a matrix or array. In one embodiment, the haptic nodes are mapped to touch sensing nodes. Each touch sensing node can be assigned one or more haptic nodes. The haptic nodes are typically proximate the touch sensing nodes to which it has been assigned.

[0034] In one embodiment, the touch sensing surface is a multi touch surface thus making a multi touch multi-touch haptic device. In so doing haptic feedback can be provided that indicates information about a multi touch event. For example, the surface under a moving finger can be actuated while the surface under the non-moving finger remains static. In another example, the surface under the moving finger is actuated concurrently with a signal being passed to the other finger indicating that a multi touch action is occurring. In this way, the signals taken together can indicate the nature of the underlying action being taken by the user. For example, if an object (such as an image) is being expanded or reduced in size a larger/more intense signal could be generated (either by increasing frequency or amplitude). It is also contemplated that isolated feedback can be used to provide an on-screen click-wheel or other such user input where the touch screen is used to simulate the "clicks" of the click wheel both audibly and via tactile feedback.

[0035] The described embodiments generally pertain to gestures and methods of implementing gestures with associated physical feedback with touch sensitive devices. Examples of touch sensitive devices include touch screens and touch pads. One aspect of the invention describes a touch sensitive input device able to recognize at least two substantially simultaneously occurring gestures using at least two different fingers or other objects (hereinafter referred to as a multi-touch event). The touch sensitive input device communicates with an array of haptic feedback devices (also referred to as haptic actuators) each arranged to provide haptic feedback according to a haptic profile in response to a multi-touch event. In another aspect of the invention, each finger receives different haptic feedback (multi-haptic) depending upon the location on the touch sensitive input device each finger is placed. In another aspect of the invention, a compound haptic feedback can be provided that combines the output from at least two different haptic actuators to form the compound response that is different from that provided by the two originating haptic actuators. In another embodiment, an integrated device is described that can act as both a force sensing device and a haptic feedback device. In still another embodiment, a handheld portable device is described having a housing and a user interface are acoustically isolated from each other. In this way, the housing and user interface and having non-interfering and independent haptic responses.

[0036] These and other aspects of the invention are discussed below with reference to FIGS. **1-13**. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments.

[0037] FIG. **1**A-**1**E are block diagrams of a representative electronic device or system **100**, in accordance with one embodiment of the present invention. Electronic device **100** can correspond to a computer (such as a desktops or laptops) as well as small form factor electronic devices that can include portable consumer electronic products such as cell phones, PDA, media players and/or the like. As such, portable electronic device **100** can be sized for one-handed operation and placement into small areas such as a pocket. Portable electronic device **100** can process data and more particularly media such as audio, video, images, etc. As such, the portable electronic device **100** can correspond to a music player, game player, video player, personal digital assistant (PDA), such as, for example, an iPod™, an iPod Nano™, an iPod Shuffle™, an iPod™ Touch or an iPhone™ available by Apple Inc. of Cupertino, Calif. In some cases, portable electronic device **100** can communicate wirelessly (with or without the aid of a wireless enabling accessory system) and/or via wired pathways (e.g., using traditional electrical wires).

[0038] Portable electronic device **100** includes a housing **102**. Housing **102** can be formed of any number of materials including for example plastics, metals, ceramics and the like. In one embodiment, housing **102** can be formed of stainless steel in order to provide an aesthetic and appealing look and feel as well as provide structural integrity and support for all sub-assemblies installed therein. Housing **102** can define a cavity configured to at least partially enclose any suitable number of operational electronic components **104** used by portable electronic device **100** to carry out its intended functions. Operational electronic components **104** can include processor **106** that can operate (in conjunction with an operating system) to execute computer code and produce and use data. Processor **106** can be implemented on a single-chip, multiple chips or multiple electrical components. For example, various architectures can be used for the processor **106**, including dedicated or embedded processor, single purpose processor, controller, ASIC, and so forth. The operating system, other computer code and data can reside within a memory **108** that can be operatively coupled to processor **106**. By way of example, memory **108** can include Read-Only Memory (ROM), Random-Access Memory (RAM), flash memory, hard disk drive and/or the like. Operational components **104** can also include a number of input/output (I/O) devices **109**. Such devices can include audio output devices such as headphone jacks, data ports (such as I.E.E.E. 1392 compliant, USB, etc.), and so on.

[0039] Portable electronic device **100** can also include a user interface **110** that can operate to both receive user inputs and provide information to a user. In the described embodiment, user interface **110** can include display device **112** that can be operatively coupled to processor **106** by way of bus **114**. Display device **112** can correspond to any known display technology such as a plasma, LCD, or an organic light emitting diode (OLED). It should be noted that in the embodiment shown in FIGS. **1**A-**1**E, display device **112** is integrated with the electronic device **100**. However, display device **112** can also be configured as a component separate from portable electronic device **100** in which case display device **112** would be considered a peripheral device that can be coupled to portable electronic device **100** by way of a wired connection (such as a peripheral bus or cable) or a wireless connection such as IR, RF, Bluetooth or the like (among others).

[0040] In some cases, display device **112** presents graphical user interface (GUI) **116** on display device **112**. GUI **116** can provide an easy to use interface between a user of portable electronic device **100** and the operating system or application running thereon. Generally speaking, GUI **116** iconically represents programs, files and operational options with graphical images. The graphical images can include windows, fields, dialog boxes, menus, icons, buttons, cursors, scroll bars, etc. Such images can be arranged in predefined layouts, or can be created dynamically to serve the specific actions being taken by a user. During operation, the user can