or other type of display signal known in the art. In the embodiment shown in FIG. **2**, display **216** comprises a textured ball **204**. Display **216** further comprises texture selection icons **206**. Texture selection icons **206** comprise rocks, sand, and water.

[0057] Referring still to FIG. **2**, the messaging device **200** further comprises a manipulandum **214**. In the embodiment shown in FIG. **2**, the manipulandum **214** comprises a roller ball and buttons. The messaging device **200** also comprises a touch-sensitive interface **218**. In the embodiment shown in FIG. **2**, the touch-sensitive interface comprises a touch-screen positioned overtop of display **216**. In some embodiments, display **216** and the touch-screen may comprise a single integrated component, such as a touch-screen display.

[0058] Manipulandum **214** and touch-sensitive interface **218** are configured to detect user interaction and transmit interface signals corresponding to the user interaction to the processor. In some embodiments, the user interaction is associated with a graphical user interface shown on display **216**. In such an embodiment, the processor receives the interface signal and, based at least in part on the interface signal, modifies the graphical user interface on display **216**. For example, in the embodiment shown in FIG. **2**, the user may use either manipulandum **214** or touch-sensitive interface **218** to select one of texture selection icons **206**. Once the user has selected a texture for textured ball **204**, its appearance on the display may change to correspond to that texture. For example, if the user selects the sand texture icon, the processor will determine a haptic effect that causes the user to feel a sandy texture when the user interacts with textured ball **204**. Or, in another embodiment, if the user selects the rocky texture icon, the processor may determine a haptic effect that causes the user to feel a rocky texture when the user interacts with textured ball **204**.

[0059] Messaging device **200** further comprises an actuator configured to receive a haptic signal and output a haptic effect (not shown in FIG. **2**). In some embodiments, the haptic effect comprises a vibrotactile texture felt by the user of messaging device **200**. Processor **110** is configured to determine a haptic effect and transmit a haptic signal corresponding to the haptic effect to the actuator. In some embodiments, determining a haptic effect may comprise performing a series of calculations. In other embodiments, determining the haptic effect may comprise accessing a lookup table. In still other embodiments, determining the haptic effect may comprise using a combination of lookup tables and algorithms. Once processor **110** determines the haptic effect, it transmits a haptic signal associated with the haptic effect to the actuator. The actuator receives the haptic signal from processor **110** and outputs the haptic effect. The user may feel the haptic effect via the surface of display **216** or through some other part of messaging device **200**, for example via manipulandum **214** or housing **202**.

[0060] In the embodiment shown in FIG. **2**, display **216** comprises a textured ball **204**. When the user interacts with textured ball **204**, the processor will determine a haptic effect that will simulate the texture of textured ball **204** on the surface of display **216**. For example, textured ball may comprise the texture of sand. In such an embodiment, the processor may determine a haptic effect simulating the rough gritty feel of sand. In some embodiments, the processor may modify this haptic effect as users moves their fingers over the surface of textured ball **204**, in order to simulate the texture of movement over sand.

[0061] FIG. **3***a* is an illustration of a system for using textures in graphical user interface widgets according to one embodiment of the present invention. FIG. **3***a* comprises a messaging device **300**, such as a mobile phone, PDA, portable media player, portable gaming device, or mobile computer. The messaging device **300** is configured to send and receive signals comprising messages, such as voicemail, text messages, and other data messages, over a network such as a cellular network or the Internet. The messaging device **300** may comprise a wireless network interface and/or a wired network interface (not shown in FIG. **3***a*). Although the device **300** is illustrated as a handheld messaging device in FIG. **3***a*, other embodiments may comprise different devices, such as video game systems and/or personal computers.

[0062] As shown in FIG. **3***a*, messaging device **300** comprises a display **316**. Display **316** is configured to receive a display signal, and output an image based at least in part on the display signal. Messaging device **300** further compromises a processor (not shown in FIG. **3***a*) configured to transmit the display signal to display **316**. Messaging device **300** further comprises a touch-sensitive interface **314** mounted overtop of display **316**. Touch-sensitive interface **314** is configured to detect a user interaction and transmit an interface signal corresponding to the user interaction to the processor. Display **316** comprises two icons **302** and **304**. When the user interacts with one of icons **302** and **304**, touch-sensitive interface **314** will detect the user interaction and transmit a corresponding interface signal to the processor. Based on this interface signal, the processor may determine that the user has opened a file linked to one of the icons or performed some other action known in the art.

[0063] As shown in FIG. **3***a*, each of icons **302** and **304** comprises a texture. In the embodiment shown, icon **302** comprises the texture of bricks and icon **304** comprises the texture of rocks. In other embodiments, different textures may be used, for example, the texture of sand, water, oil, grass, fur, skin, leather, ice, wood, or some other texture known in the art. When the user, shown in FIG. **3***a* as finger **306**, interacts with the section of display **316** associated with each icon, the processor will determine a haptic effect configured to simulate the texture of that icon. The processor will then output a signal associated with the haptic effect to an actuator (not shown in FIG. **3***a*) configured to output the haptic effect. For example, in the embodiment shown in FIG. **3***a*, when the user interacts with the section of the display associated with the icon **302** the processor will determine a haptic effect associated with the texture of bricks. This haptic effect may be characterized by a random signal punctuated with high powered pulses as user's finger **306** moves across mortar. In other embodiments, other haptic effects may be used to simulate different textures that may correspond to the image shown on display **316**.

[0064] FIG. **3***b* is an illustration of a system for using textures in graphical user interface widgets according to one embodiment of the present invention. In the embodiment shown in FIG. **3***b*, determining the haptic effect comprises mapping the display signal to the actuator. The embodiment shown in FIG. **3***b*, comprises a magnified section of a display **350**. Display **350** is configured to receive a display signal from the processor. The display signal comprises a plurality of pixels that are each associated with a color and an intensity of that color. Display **350** receives this display signal and outputs an image associated with the display signal. In the embodiment shown in FIG. **3***b*, the magnified portion of