

navigation interface utilizes a magnification (zoom) feature along with a hierarchical protocol for the display of active map items representing different information sources or programs. In this respect, the navigation interface displays only a limited number of active map items at an initial magnification level and introduces additional active map items as the magnification changes. The interactive navigation interface may include a number of additional features designed to enhance the display of useful information to the user and to make it easier for the user to view and locate appropriate content.

[0011] In accordance with another aspect of the present invention, the navigation interface system is configured in a layered architecture. In this manner, the system can be deployed in a centralized mode using remote servers. Various presentation layers associated with different presentation devices are utilized to obtain generic display characteristic data from the remote servers. In turn, the respective presentation layers act as an interface between the generic data and data formatted for compatibility with the presentation devices. Consequently, the system need not employ customized server applications for the different presentation devices.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] A more complete understanding of the present invention may be derived by referring to the detailed description and claims when considered in conjunction with the following Figures, wherein like reference numbers refer to similar elements throughout the Figures.

[0013] FIG. 1 is an exemplary navigation interface display screen at a relatively low magnification level;

[0014] FIG. 2 is the navigation interface display screen of FIG. 1 at a relatively intermediate magnification level;

[0015] FIG. 3 is the navigation interface display screen of FIG. 1 at a relatively high magnification level;

[0016] FIG. 4 is a schematic representation of a navigation interface display;

[0017] FIG. 5 is a schematic representation of a navigation interface display system in which the techniques of the present invention may be implemented;

[0018] FIG. 6 is a schematic representation of an exemplary map server architecture that may be utilized in the system shown in FIG. 5;

[0019] FIG. 7 is a schematic representation of a personal computer presentation layer;

[0020] FIG. 8 is a schematic representation of a cellular telephone presentation layer;

[0021] FIG. 9 is a schematic representation of a wireless personal digital assistant presentation layer;

[0022] FIG. 10 is a schematic representation of a set-top presentation layer;

[0023] FIG. 11 is a schematic representation of a time-shifting element in a first state;

[0024] FIG. 12 is a schematic representation of a time-shifting element in a second state;

[0025] FIG. 13 is a flow diagram of a navigation map operation process according to one practical embodiment of the present invention;

[0026] FIG. 14 is a flow diagram of a user interaction process;

[0027] FIG. 15 is a flow diagram of a zoom process according to one practical embodiment of the present invention;

[0028] FIG. 16 is a flow diagram of a zoom request process;

[0029] FIG. 17 is a flow diagram of a pan request process;

[0030] FIG. 18 is a flow diagram of an on-map selection process;

[0031] FIG. 19 is a flow diagram of a hovering process;

[0032] FIG. 20 is a flow diagram of an activation request process;

[0033] FIG. 21 is a flow diagram of a time shifting process;

[0034] FIG. 22 is a flow diagram of a directional key request process;

[0035] FIG. 23 is a flow diagram of a change selection process;

[0036] FIG. 24 is a flow diagram of a navigation map presentation process according to one practical embodiment of the present invention;

[0037] FIG. 25 is a flow diagram of a map system request process;

[0038] FIG. 26 illustrates a system block diagram of one embodiment of a network system in which the techniques of the present invention may be used;

[0039] FIG. 27 illustrates one embodiment of a computer system suitable for use in the network system shown in FIG. 26;

[0040] FIG. 28 illustrates one embodiment of a layout of a graphical user interface provided in accordance with the principles of the present invention;

[0041] FIG. 29 illustrates one example of the graphical user interface depicted in FIG. 28;

[0042] FIG. 30 illustrates one embodiment of a navigator bar used in the graphical user interface of the present invention; and

[0043] FIG. 31 illustrates an alternate embodiment of the architecture of a system that implements the principles of the present invention.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0044] The present invention may be described herein in terms of functional block components and various processing steps. It should be appreciated that such functional blocks may be realized by any number of hardware components configured to perform the specified functions. For example, the present invention may employ various integrated circuit components, e.g., memory elements, digital signal processing elements, logic elements, look-up tables, and the like,