

[0026] In some embodiments, the peripherals interface 118, the CPU 120, and the memory controller 122 may be implemented on a single chip, such as a chip 104. In some other embodiments, they may be implemented on separate chips.

[0027] The RF (radio frequency) circuitry 108 receives and sends RF signals, also called electromagnetic signals. The RF circuitry 108 converts electrical signals to/from electromagnetic signals and communicates with communications networks and other communications devices via the electromagnetic signals. The RF circuitry 108 may include well-known circuitry for performing these functions, including but not limited to an antenna system, an RF transceiver, one or more amplifiers, a tuner, one or more oscillators, a digital signal processor, a CODEC chipset, a subscriber identity module (SIM) card, memory, and so forth. The RF circuitry 108 may communicate with networks, such as the Internet, also referred to as the World Wide Web (WWW), an intranet and/or a wireless network, such as a cellular telephone network, a wireless local area network (LAN) and/or a metropolitan area network (MAN), and other devices by wireless communication. The wireless communication may use any of a plurality of communications standards, protocols and technologies, including but not limited to Global System for Mobile Communications (GSM), Enhanced Data GSM Environment (EDGE), wideband code division multiple access (W-CDMA), code division multiple access (CDMA), time division multiple access (TDMA), Bluetooth, Wireless Fidelity (Wi-Fi) (e.g., IEEE 802.11a, IEEE 802.11b, IEEE 802.11g and/or IEEE 802.11n), voice over Internet Protocol (VoIP), Wi-MAX, a protocol for email, instant messaging, and/or Short Message Service (SMS)), or any other suitable communication protocol, including communication protocols not yet developed as of the filing date of this document.

[0028] The audio circuitry 110, the speaker 111, and the microphone 113 provide an audio interface between a user and the device 100. The audio circuitry 110 receives audio data from the peripherals interface 118, converts the audio data to an electrical signal, and transmits the electrical signal to the speaker 111. The speaker 111 converts the electrical signal to human-audible sound waves. The audio circuitry 110 also receives electrical signals converted by the microphone 113 from sound waves. The audio circuitry 110 converts the electrical signal to audio data and transmits the audio data to the peripherals interface 118 for processing. Audio data may be retrieved from and/or transmitted to memory 102 and/or the RF circuitry 108 by the peripherals interface 118. In some embodiments, the audio circuitry 110 also includes a headset jack (not shown). The headset jack provides an interface between the audio circuitry 110 and removable audio input/output peripherals, such as output-only headphones or a headset with both output (e.g., a headphone for one or both ears) and input (e.g., a microphone).

[0029] The I/O subsystem 106 couples input/output peripherals on the device 100, such as the display system 112, the click wheel 114 and other input/control devices 116, to the peripherals interface 118. The I/O subsystem 106 may include a display controller 156, a click wheel controller 158 and one or more input controllers 160 for other input or control devices. The one or more input controllers 160 receive/send electrical signals from/to other input or control devices 160. The other input/control devices 160 may include physical buttons (e.g., push buttons, rocker buttons, etc.), dials, slider switches, joysticks, and so forth.

[0030] The display system 112 provides an output interface and/or an input interface between the device and a user. The display controller 156 receives and/or sends electrical signals from/to the display system 112. The display system 112 displays visual output to the user. The visual output may include text, icons, graphics, video, and any combination thereof. In some embodiments, some or all of the visual output may correspond to user-interface objects, further details of which are described below.

[0031] In some embodiments, such as those that include a touch screen, the display system 112 also accepts input from the user based on haptic and/or tactile contact. In embodiments with a touch screen, the display system 112 forms a touch-sensitive surface that accepts user input. In these embodiments, the display system 112 and the display controller 156 (along with any associated modules and/or sets of instructions in memory 102) detect contact (and any movement or breaking of the contact) on the display system 112 and converts the detected contact into interaction with user-interface objects, such as one or more soft keys or a virtual click wheel, that are displayed on a touch screen. In an exemplary embodiment, a point of contact between a touch screen in the display system 112 and the user corresponds to one or more fingers of the user.

[0032] In embodiments with a touch screen, the touch screen in the display system 112 may use LCD (liquid crystal display) technology, or LPD (light emitting polymer display) technology, although other display technologies may be used in other embodiments. A touch screen in the display system 112 and the display controller 156 may detect contact and any movement or breaking thereof using any of a plurality of touch sensing technologies, including but not limited to capacitive, resistive, infrared, and surface acoustic wave technologies, as well as other proximity sensor arrays or other elements for determining one or more points of contact with a touch screen in the display system 112. A touch-sensitive display in some embodiments of the display system 112 may be analogous to the multi-touch sensitive tablets described in the following U.S. Pat. No. 6,323,846 (Westerman et al.), U.S. Pat. No. 6,570,557 (Westerman et al.), and/or U.S. Pat. No. 6,677,932 (Westerman), and/or U.S. Patent Publication 2002/0015024A1, each of which is hereby incorporated by reference. However, a touch screen in the display system 112 displays visual output from the portable device 100, whereas touch sensitive tablets do not provide visual output. The touch screen in the display system 112 may have a resolution in excess of 100 dpi. In an exemplary embodiment, the touch screen in the display system has a resolution of approximately 168 dpi. The user may make contact with the touch screen in the display system 112 using any suitable object or appendage, such as a stylus, a finger, and so forth.

[0033] In some embodiments, in addition to a touch screen, the device 100 may include a touchpad (not shown) for activating or deactivating particular functions. In some embodiments, the touchpad is a touch-sensitive area of the device that, unlike the touch screen, does not display visual output. The touchpad may be a touch-sensitive surface that is separate from the touch screen in the display system 112 or an extension of the touch-sensitive surface formed by the touch screen.

[0034] The device 100 includes a physical or virtual click wheel 114. A user may interact with one or more graphical objects (henceforth referred to as icons) displayed in the display system 112 by rotating the click wheel 114 or by