

DETAILED DESCRIPTION OF THE
INVENTION

[0020] With reference to **FIG. 1**, an embodiment of the invention provides a form factor for a portable device **101**, which may be a mobile telephone, personal digital assistant (PDA), portable computer device, browsing device, electronic book reader, or any combination thereof. Portable device **101** may include a display screen **103** and linear input devices **105**, **107**, and **109**. Each linear input device may be a touch-sensitive membrane, a linear roller, a mechanical slider, optical sensor, or any other linear input device that can determine a linear position of input. For purposes of illustration only, portable device **101** is described with linear input devices **105**, **107**, and **109** being touch sensitive strips.

[0021] Each linear input device may be located on differing sides of display screen **103**, with a fourth side remaining vacant. Linear input device **105** may be located on a left side of display screen **103**, linear input device **107** may be located below display screen **103**, and linear input device **109** may be located on a right side of display screen **103**. In one embodiment, linear input devices **105** and **107** may be substantially perpendicular to each other, and linear input devices **107** and **109** may be substantially perpendicular to each other. However, other configurations are also possible. Optionally, in order to provide tactile feedback to a user as the user manipulates each input device and/or selects displayed soft buttons (described below), each linear input device may be mounted on dome switches.

[0022] For purposes of illustration only, portable device **101** is shown and described in a horizontal orientation. However, portable device **101** may be configured for use in either a horizontal or vertical orientation, depending on an application program in use, data displayed on display screen **103**, user preferences, etc.

[0023] A first linear input device, for example linear input device **105**, may be used for zooming in and out of content displayed on display screen **103**. As a user moves her hand in one direction along linear input device **105**, the portable device may zoom in, or enlarge, content displayed on the display screen **103**. As the user moves her hand in the other direction along linear input device **105**, the portable device may zoom out, or reduce, content displayed on the display screen **103**. Optionally, the direction of input for zooming in/out of content may be user-configurable via a preferences screen (not shown) displayable on portable device **101**, such that either direction may be used for zooming in/out. Alternatively, the direction of input for zooming in/out may be factory preset. In addition to sliding her finger along linear input device **105**, the user may simply touch linear input device **105** at an arbitrary position to quickly zoom in or out to a zoom level corresponding to the touched position.

[0024] In one embodiment of the invention, the two linear input devices **107** and **109** may be used for manipulating crosshairs to identify a location within an image displayed on display screen **103**. That is, linear input device **107** may be used to manipulate a vertical crosshair for identifying a horizontal position on the display screen, and linear input device **109** may be used to manipulate a horizontal crosshair for identifying a vertical position on the display screen. The combination of the horizontal and vertical crosshairs may identify a point on the display screen. For example, when a user touches linear input device **107** at location **112**, vertical

line **113** may be displayed to identify the corresponding horizontal position on display screen **103**. Similarly, when the user touches linear input device **109** at location **110**, horizontal line **111** may be displayed to identify the corresponding vertical position on display screen **103**. Vertical line **113** and horizontal line **111** together form crosshairs that identify a point at intersection **115** on display screen **103**. In alternative embodiments, lines might not be displayed on display screen **103** when a user identifies a horizontal and/or vertical position, or the crosshairs might not extend the length and/or width of the display screen.

[0025] With further reference to **FIG. 2**, portable device **101** may also include a planar input device **203** located on the opposite face of the portable device as display screen **103**. This could include any input device that can receive two-dimensional input, regardless of whether the input device is actually a flat plane. For instance, a planar input device may be mounted in a curved or spherical position, yet still receive two-dimensional input. Planar input device **203** may be a touchpad that senses a location of input based on a user touching it and/or moving a finger (or stylus) on it. Other known planar input devices may also be used. For purposes of illustration only, portable device **101** is described with planar input device **203** being a touchpad.

[0026] In the embodiment of the invention where linear input devices **107** and **109** are used for identifying a horizontal line, a vertical line, and/or a point on display screen **103**, touchpad **203** may be used for navigation of an image (e.g., a map, picture, text document, web page, etc.) displayed on display screen **103**. That is, as a user touches touchpad **203**, the portable device may be configured to respond as if the user is "gripping" the presently displayed image, and horizontally and vertically scrolls the image corresponding to the user's horizontal and vertical movement on touchpad **203**, similar to known click and drag techniques used with computer mice and conventional computer systems. An example of such a technique is the Hand Tool in Adobe Acrobat® Reader, available from Adobe Systems Incorporated of San Jose, Calif. Essentially, the user "touches" the displayed image from behind and moves it with a finger.

[0027] Planar input device **203** may also be used for alternative forms of input, depending on the current application in use. For example, when an imagery application is being used, planar input device **203** may be used by a user to "draw" on display screen **103**. Input received via planar input device **203** may be displayed in mirror image on display screen **103** so that it appears as if the user is touching planar input device **203** at a position directly behind display screen **103**. For example, intersection **115** on display screen **103** may correspond to input received at point **215** on planar input device **203**. As should be apparent to one of skill in the art, portable device **101** may be configured to receive straight input from planar input device **203** without using a mirror image algorithm, and portable device **101** may use input received from planar input device **203** for any purposes and in any manner known in the art.

[0028] Portable device **101** may also include a speaker **205** and microphone **207** for receiving and generating audio signals, such as for use with mobile telephone capabilities. Speaker **205** may be located inside portable device **101** behind planar input device **203**, and the audio output may be