

(e.g., search result target pages, documents, images) to highlight search hits in various portions or logical sections of each resource. In this manner, the issues of zooming and spatial context are both separated and preserved to some extent. A zoomed out resource may be displayed to maximize the amount of the resource that can be viewed without scrolling, while providing hit annotations associated with each logical section. Thereafter, the logical section can be selected for viewing in a zoomed in, reformatted display.

[0033] FIG. 1 depicts three parts of a Web page displayed on a handheld device at different horizontal scroll points in an embodiment of the present invention. The composite display 100 is configured to illustrate how a Web page, which is typically designed for display on a desktop or laptop display screen, may not adequately fit within the dimensions of a handheld device display screen 102. In fact, as can be seen on the depiction of three handheld device displays arranged side by side, the Web page visualized on FIG. 1 horizontally straddles the combined width of three displays.

[0034] Within the Web page illustrated in the composite drawing 100, a logical section 104 and a logical section 110 are displayed. The logical section 104 includes an image link displaying the word "Slate," a search applet, and an advertisement link for MICROSOFT WINDOWS XP software. The logical section 110 includes an article entitled "a fine whine," by Gregg Easterbrook. In a typical Web page layout, logical sections are designated by a table layout defined in the HTML data received by the browser, however, other means of designating logical sections in a Web page, such as by using paragraphs, HTML forms, HTML frames, etc. are contemplated within the scope of the present invention.

[0035] In the illustration, a user must employ horizontal scrolling, using, for example, the horizontal scroll bar 106 to read a single line of text in the article of the logical section 110. By scrolling back and forth using the horizontal scroll bar 106, the user is able to read each line of text, although this interface is inconvenient and makes reading such articles difficult. One contributing factor to this inconvenience is the incompatibility between the initial design of the Web page (i.e., for a desktop or laptop display screen) and the handheld display screen dimensions and aspect ratio. Furthermore, the inclusion of the logical section 104 in the display, when the user is interested only in the article in logical section 110, further diminishes the amount of real estate available for displaying the article.

[0036] However, in the embodiment of the present invention shown in FIG. 1, a special "SmartView" ("S<sub>v</sub>") control 108 allows the user to switch into SmartView mode for viewing the Web page on the handheld device. In another embodiment, the user switches into SmartView mode using a tap-and-hold menu by selecting the "SmartView" option.

[0037] FIG. 2 depicts a logical section of the Web page partition reformatted to be compatible with the display of a handheld device in an embodiment of the present invention. The handheld device display 200 displays the logical section of the Web page from FIG. 1 that contained the article "a fine whine." However, the display 200 has omitted the logical section containing the image title "Slate," the search applet, and the advertisement. Furthermore, the logical section including the article has been reformatted to fit within the horizontal dimension (or axis) of the display 200. For

example, the text of the article now wraps to new lines so that no horizontal scrolling is required. It is believed that vertical scrolling (i.e., scrolling along a vertical axis) is user-friendlier and is therefore preferable over horizontal scrolling. In this embodiment, the vertical axis is the "preferred axis" of scrolling.

[0038] However, the vertical axis need not always be the preferred axis of scrolling. In another embodiment, vertical scrolling may not be preferable. For example, if a logical section includes a panoramic image of a beach that span multiple horizontal screen areas (i.e., a short, wide photographic image), it may be preferable to size the image to fit in the full vertical dimension of the screen while requiring horizontal scrolling to view the full width of the image. In this embodiment, the horizontal axis is the preferred axis of scrolling.

[0039] In one embodiment, the user switches back to the partition map by pressing the "back" button on the browser. In another embodiment, a tap-and-hold menu can be opened that contains an option to return to the partition map. In a further embodiment, a special button is present that allows the user to jump back to the partition map. In yet another embodiment, the partition map is itself a graphical pop-up menu that the user can open, e.g., using a tap-and-hold activity or standard pull-down menus, and where logical sections can be chosen in a manner similar to textual options from a textual pop-up menu.

[0040] FIG. 3 depicts a Web page partition map in an embodiment of the present invention. Whereas FIG. 1 displayed a Web page in its originally designed dimensions and aspect ratio (i.e., an example of "standard view" mode) and FIG. 2 illustrates a single logical section of the Web page reformatted to fit within the dimensions and aspect ratio of the handheld device (i.e., an example of "detailed view" mode), FIG. 3 illustrates a zoomed out version 302 of the entire Web page in the handheld device display 300 that fits the width of the device and may require vertical scrolling (i.e., an example of SmartView mode). In another embodiment, the scaling of the page shown in FIG. 3 is such that it fits the display both horizontally and vertically. Multiple logical sections are displayed in the zoomed out version 302 of the Web page, as designated by partition lines, such as line 318. The exemplary logical sections 302, 304, 306, 308, 310, 312, and 314 are all designated by partition lines separating them from other logical sections.

[0041] The display 300 illustrates a Web page partition map that allows a user to select an individual logical section for viewing in the format shown in FIG. 2. A user may select a logical partition by a double tap of a stylus, a tap-and-hold operation using the stylus or some other pointing apparatus, or another selection means. Responsive to the selection, the browser displays the logical partition in a reformatted display as shown in FIG. 2.

[0042] The "detailed view" and "SmartView" modes provide important context assistance and control for viewing resources on an incompatible display, such as a handheld display. These concepts can be further applied to resource searching functions, including without limitation a Web search, an Internet search, a documents search, or a file search. A handheld device, for example, does not generally provide a large enough display space to quickly and comfortably display a search tool interface for a user. Search