MULTI-FUNCTIONAL HAND-HELD DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to and claims the benefit of: (1) U.S. Provisional Patent Application No. 60/658,777, titled "Multi-Functional Hand-Held Device," filed Mar. 4, 2005 and (2) U.S. Provisional Patent Application No. 60/663,345, titled "Multi-Functional Hand-Held Device, "filed Mar. 16, 2005, each of which is hereby incorporated by reference.

[0002] This application is related to the following applications, which are all herein incorporated by reference: (1) U.S. patent application Ser. No. 10/188,182, title "Touch Pad for Handheld Device," filed on Jul. 1, 2002; (2) U.S. patent application Ser. No. 10/722,948, titled "Touch Pad for Handheld Device," filed on Nov. 25, 2003; (3) U.S. patent application Ser. No. 10/643,256, titled "Movable Touch Pad with Added Functionality," filed on Aug. 18, 2003; (4) U.S. patent application Ser. No. 10/654,108, titled "Ambidextrous Mouse," filed on Sep. 2, 2003; (5) U.S. patent application Ser. No. 10/840,862, titled "Multipoint Touch Screen," filed on May 6, 2004; (6) U.S. patent application Ser. No. 10/903,964, titled "Gestures for Touch Sensitive Input Devices," filed on Jul. 30, 2004; (7) U.S. patent application Ser. No. 11/057,050, titled "Display Actuator," filed on Feb. 11, 2005, (9) U.S. patent application Ser. No. 11/115,539, titled "Hand-Held Electronic Device with Multiple Touch Sensing Devices," filed Apr. 26, 2005.

BACKGROUND

[0003] There exist today many types of hand-held electronic devices, each of which utilizes some sort of user interface. The user interface typically includes and output device in the form of a display, such as a Liquid Crystal Display (LCD), and one or more input devices, which can be mechanically actuated (e.g. switches, buttons, keys, dials, joysticks, joy pads) or electrically activated (e.g., touch pads or touch screens). The display is typically configured to present visual information such as text and graphics, and the input devices are typically configured perform operations such as issuing commands, making selections or moving a cursor or selector in the electronic device. Each of these well known devices has considerations such as size and shape limitations, costs, functionality, complexity, etc. that must be taken into account when designing the hand-held electronic device. In most cases, the user interface is positioned on the front face (or front surface) of the hand-held device for easy viewing of the display and easy manipulation of the input devices.

[0004] **FIGS. 1A-1F** are diagrams of various hand-held electronic devices including for example a telephone **10**A (**FIG. 1A**), a PDA **10**B (**FIG. 1B**), a media player **10**C (**FIG. 1C**), a remote control **10**D (**FIG. 1D**), a camera **10**E (**FIG. 1E**), and a GPS module **10**F (**FIG. 1F**). In each of these devices **10**, a display **12**, which is secured inside the housing of the device **10** and which can be seen through an opening in the housing, is typically positioned in a first region of the electronic device **10**. Each of these devices also include one or more input devices **14**, which are typically positioned in a second region of the electronic device **10** next to the display **12**.

[0005] To elaborate, the telephone **10**A typically includes a display **12** such as a character or graphical display, and input devices **14** such as a number pad and in some cases a navigation pad. The PDA **10**B typically includes a display **12** such as a graphical display, and input devices **14** such as a stylus based resistive touch screen and buttons. The media player **10**C typically includes a display **12** such as a character or graphic display and input devices **14** such as buttons or wheels. The iPod® media player manufactured by Apple Computer, Inc. of Cupertino, Calif. is one example of a media player that includes both a display and input devices disposed next to the display. The remote control **10**D typically includes an input device **14** such as a keypad and may or may not have a character display **12**. The camera **10**E typically includes a display **12** such as a graphic display and input devices **14** such as buttons. The GPS module **10**F typically includes a display **12** such as graphic display and input devices **14** such as buttons, and in some cases a joy pad.

[0006] Recently, traditionally separate hand-held electronic devices have begun to be combined in limited ways. For example, the telephone **10**A has been combined with the PDA **10**B. One problem that has been encountered is in the way inputs are made into the device. Each of these devices has a particular set of input mechanisms for providing inputs into the device. Some of these input mechanisms are generic to all the devices (e.g., power button) while others are not. The ones that are not generic are typically dedicated to a particular functionality of the device. By way of example, PDAs typically include four dedicated buttons while cell phones typically include a numeric keypad and at least two dedicated buttons.

[0007] Thus it is a challenge to design a merged device with limited input devices without adversely affecting the dedicated inputs for each device. As will be appreciated, it is preferable, not to overload the hand-held devices with a large number of input mechanisms as this tends to confuse the user and take up valuable space, i.e., "real estate." In the case of hand-held devices, space is at a premium because of their small size. At some point there is not enough space on the device to house all the necessary buttons and switches, etc. This is especially true when considering that all these devices need a display that typically takes up a large amount of space on its own. To increase the number of input devices beyond some level, designers would have to decrease the size of the display. However, this will often leave a negative impression on the user because the user typically desires the largest display possible. Alternatively, to accommodate more input devices designers may opt to increase the size of the device. This, too, will often leave a negative impression on a user because it would make one-handed operations difficult, and at some point, the size of the device becomes so large that it is no longer considered a hand-held device.

[0008] Therefore what is needed in the art is an improved user interface that works for multi-functional hand-held devices.

SUMMARY

[0009] Disclosed herein is a multi-functional hand-held device capable of configuring user inputs based on how the device is to be used. Preferable, the multi-functional hand-held device has at most only a few physical buttons, keys, or