in a web browser, powering the computer **10** or initiating a "sleep" mode, checking mail, firing a gun in a game, cutting or pasting data from a buffer, saving a file to a storage device, selecting a font, etc. The regions **456** can duplicate functions and buttons provided in an application program or provide new, different functions.

[**0194**] Similarly to regions **454**, the regions **456** an each be associated with haptic sensations; for example, a region **456** can provide a pulse sensation when it has been selected by the user, providing instant feedback that the function has been selected. For example, a haptic sensation such as a pulse can be output when the user "taps" a finger or object on a region **456**, **452**, or **454** to make a selection. Similar to physical analog buttons that provide a range of output based on how far the button is pushed, one or more regions **456** can be an analog-like button by providing a proportional, stepped, or analog output based on the pressure the user is exerting on the touchpad.

[**0195**] Furthermore, the same types of regions can be associated with similar-feeling haptic sensations. For example, each word-processor related region **456** can, when pointed to, cause a pulse of a particular strength, while each game-related region **456** can provide a pulse of different strength or a vibration. Furthermore, when the user moves the pointing object from one region **454** or **456** to another, a haptic sensation (such as a pulse) can be output on the touchpad **450** to signify that a region border has been crossed For example, a high frequency vibration which quickly decays to zero magnitude can be output when the pointing object enters a designated region. This can be valuable since it provides an indication of the borders to the regions **454** and **456** which the user would not otherwise know. This also allows region reconfiguration of size and/or location and allows the user to quickly learn the new layout haptically. Regions can also be associated with "enclosures" which define areas in a graphical environment and the different haptic sensations which are output when the cursor enters, exits, and is moved within the enclosure and the particular borders having such haptic associations.

[**0196**] In addition, the regions are preferably programmable in size and shape as well as in the function with which they are associated. Thus, the functions for regions **456** can change based on an active application program in the graphical environment and/or based on user preferences input to and/or stored on the computer **10**. Preferably, the size and location of each of the regions can be adjusted by the user or by an application program, and any or all of the regions can be completely removed if desired. Furthermore, the user is preferably able to assign particular haptic sensations to particular areas or types of areas based on types of functions associated with those areas, as desired. Different haptic sensations can be designed in a tool such as Immersion Studio™ available from Immersion Corp. of San Jose, Calif.

[**0197**] It should be noted that the regions **454** and **456** need not be physical regions of the touchpad **450**. That is, the entire touchpad surface need merely provide coordinates of user contact to the processor of the computer and software on the computer can designate where different regions are located. The computer can interpret the coordinates and, based on the location of the user contact, can interpret the touchpad input signal as a cursor control signal or a different type of signal, such as rate control, button function, etc. (e.g. a driver program can,provide this interpreting function if desired). A local touchpad microprocessor, if present, may alternatively interpret the function associated with the user contact location and report appropriate signal or data to the host processor (such as position coordinates or a button signal), thus keeping the host processor or software ignorant of the lower level processing. In other embodiments, the touchpad **450** can be physically designed to output different signals to the computer based on different regions physically marked on the touchpad surface that are contacted by the user; e.g. each region can be sensed by a different sensor or sensor array.

[**0198**] Any of those embodiments described herein which provide haptic feedback to the finger or object of the user that contacts the touchpad or touchscreen may be used with the regions of touchpad **450**.

[**0199**] While this invention has been described in terms of several preferred embodiments, it is contemplated that alterations, permutations, and equivalents thereof will become apparent to those skilled in the art upon a reading of the specification and study of the drawings. For example, many of the features described in one embodiment can be used interchangeably with other embodiments. Furthermore, certain terminology has been used for the purposes of descriptive clarity, and not to limit the present invention.

1-58. (cancelled).

59. An apparatus, comprising:

a substantially-planar contact surface;

a piezoelectric member including a metal diaphragm disposed between the substantially-planar contact surface and a ground; and

a spacer having a mass disposed between the substantially-planar contact surface and the ground and adjacent to the metal diaphragm, the mass of the spacer configured to cause the piezoelectric actuator to oscillate at a predetermined frequency to provide haptic feedback.

60. The apparatus of claim 59, wherein the haptic feedback is in response to an input associated with the substantially-planar contact surface.

61. The apparatus of claim 60, further comprising a processor in communication with the substantially-planar contact surface and the piezoelectric actuator.

62. The apparatus of claim 59, wherein the predetermined frequency is associated with a resonant frequency of the apparatus.

63. The apparatus of claim 59, wherein the predetermined frequency is associated with a modulation of a carrier frequency of the piezoelectric actuator.

64. The apparatus of claim 59, wherein the substantially-planar contact surface is coupled to the ground via a spring element.

65. The apparatus of claim 64, wherein the predetermined frequency is associated with a spring constant of the spring element.

66. The apparatus of claim 59, wherein the spacer is coupled to the ground via a spring element.

67. The apparatus of claim 66, wherein the predetermined frequency is associated with a spring constant of the spring element.