of the event. The visual modification may include a count of all new events that remain to be disposed. On a selection of the visually modified icon, additional previewing may be provided. Activation of the application having a visually modified application icon may be configured to automatically initiate the application at the new event.

18 Claims, 9 Drawing Sheets



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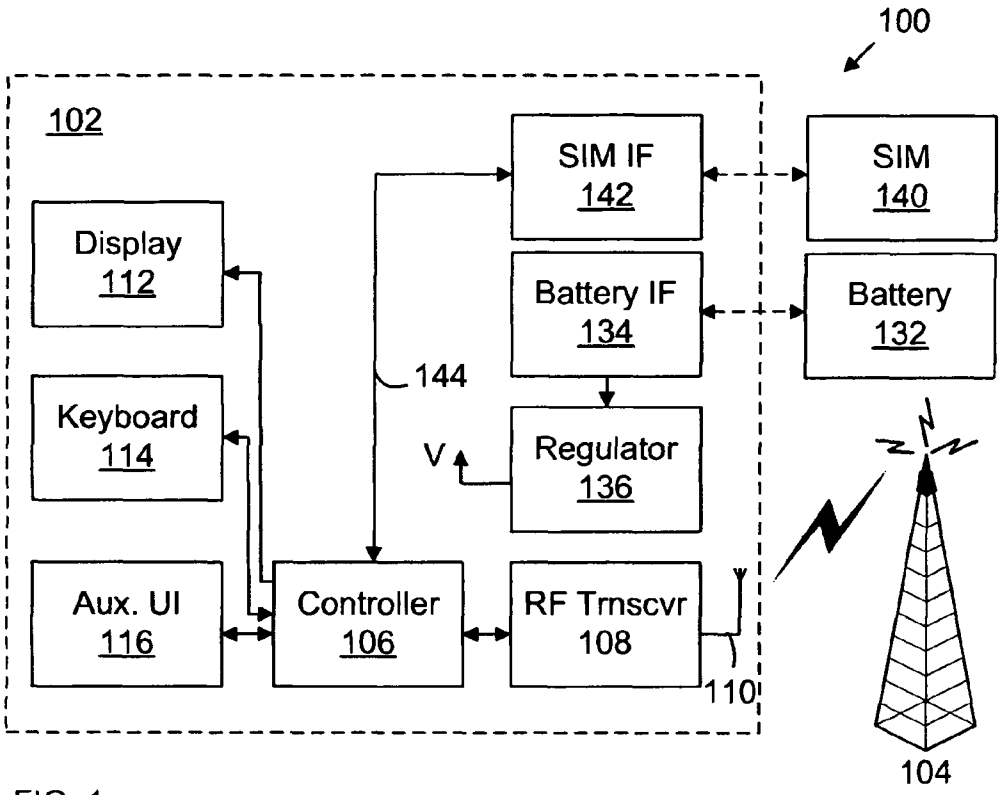
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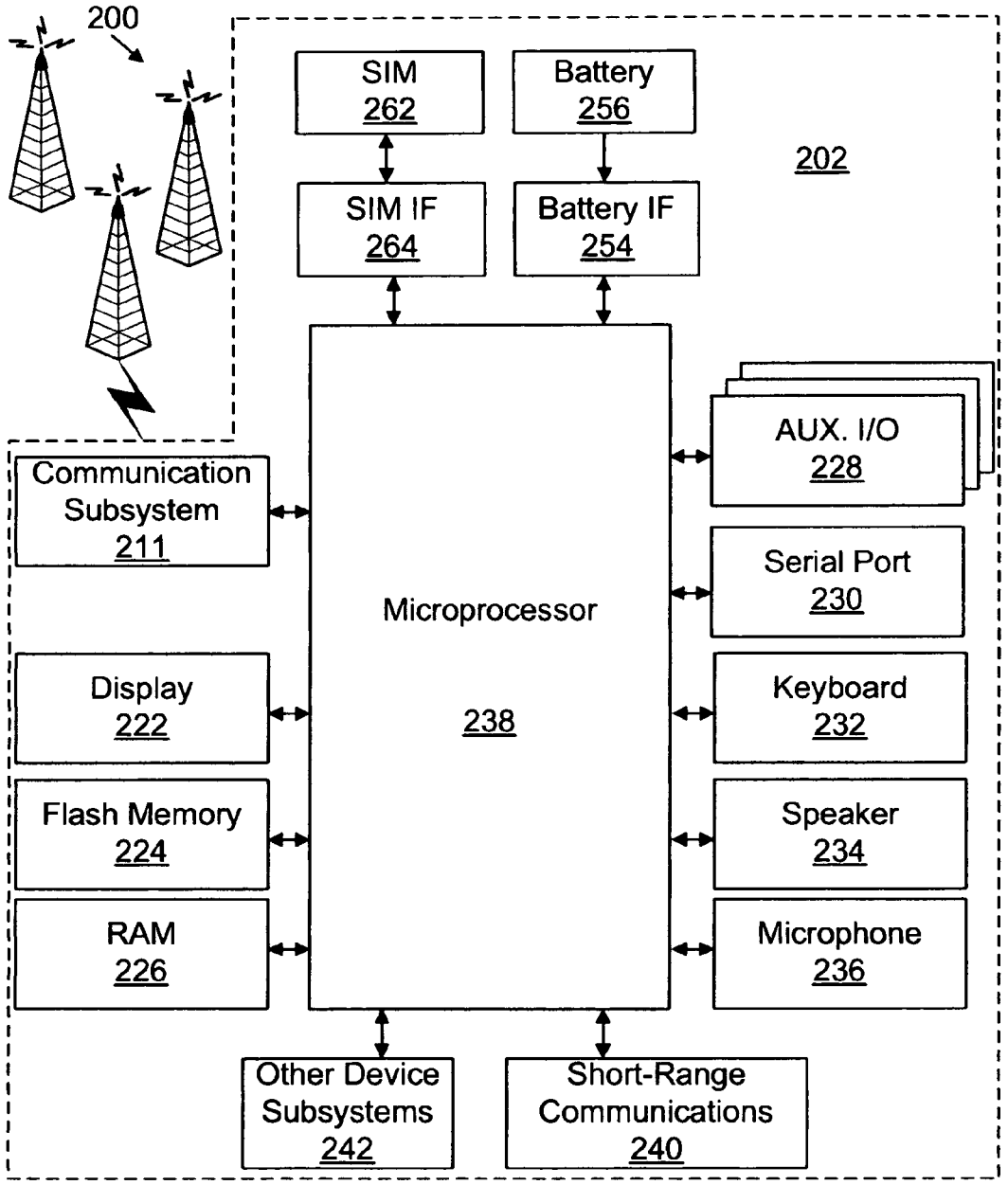
142
SIM
140
Display
112
Battery IF
134
Battery
132
144
Keyboard
114
V
Regulator
136
Aux. UI
116
Controller
106
RF Trnscvr
108
110
104

FIG. 1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SIM
262
Battery
256
202
SIM IF
264
Battery IF
254
AUX. I/O
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Communication
Subsystem
211
Serial Port
230
Microprocessor
238
Display
222
Keyboard
232
Flash Memory
224
Speaker
234
RAM
226
Microphone
236
Other Device
Subsystems
242
Short-Range
Communications
240

FIG. 2

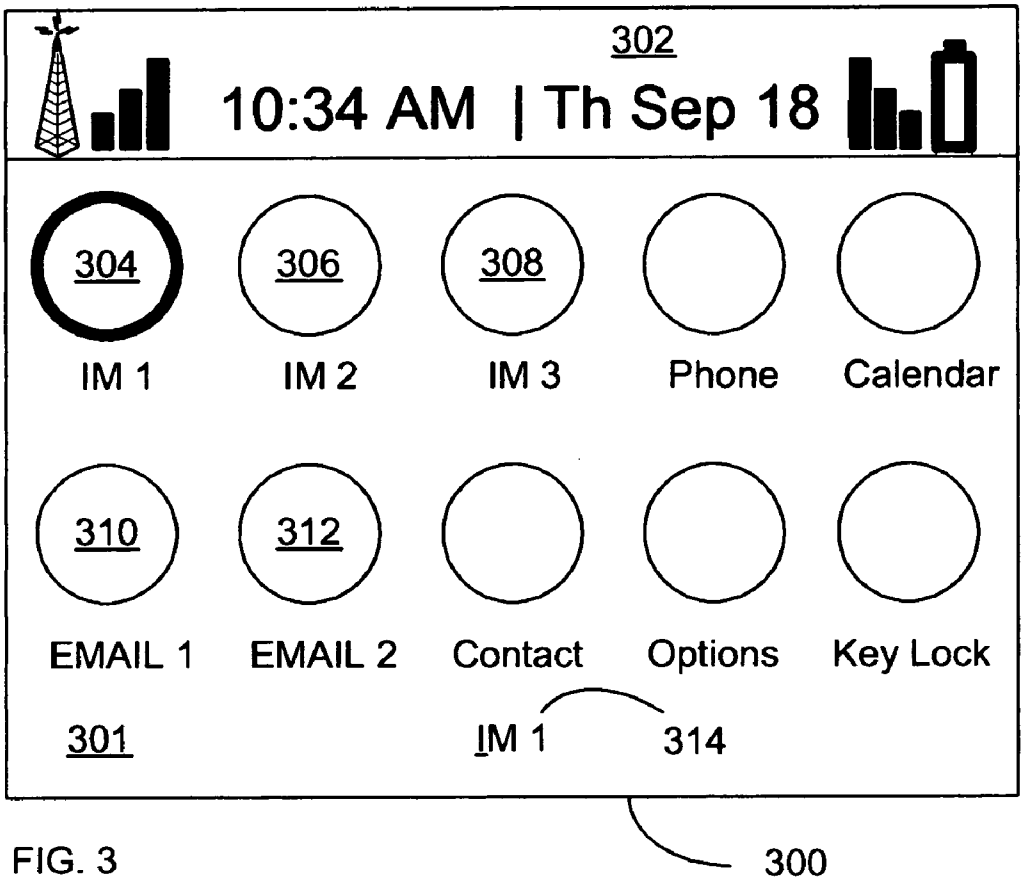
302
10:34 AM | Th Sep 18
304
306
308
IM 1
IM 2
IM 3
Phone
Calendar
310
312
EMAIL 1
EMAIL 2
Contact
Options
Key Lock
301
IM 1
314
300

FIG. 3

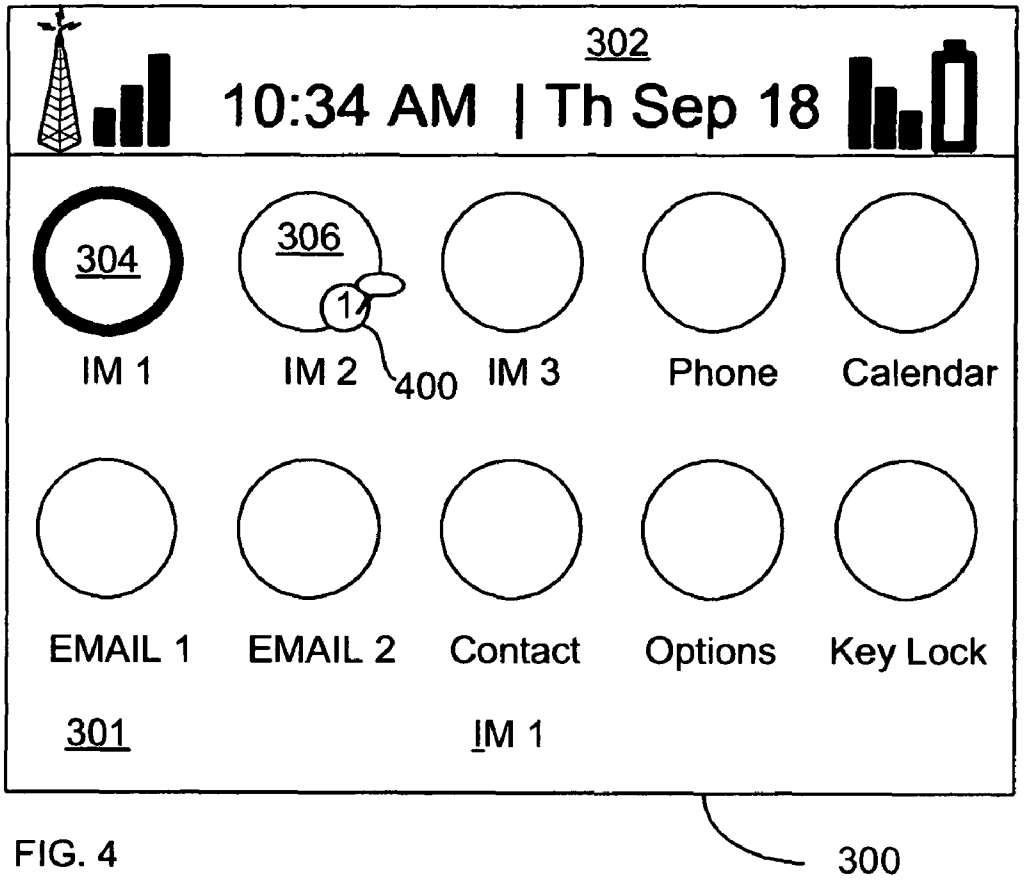
302
10:34 AM | Th Sep 18
304
306
1
IM 1
IM 2
400
IM 3
Phone
Calendar
EMAIL 1
EMAIL 2
Contact
Options
Key Lock
301
IM 1
300

FIG. 4

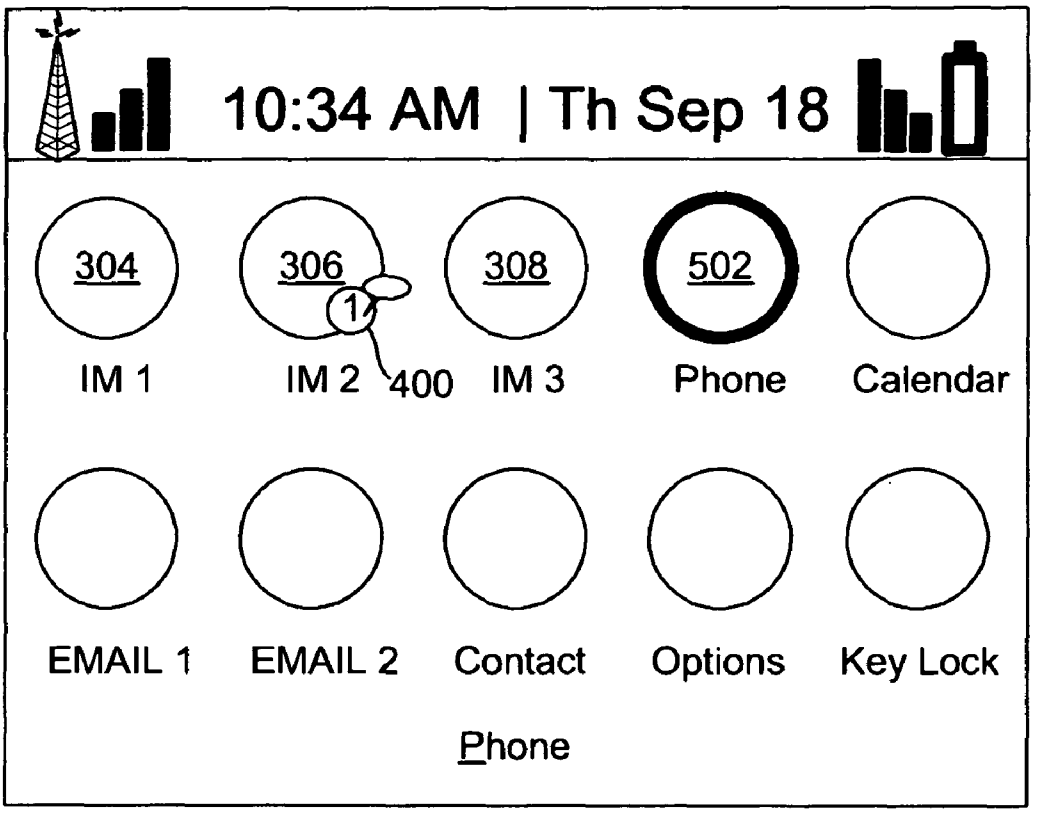
10:34 AM | Th Sep 18
304
306
1
308
502
IM 1
IM 2
400
IM 3
Phone
Calendar
EMAIL 1
EMAIL 2
Contact
Options
Key Lock
Phone

FIG. 5

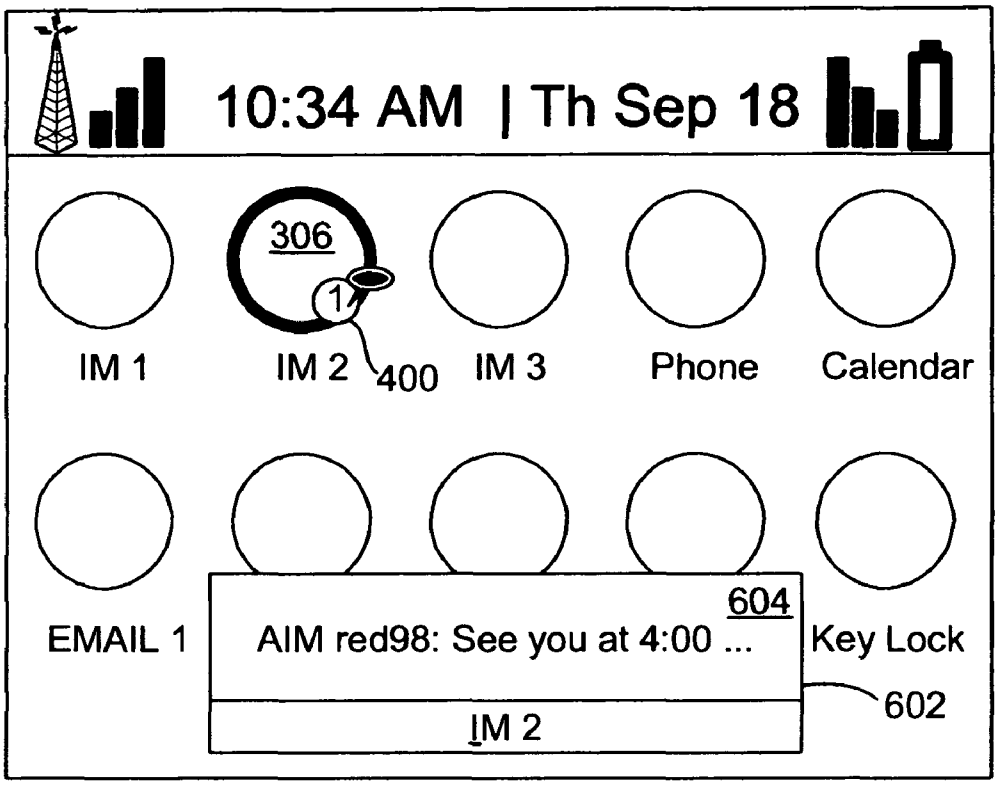
10:34 AM | Th Sep 18
306
1
IM 1
IM 2
400
IM 3
Phone
Calendar
EMAIL 1
AIM red98: See you at 4:00 ...
604
Key Lock
602
IM 2

FIG. 6

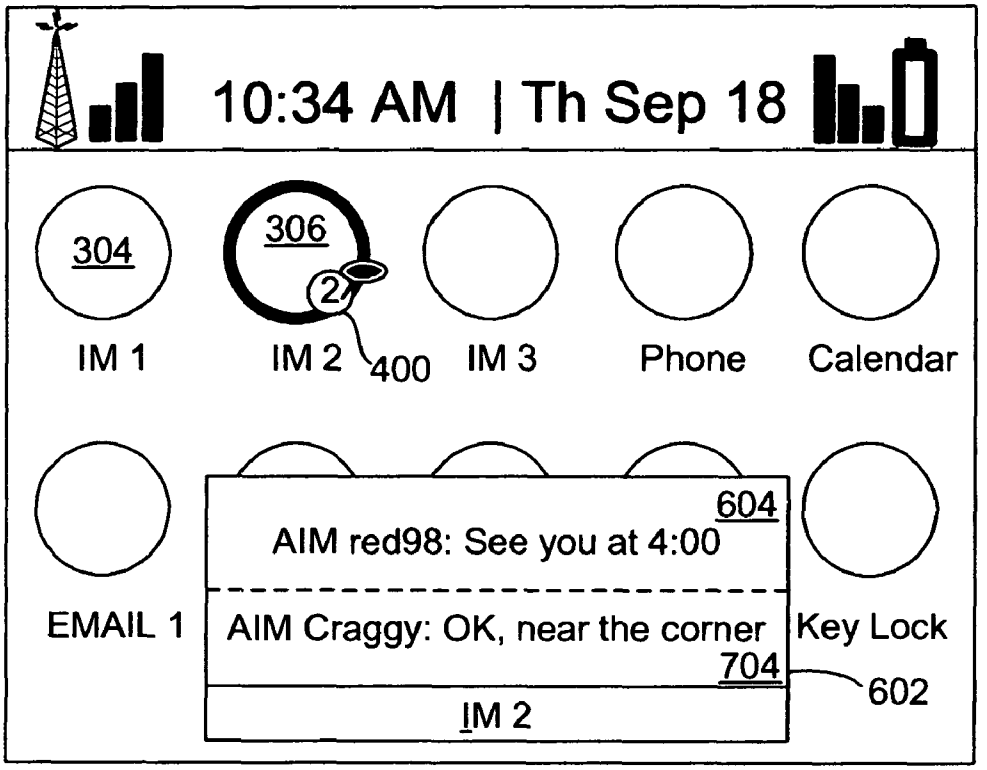
10:34 AM | Th Sep 18
304
306
2
IM 1
IM 2
400
IM 3
Phone
Calendar
604
AIM red98: See you at 4:00
EMAIL 1
AIM Craggy: OK, near the corner
Key Lock
704
602
IM 2

FIG. 7

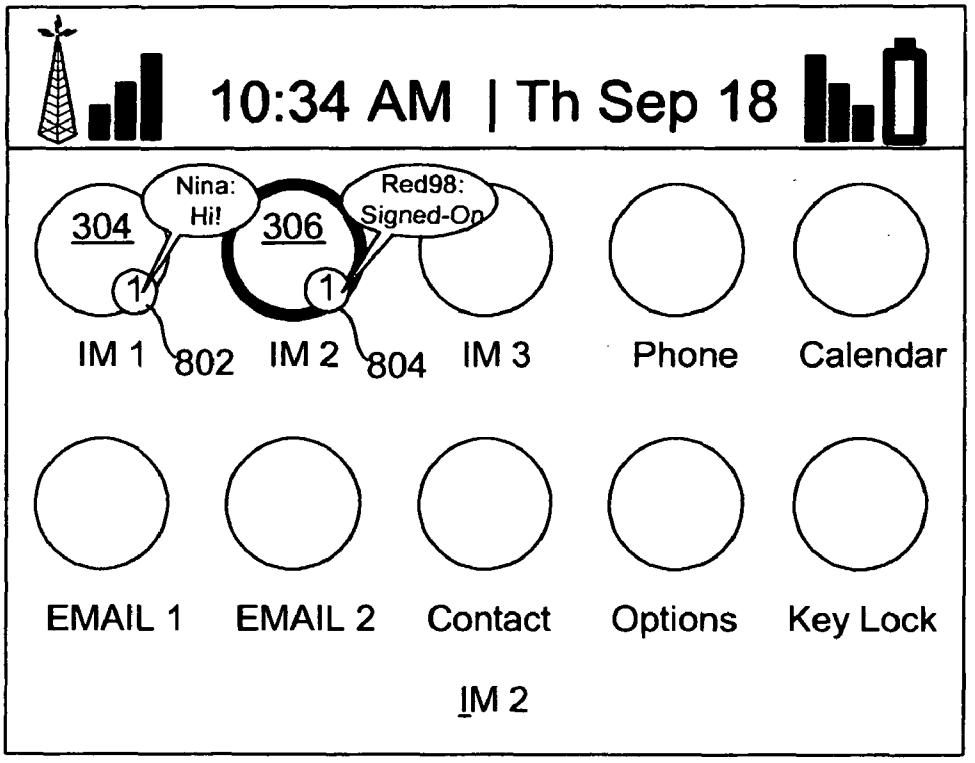
10:34 AM | Th Sep 18
Nina: Hi!
Red98: Signed-On
304
306
1
1
IM 1
802
IM 2
804
IM 3
Phone
Calendar
EMAIL 1
EMAIL 2
Contact
Options
Key Lock
IM 2

FIG. 8

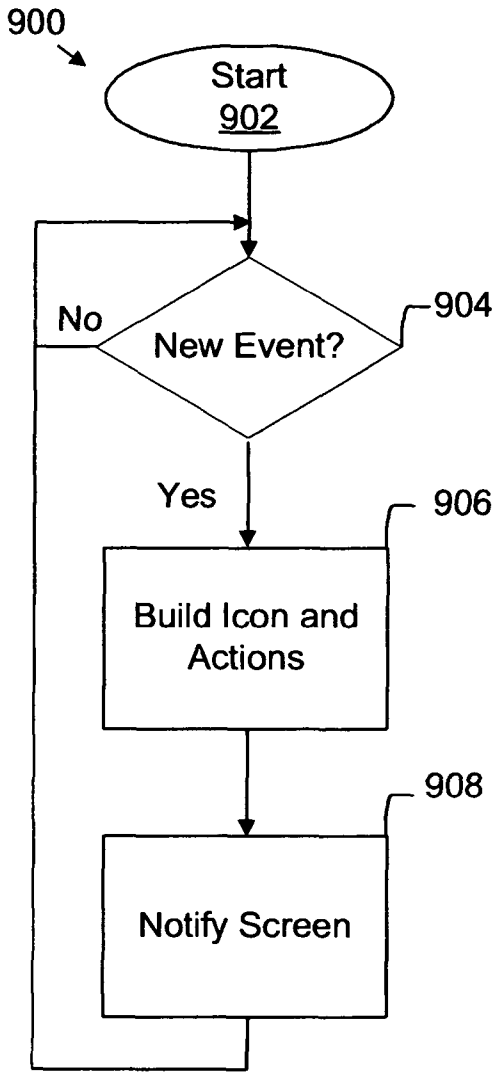
900
Start
902
New Event?
904
No
Yes
Build Icon and Actions
906
Notify Screen
908

FIG. 9A

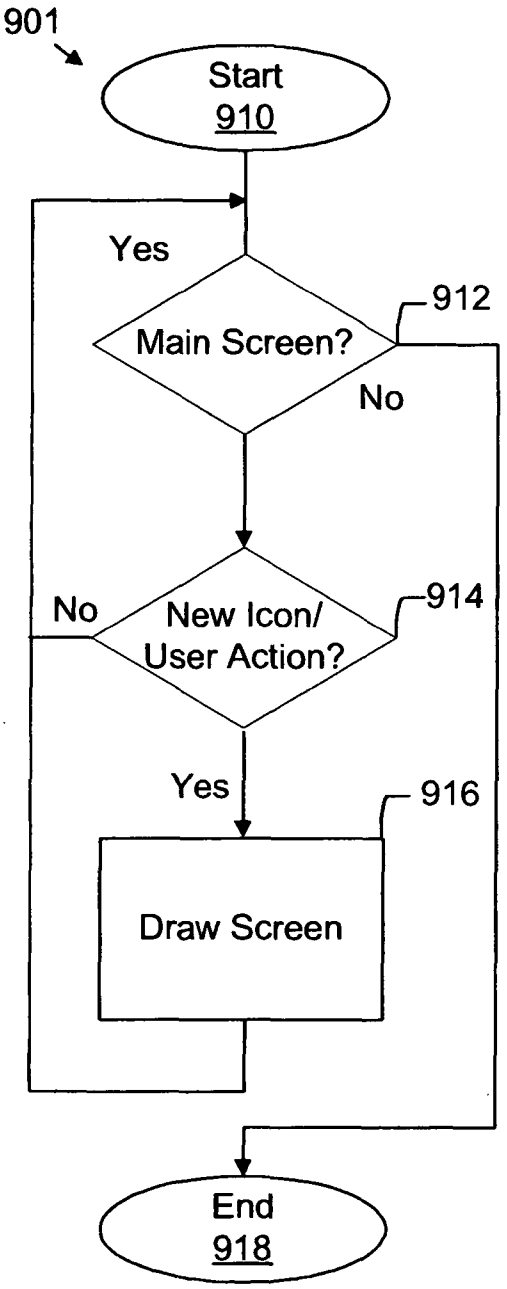
901
Start
910
Yes
Main Screen?
912
No
No
New Icon/ User Action?
914
Yes
Draw Screen
916
End
918

FIG. 9B

PREVIEWING A NEW EVENT ON A SMALL SCREEN DEVICE

CROSS-REFERENCE TO RELATED APPLICATION

This application claims the benefit of U.S. Provisional Patent Application No. 60/525,958 filed Dec. 1, 2003.

FIELD OF THE INVENTION

The present invention relates generally to wireless communication devices, and more particularly to graphical user interfaces for controlling such devices.

DESCRIPTION OF THE RELATED ART

With the proliferation of communications services available on wireless mobile devices, it becomes increasingly complex to create a single device that can excel at many different functions. Many critics claim that a wireless telephone device can never make a good handheld personal digital assistant (PDA) device and a handheld PDA device will never make a good wireless telephone. It is also said that only teenagers are using Instant Messaging (IM) services or Short Message Services (SMS) to exchange messages with friends and acquaintances and that such users should get an entirely different wireless mobile device. However, many users of wireless handheld devices desire to have multiple services and functionality on a single device.

Representing multiple services and functions to a user on a single wireless mobile device presents a number of challenges to the designer of a user interface, particularly a graphical user interface (GUI), for controlling the device. Wireless devices are usually small relative to less portable computing devices such as laptops and desktop computers. Inherently then, a visual display such as an LCD or other screen component of the wireless mobile device has a small display area.

Typically, GUIs for wireless mobile devices comprise a main or home screen and one or more sub-screens that may be navigated from the main screen. Notification icons are often rendered on a portion of the main screen to indicate a new event such as the receipt of a new IM message, electronic mail (e-mail) or other service event such as a calendar reminder or alarm and other status information such as time, date and battery life. For each type of service or function available via the device, a graphical image or icon is often rendered on a major portion of the main screen, which icon may be selected using a cursor or other means to launch a specific GUI for the selected service or function.

A user may subscribe to multiple similar services and have these services available via a single wireless mobile device. For example, a user may subscribe to more than one Instant Message-type service, such as AOL™ Instant Messenger (AIM™), ICQ™, Microsoft Network™ (MSN™), Yahoo!™ Messenger and Quick Messaging™. Alternatively or as well, a user may have a corporate and personal e-mail account coupled to the wireless mobile device. When a user is notified of a new event such as a new IM message, the user is required to check each of their IM service applications separately, via their respective activation icons, to determine which IM service is responsible for the new event. Checking each service is inconvenient. Moreover, there is a demand to have information made available to a user quicker than previously available in order to optimize the control of the wireless device.

Accordingly, there is a resulting need for a method and apparatus that addresses one or more of these shortcomings.

SUMMARY

The invention relates to a method, graphical user interface and apparatus for notifying and previewing a new event on a display of a device.

In accordance with a first aspect of the invention, there is provided a method for a computing device having a plurality of applications for managing respective events, individual ones of said applications each represented by an application icon on a screen of a graphical user interface for the device. The method for previewing new events on the screen comprises, in response to a new event of a one of said applications, visually modifying the one of said applications' icon to notify of the new event. In response to the visually modified icon, a user may invoke the one of said applications.

The one of said applications may be monitored to determine an occurrence of the new event. Further, the first aspect may comprise determining a visual modification for the one of said applications' icon in response to the new event; and using said visual modification when visually modifying. Determining a visual modification may comprise maintaining a count of new events for the one of said applications and visually modifying the one of said applications' icon may comprise displaying a preview of a content of the new event. Displaying a preview can be responsive to a user action, such as an interaction with the modified icon. Displaying a preview of a content can comprise displaying a dialog box over a portion of the main screen.

In one embodiment, the method comprises, in response to an activation of the one of said applications having its icon visually modified to notify of the new event, automatically navigating through the one of said applications to the new event.

In one embodiment, the device comprises at least one of a data communication device and a voice communication device and at least some of said plurality of applications manage communications capabilities associated with the device. As such, the events of said at least some of said plurality of applications comprise communication events. For example, the device may be a wireless device.

In a second aspect, in a computing device having a controller coupled to a memory, the memory storing a plurality of applications for managing respective events, there is provided a graphical user interface (GUI) for the applications. The GUI comprises a main screen for displaying on the computing device, the screen comprising a plurality of icons, each icon associated with one of the plurality of applications; at least one monitoring component to determine the occurrence of new events of the applications; and at least one icon modifying component to modify a one of the icons for display on the main screen in response to a new event of the application associated with the one of the icons to notify of the new event.

In a third aspect there is provided a wireless handheld device comprising a controller; a memory coupled to the controller, the memory storing a plurality of applications for execution by the controller to manage respective events and a graphical user interface (GUI) for the applications. The GUI comprises a main screen for displaying on the device, the screen comprising a plurality of icons, each icon associated with one of the plurality of applications; at least one monitoring component to determine the occurrence of new events of the applications; and at least one icon modifying component to modify a one of the icons for display on the main

screen in response to a new event of the application associated with the one of the icons to notify of the new event.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of present invention will now be described by way of example with reference to attached figures, wherein:

FIG. **1** is a block diagram which illustrates pertinent components of a wireless communication device which communicates within a wireless communication network in accordance with the prior art;

FIG. **2** is a more detailed diagram of a preferred wireless communication device of FIG. **1** in accordance with the prior art;

FIG. **3** is an illustration of an exemplary main screen, in accordance with the invention, for a wireless communication device such as the devices of FIGS. **1** and **2**;

FIG. **4** is an illustration of the main screen of FIG. **3** after a new event;

FIG. **5** is an illustration of the main screen of FIG. **4** following a user action;

FIG. **6** is an illustration of a change to an IM application icon when the user selects the application icon with the new event;

FIG. **7** is an illustration of multiple new events within one application;

FIG. **8** is an illustration of further embodiments for previewing new events on the main screen; and

FIGS. **9**A and **9**B are flowcharts which describe a method in accordance with the invention.

DETAILED DESCRIPTION

Method and apparatus for previewing new events in a computing device having a plurality of applications for managing respective events are described. Individual applications are each represented by an application icon on a screen of a graphical user interface for the device. When a new event occurs, particularly when the new event relates to a specific one of a plurality of similar applications, the invention provides a convenient way to denote which application relates to the event. In response to a new event of one of the applications, the application's icon is visually modified to notify of the new event. A visual modification may be determined in response to the new event, for example, to preview a content of the event. The visual modification may include a count of all new events that remain to be disposed. On a selection of the visually modified icon, additional previewing may be provided. Activation of the application having a visually modified application icon may be configured to automatically initiate the application at the new event.

FIG. **1** is a block diagram of a communication system **100** which includes a mobile station **102** which communicates through a wireless communication network **104** symbolized by a station. Mobile station **102** preferably includes a visual display **112**, a keyboard **114**, and perhaps one or more auxiliary user interfaces (UI) **116**, each of which are coupled to a controller **106**. Controller **106** is also coupled to radio frequency (RF) transceiver circuitry **108** and an antenna **110**.

Typically, controller **106** is embodied as a central processing unit (CPU) which runs operating system software in a memory component (not shown). Controller **106** will normally control overall operation of mobile station **102**, whereas signal processing operations associated with communication functions are typically performed in RF transceiver circuitry **108**. Controller **106** interfaces with device display **112** to display received information, stored information, user inputs, and the like. Keyboard **114**, which may be a telephone type keypad or full alphanumeric keyboard, is normally provided for entering data for storage in mobile station **102**, information for transmission to network **104**, a telephone number to place a telephone call, commands to be executed on mobile station **102**, and possibly other or different user inputs.

Mobile station **102** sends communication signals to and receives communication signals from the wireless network **104** over a wireless link via antenna **110**. RF transceiver circuitry **108** performs functions similar to those of a base station and a base station controller (BSC) (not shown), including for example modulation/demodulation and possibly encoding/decoding and encryption/decryption. It is also contemplated that RF transceiver circuitry **108** may perform certain functions in addition to those performed by a BSC. It will be apparent to those skilled in art that RF transceiver circuitry **108** will be adapted to particular wireless network or networks in which mobile station **102** is intended to operate.

Mobile station **102** includes a battery interface (IF) **134** for receiving one or more rechargeable batteries **132**. Battery **132** provides electrical power to electrical circuitry in mobile station **102**, and battery IF **132** provides for a mechanical and electrical connection for battery **132**. Battery IF **132** is coupled to a regulator **136** which regulates power to the device. When mobile station **102** is fully operational, an RF transmitter of RF transceiver circuitry **108** is turned on only when it is sending to network, and is otherwise turned off or placed in a low-power mode to conserve power. Similarly, an RF receiver of RF transceiver circuitry **108** is typically periodically turned off to conserve power until it is needed to receive signals or information (if at all) during designated time periods.

Mobile station **102** operates using a Subscriber Identity Module (SIM) **140** which is connected to or inserted in mobile station **102** at a SIM interface (IF) **142**. SIM **140** is one type of a conventional "smart card" used to identify an end user (or subscriber) of mobile station **102** and to personalize the device, among other things. Without SIM **140**, the mobile station terminal is not fully operational for communication through the wireless network. By inserting SIM **140** into mobile station **102**, an end user can have access to any and all of his/her subscribed services. SIM **140** generally includes a processor and memory for storing information. Since SIM **140** is coupled to SIM IF **142**, it is coupled to controller **106** through communication lines **144**. In order to identify the subscriber, SIM **140** contains some user parameters such as an International Mobile Subscriber Identity (IMSI). An advantage of using SIM **140** is that end users are not necessarily bound by any single physical mobile station. SIM **140** may store additional user information for the mobile station as well, including datebook (or calendar) information and recent call information.

Mobile station **102** may consist of a single unit, such as a data communication device, a multiple-function communication device with data and voice communication capabilities, a personal digital assistant (PDA) enabled for wireless communication, or a computer incorporating an internal modem. Alternatively, mobile station **102** may be a multiple-module unit comprising a plurality of separate components, including but in no way limited to a computer or other device connected to a wireless modem. In particular, for example, in the mobile station block diagram of FIG. **1**, RF transceiver circuitry **108** and antenna **110** may be implemented as a radio modem unit that may be inserted into a port on a laptop computer. In this case, the laptop computer would include display **112**, key-

board **114**, one or more auxiliary UIs **116**, and controller **106** embodied as the computer's CPU. It is also contemplated that a computer or other equipment not normally capable of wireless communication may be adapted to connect to and effectively assume control of RF transceiver circuitry **108** and antenna **110** of a single-unit device such as one of those described above. Such a mobile station **102** may have a more particular implementation as described later in relation to mobile station **202** of FIG. **2**.

FIG. **2** is a detailed block diagram of a preferred mobile station **202**. Mobile station **202** is preferably a two-way communication device having at least voice and advanced data communication capabilities, including the capability to communicate with other computer systems. Depending on the functionality provided by mobile station **202**, it may be referred to as a data messaging device, a two-way pager, a cellular telephone with data messaging capabilities, a wireless Internet appliance, or a data communication device (with or without telephony capabilities). Mobile station **202** may communicate with any one of a plurality of fixed transceiver stations **200** within its geographic coverage area.

Mobile station **202** will normally incorporate a communication subsystem **211**, which includes a receiver, a transmitter, and associated components, such as one or more (preferably embedded or internal) antenna elements and, local oscillators (LOs), and a processing module such as a digital signal processor (DSP) (all not shown). Communication subsystem **211** is analogous to RF transceiver circuitry **108** and antenna **110** shown in FIG. **1**. As will be apparent to those skilled in field of communications, particular design of communication subsystem **211** depends on the communication network in which mobile station **202** is intended to operate.

Network access is associated with a subscriber or user of mobile station **202** and therefore mobile station **202** requires a Subscriber Identity Module or "SIM" card **262** to be inserted in a SIM IF **264** in order to operate in the network. SIM **262** includes those features described in relation to FIG. **1**. Mobile station **202** is a battery-powered device so it also includes a battery IF **254** for receiving one or more rechargeable batteries **256**. Such a battery **256** provides electrical power to most if not all electrical circuitry in mobile station **202**, and battery IF **254** provides for a mechanical and electrical connection for it. The battery IF **254** is coupled to a regulator (not shown) which provides power V+ to all of the circuitry.

Mobile station **202** includes a microprocessor **238** (which is one implementation of controller **106** of FIG. **1**) which controls overall operation of mobile station **202**. Communication functions, including at least data and voice communications, are performed through communication subsystem **211**. Microprocessor **238** also interacts with additional device subsystems such as a display **222**, a flash memory **224**, a random access memory (RAM) **226**, auxiliary input/output (I/O) subsystems **228**, a serial port **230**, a keyboard **232**, a speaker **234**, a microphone **236**, a short-range communications subsystem **240**, and any other device subsystems generally designated at **242**. Some of the subsystems shown in FIG. **2** perform communication-related functions, whereas other subsystems may provide "resident" or on-device functions. Notably, some subsystems, such as keyboard **232** and display **222**, for example, may be used for both communication-related functions, such as entering a text message for transmission over a communication network, and device-resident functions such as a calculator or task list. Operating system software used by microprocessor **238** is preferably stored in a persistent store such as flash memory **224**, which may alternatively be a read-only memory (ROM) or similar storage element (not shown). Those skilled in the art will appreciate that the operating system, specific device applications, or parts thereof, may be temporarily loaded into a volatile store such as RAM **226**.

Microprocessor **238**, in addition to its operating system functions, preferably enables execution of software applications on mobile station **202**. A predetermined set of applications which control basic device operations, including at least data and voice communication applications, will normally be installed on mobile station **202** during its manufacture. A preferred application that may be loaded onto mobile station **202** may be a personal information manager for organizing and managing data items relating to the user such as, but not limited to, instant messaging (IM), e-mail, calendar events, voice mails, appointments, and task items. Naturally, one or more memory stores are available on mobile station **202** and SIM **262** to facilitate storage of PIM data items and other information.

The PIM application preferably has the ability to send and receive data items via the wireless network. In a preferred embodiment, PIM data items are seamlessly integrated, synchronized, and updated via the wireless network, with the mobile station user's corresponding data items stored and/or associated with a host computer system thereby creating a mirrored host computer on mobile station **202** with respect to such items. This is especially advantageous where the host computer system is the mobile station user's office computer system. Additional applications may also be loaded onto mobile station **202** through network **200**, an auxiliary I/O subsystem **228**, serial port **230**, short-range communications subsystem **240**, or any other suitable subsystem **242**, and installed by a user in RAM **226** or preferably a non-volatile store (not shown) for execution by microprocessor **238**. Such flexibility in application installation increases the functionality of mobile station **202** and may provide enhanced on-device functions, communication-related functions, or both. For example, secure communication applications may enable electronic commerce functions and other such financial transactions to be performed using mobile station **202**.

In a data communication mode, a received signal such as a text message, an e-mail message, or web page download will be processed by communication subsystem **211** and input to microprocessor **238**. Microprocessor **238** will preferably further process the signal for output to display **222**, to auxiliary I/O device **228** or both as described further herein below with reference to FIGS. **3-9**. A user of mobile station **202** may also compose data items, such as e-mail messages, for example, using keyboard **232** in conjunction with display **222** and possibly auxiliary I/O device **228**. Keyboard **232** is preferably a complete alphanumeric keyboard and/or telephone-type keypad. These composed items may be transmitted over a communication network through communication subsystem **211**.

For voice communications, the overall operation of mobile station **202** is substantially similar, except that the received signals would be output to speaker **234** and signals for transmission would be generated by microphone **236**. Alternative voice or audio I/O subsystems, such as a voice message recording subsystem, may also be implemented on mobile station **202**. Although voice or audio signal output is preferably accomplished primarily through speaker **234**, display **222** may also be used to provide an indication of the identity of a calling party, duration of a voice call, or other voice call related information, as some examples.

Serial port **230** in FIG. **2** is normally implemented in a personal digital assistant (PDA)-type communication device for which synchronization with a user's desktop computer is

a desirable, albeit optional, component. Serial port **230** enables a user to set preferences through an external device or software application and extends the capabilities of mobile station **202** by providing for information or software downloads to mobile station **202** other than through a wireless communication network. The alternate download path may, for example, be used to load an encryption key onto mobile station **202** through a direct and thus reliable and trusted connection to thereby provide secure device communication.

Short-range communications subsystem **240** of FIG. **2** is an additional optional component which provides for communication between mobile station **202** and different systems or devices, which need not necessarily be similar devices. For example, subsystem **240** may include an infrared device and associated circuits and components, or a Bluetooth™ communication module to provide for communication with similarly-enabled systems and devices. Bluetooth™ is a registered trademark of Bluetooth SIG, Inc.

In accordance with an embodiment of the invention, mobile station **202** is configured for sending and receiving data items and includes a PIM for organizing and managing data items relating to the user such as, but not limited to, instant messaging (IM), e-mail, calendar events, calendar appointments, and task items, etc. By way of example, mobile station **202** is configured for three instant messaging services and two e-mail services to which the user subscribes. To provide a user-friendly environment to control the operation of mobile station **202**, PIM together with the operation system and various software applications resident on the station **202** provides a GUI having a main screen and a plurality of subscreens navigable from the main screen.

Referring now to FIG. **3**, there is an illustration of an exemplary main screen **300**, in accordance with an embodiment of the invention, for a display **112**, **222** of mobile station **202** providing a graphical user interface for controlling mobile station **202**. Main screen **300** is divided into two main portions, namely an application portion **301** for displaying and manipulating icons (e.g. **304**-**312**) for various software applications and functions enabled by mobile station **202** and a mobile station status portion **302** for displaying status information such as time, date, battery and signal strength, etc. FIG. **3** illustrates three icons **304**, **306** and **308** for respective IM applications IM 1, IM 2 and IM 3 and two icons **310**, **312** for the two e-mail services Email 1 and Email 2. Associated with each icon is a name (e.g. IM 1) for the application for icon **304**. The name may also be presented in a name region **314** of application portion **301**.

Main screen **300** may not represent all application icons at once in application portion **301**. A user may be required to navigate or scroll through the icons of application portion **301** to view additional application icons.

For simplicity, each icon is represented as a circle but persons of ordinary skill in the art will appreciate that other graphics may be used. In the exemplary main screen and GUI of mobile station **202**, when a particular icon, e.g. **304**, is selected or made active by a user (such as by manipulating keyboard **232** or other auxiliary I/O device **228**), the icon **304** is changed such as by highlighting, shadowing or the like.

In accordance with an embodiment of the invention, an icon (e.g. **304**) may be visually modified in response to a new event from the application associated with the icon to provide an immediate notification of the event via a change in main screen **300**. The notification may distinguish the icon from icons for similar services to assist a user to control mobile station **202** as described further.

Each of the icons in the main screen **300** of FIG. **3** is in an initial state indicating no new events have occurred and remain unattended by the user. FIG. **4** is an illustration of the main screen **300** after a new IM event, for example, a new message, has arrived into one of the IM applications, namely IM 2, associated with icon **306**. In this exemplary embodiment, the new IM message is indicated with a visual modification **400** comprising a bubble, alluding to new received text, and a numeric indicator "1" representing a count of new events, which in this case are unread messages. Persons of ordinary skill in the art will appreciate that a visual modification **400** different from a bubble may be used and the count may represent other information, such as the number of correspondents or "buddies" from which one or more messages have been received but remain unread. In addition to indicating the number of unread messages, this mechanism may be used to reflect other new event information such as additional state information pertaining to the associated application. State information may include whether the user is currently signed in (and their user name), the state of the connection, and the current state of the user (away vs. available). In an e-mail application, such as associated with one of icons **310**, **312**, a count may be of unread e-mail messages or distinct senders of unread e-mail. Similar counts may represent SMS messages, appointments, alarms or other events for respective applications.

Optionally, the count may be configurable for each application or instance thereof. For application icon **304** it may identify the number of distinct senders of unread IM messages and for application icon **308** distinct unread IM messages.

FIG. **5** shows an IM application icon **306** following a user action. When the user of mobile station **202** moves the focus of main screen from icon **304** through **306** and **308** to highlight phone icon **502**, visual modification **400** persists at icon **306** to maintain the visual modification and remind the user of the unread message. Preferably, only once the user activates an application and reads the unread message is the visual modification changed, for example, to decrease the count and, if applicable, remove the modification if the count is zero.

FIG. **6** is an illustration of main screen **300** when IM application icon **306** having an unread message is highlighted. Upon selection of icon **306**, in addition to highlighting the icon, a dialog box **602** comprising a message preview **604** of at least a portion of the unread message is displayed. The opening of the dialog box **604** may be briefly delayed after icon **306** is brought in focus by the user. If a dialog box is opened too quickly as a user navigates among the icons, navigation may be preempted before the user navigates to a particular icon of choice. Dialog box **604** is opened at name region **314** though persons skilled in the art will recognize that another region may be selected to position the dialog box **604**. By way of example, message preview **604** in dialog box **602** shows the application service (i.e. "AIM" for AOL Instant Messenger) the correspondent sending the message (i.e. "red98") and a part of the unread message (i.e. "See you at 4:00 . . . ").

FIG. **7** shows a dialog box **602** for an IM application **306** having two unread messages indicated at visual modification **400**. Dialog box **602** comprises message previews **604** and **704**. Due to the inherent size of main screen **300** and other considerations apparent to those skilled in the art, there is an upper limit to the number of unread messages that may be previewed in such a manner. This limit may be optionally configurable by a user within a predetermined range or simply configured to a maximum size based on the available screen space, font, etc.

Optionally, in accordance with an embodiment of the invention, a user may be enabled to "jump" (i.e. automatically

navigate) to the unread message directly from the application icon on the main screen, eliminating any intervening screens that may normally be navigated to read messages when navigating the GUI for the associated application. For example, highlighted icon **306** may be activated as per normal (e.g. selecting "enter" on keyboard **232**) and the application initiated to start at an unread message (e.g. most or least recent). The application's initial screen or buddies list may be skipped. The opportunity to "jump" may be time-limited and enabled only for a short period of time immediately following the occurrence of the new event, such as from about a few seconds to about 30 seconds. The "jump" activation anticipates the user's need to see the unread message.

FIG. **8** is an illustration of another embodiment for previewing events on a main screen of a mobile station such as station **202**. In this embodiment, two new events, one for each of IM application icons **304**, **306** are indicated via respective visual modifications **802** and **804**. Visual modification **802** comprises an event count, namely a count of unread messages and a message preview providing a sender identity and a portion of the unread message. Similarly though differently modification **804** comprises an event count and state preview indicating IM correspondent buddy "Red98" has signed on. Persons of ordinary skill in the art will appreciate that different events may be visualized on the main screen in accordance with the invention and these events may depend upon the associated application.

FIGS. **9**A and **9**B are flowcharts which describe a method in accordance with the invention for the visual modification of an application icon to represent a new event. FIG. **9**A represents operations **900** for identifying a new event to determine the modification and FIG. **9**B represents operations **901** to display the modification.

Operations **900** may be enabled for a service or other application such as IM, e-mail, etc. Though not shown events to be monitored (for example, by a monitoring component of the GUI) and visually indicated (for example, by a icon modifying component) upon occurrence are pre-determined in accordance with a type or types of events to be notified and previewed. For example, for operations **900** for use in accordance with IM, whether the count is to count distinct unread messages or senders is pre-determined.

Beginning at a start block **902** of FIG. **9**A, operations **900** commence and the application represented by the application icon to be modified is monitored for a new event (step **904**). Persons of ordinary skill in the art will understand that monitoring may be implemented in a number of fashions depending, in part, on operating system and other system services and the interface between communication subsystem **211** and microprocessor **238**. Each of the plurality of applications to be monitored may have a dedicated monitoring component to determine the occurrence of respective new events. Alternatively, a single monitoring component could monitor each of the applications. Monitoring may be continuously or intermittently performed repeating step **904**, until a new event is determined.

Upon a new event, at step **906**, the visual modification to the icon to be changed is determined by an icon modifying component. The counter, if any, is incremented and any visual element or graphic to be overlaid may be configured. For example, text may be obtained for the overlay as exemplified by visual modification **802** of FIG. **8**. The counter may be decremented if the monitored event is the reading of a previously unread message, for example.

User actions that may be performed in association with the modified icon may be set up. For example, text for a dialog box may be obtained in advance and associated with the visual modification for use when the icon is highlighted on the main screen by the user. Should the icon be activated to initiate the application, data to facilitate an immediate automatic jump to the most recent unread message may also be determined in advance if necessary, and associated with the visual modification. The sender of the message may be identified and various user action options prepared for that sender. For example, actions to permit a phone call, e-mail, SMS or other selectable message may be presented to a user highlighting an icon having a visual modification.

At step **908**, the visual modification and any associated data, as applicable, is identified to a main screen maintenance portion of the PIM GUI or other application responsible for maintaining the main screen as described further with reference to operations **901**. The notification may pass an object or other data sharing mechanism to provide the modification and any associated action data. Thereafter, monitoring continues at step **904** of operation **900**. Monitoring may continue for as long as station **202** is powered.

Beginning at step **910**, operations **901** commence for main screen maintenance. At step **912** operations monitor to determine that the main screen is active. If yes, operations monitor for a user action or a notification of a visual modification to an icon (step **914**). Upon such an occurrence, a new screen is drawn reflecting the visual modification of an icon or the user's action (step **916**, via Yes branch). Exemplary user actions are moving the focus or cursor over the icons of a main screen to highlight an icon or activating an application associated with the icon. The highlighting of an icon that was previously visually modified may further initiate a dialog box display requiring the drawing of the main screen as described above. Once the screen is drawn at step **916** or if no new icon or user activity is detected at step **914**, operations **901** repeat at **912**. At step **912**, if the main screen is no longer active, for example because a user has navigated to another screen, operations **901** may cease (step **918** via No branch) until the main screen is reactivated (not shown).

Operations **900** illustrate a method aspect of an embodiment of the invention monitoring events of a single application. As will be understood to those of ordinary skill in the art, mobile station **202** may be configured to have multiple monitors, one for each application, or a single monitor configured to monitor all applications for new events. Alternatively, each type of application could have a monitor for monitoring respective instances of the application type. For example, a single monitor could be configured for monitoring the three IM applications of the above-described embodiment, a further monitor may be configured for the two e-mail applications, a further for the phone application, etc.

While operations **910** are illustrated as waiting to be advised of a new visual modification, other initiation mechanisms could be employed. For example, each application or respective monitor therefor could be queried for new visual modifications.

Though operation **900** and **901** are described with reference to new events, persons of ordinary skill in the art will appreciate that modifications may be incorporated therein to expire the preview of a new event and display a default or other icon for an application. For example, with reference to FIG. **8**, icon **804** illustrates a status event preview, namely the sign-on of Red98. This preview may be expired automatically after a predetermined period of time. A standard or default icon could be used to replace the preview icon. Alternatively, a modified preview icon could be used such as one indicating a count of new events. Similarly, it may be desired to persist some new event previews information even upon the happening of subsequent new events for he same application. For

example, new event information relating to a status of the associated application, (e.g. sign-in/out status, availability etc.) may be persisted even as new events occur and are previewed.

The above-described embodiments of the present application are intended to be examples only. Those of skill in the art may effect alterations, modifications and variations to the particular embodiments without departing from the scope of the application. The invention described herein in the recited claims intend to cover and embrace all suitable changes in technology.

What is claimed is:

1. A method of providing notifications of unread messages on a wireless communication device, comprising:

displaying at least one icon relating to electronic messaging on a graphical user interface of the wireless communication device;

receiving a plurality of electronic messages on the wireless communication device, the plurality of electronic messages including messages from a plurality of different messaging correspondents; and

in response to receiving at least one of the plurality of electronic messages, visually modifying at least one displayed icon relating to electronic messaging to include a numeric character representing a count of the plurality of different messaging correspondents for which one or more of the electronic messages have been received and remain unread.

2. The method of claim **1**, further comprising displaying a plurality of icons including one or more application icons that are selectable to invoke respective ones of a plurality of applications on the wireless communication device.

3. The method of claim **2**, further comprising visually modifying one or more of the plurality of icons to include a count of electronic messages that have been received and remain unread.

4. The method of claim **1**, the at least one icon relating to electronic messaging being selectable to invoke an electronic messaging application.

5. The method of claim **1**, comprising displaying on the graphical user interface an identifier of the correspondent from whom at least one of the plurality of messages was received.

6. The method of claim **1**, comprising displaying on the graphical user interface at least one preview of content associated with at least one of the received electronic messages.

7. A computer-readable memory accessible by a processor of a wireless communication device, the memory comprising stored electronic data structures representing executable instructions which, when executed by the processor, cause the wireless communication device to:

display at least one icon relating to an electronic messaging application on the graphical user interface;

receive a plurality of electronic messages, the plurality of electronic messages including messages from a plurality of different messaging correspondents; and

in response to receiving at least one of the plurality of electronic messages, visually modify at least one displayed icon relating to the electronic messaging application to include a numeric character representing a count of the plurality of different messaging correspondents for which one or more of the electronic messages have been received and remain unread.

8. The computer-readable memory of claim **7**, further comprising stored electronic data structures representing executable instructions which, when executed, cause the wireless communication device to display a plurality of icons including one or more application icons that are selectable to invoke respective ones of a plurality of applications on the wireless communication device.

9. The computer-readable memory of claim **8**, further comprising stored electronic data structures representing executable instructions which, when executed, cause the wireless communication device to visually modify one or more of the plurality of icons to include a count of electronic messages that have been received by the wireless communication device and remain unread.

10. The computer-readable memory of claim **7**, the at least one icon relating to electronic messaging being selectable to invoke an electronic messaging application.

11. The computer-readable memory of claim **7**, stored electronic data structures representing executable instructions which, when executed, cause the wireless communication device to visually modify the graphical user interface to include an identifier of the correspondent from whom at least one of the plurality of messages was received.

12. The computer-readable memory of claim **7**, further stored electronic data structures representing executable instructions which, when executed, cause the wireless communication device to visually modify the graphical user interface to include at least one preview of content associated with at least one of the received electronic messages.

13. A wireless communication device comprising:

a processor;

a display electrically coupled to the processor, the display presenting a graphical user interface; and

memory storing machine-readable instructions executable by the processor to:

display at least one icon relating to electronic messaging on the graphical user interface;

receive a plurality of electronic messages, the plurality of electronic messages including messages from a plurality of different messaging correspondents; and

in response to receiving at least one of the plurality of electronic messages, visually modify the at least one displayed icon relating to electronic messaging to include a numeric character representing a count of the plurality of different messaging correspondents for which one or more of the electronic messages have been received and remain unread.

14. The wireless communication device of claim **13**, the memory further comprising machine-readable instructions which, when executed, cause the wireless communication device to display a plurality of icons including one or more application icons that are selectable to invoke respective ones of a plurality of applications on the wireless communication device.

15. The wireless communication device of claim **14**, the memory comprising machine-readable instructions which, when executed, cause the wireless communication device to visually modify one or more of the plurality of icons to include a count of electronic messages that have been received and remain unread.

16. The wireless communication device of claim **13**, the at least one icon relating to electronic messaging being selectable to invoke an electronic messaging application.

17. The wireless communication device of claim **13**, the memory further comprising machine-readable instructions which, when executed, cause the wireless communication device to visually modify the graphical user interface to include an identifier of the correspondent from whom at least one of the plurality of messages was received.

18. The wireless communication device of claim 13, the memory further comprising machine-readable instructions which, when executed, cause the wireless communication device to visually modify the graphical user interface to include at least one preview of content associated with at least one of the received electronic messages.

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