

by or sourced from a layer selection action completed by a user. In such embodiments a further control component may be displayed on the MLD involved. Such a command component can be employed by a user to select preferably a destination layer for a particular selected display element. Furthermore, in some instances a single control component may also be used to generate both display element and display layer selection identifiers. In instances where a single 2-layer MLD is employed in conjunction with the present invention, the use of display layer selection identifiers need not be considered to be essential. In such instances the selection of a display element of a window will result in the element being transferred to the alternate layer of the single display.

[0105] Once a display element selection identifier and associated display layer selection identifier have been received by the software employed in conjunction with the present invention, a transfer of the identified element may be made to the identified display layer of the MLD involved. The control components employed as discussed above may allow a user to identify a particular display element or window to transfer to a particular display layer, and subsequently issue commands to execute the transfer of the element identified to the layer identified.

[0106] Both identifiers for the display element and destination display layer may be supplied to graphics software and drivers employed in conjunction with the MLD system. These components may normally manage the display of elements in the layers of the MLD system and on receipt of appropriate commands issued in conjunction with the present invention, may execute the transfer between layers of the selected display element.

[0107] The present invention may provide many potential advantages over the prior art.

[0108] The present invention may be adapted to provide a user interface facility which will allow a user of the MLD unit and associated driver device (such as a computer system), to control the layers on which specific display elements are presented and/or the visual properties of those display elements.

[0109] The present invention may allow a user to nest, organise and in general terms present specific components of display content depending on their own preferences and preferably in the best possible configuration for data analysis or information absorption purposes.

[0110] The present invention may also be implemented through software based facilities which can provide or employ recognisable command and control based components already familiar to users of computer systems which employ graphical user interfaces.

BRIEF DESCRIPTION OF DRAWINGS

[0111] Further aspects of the present invention will become apparent from the following description which is given by way of example only and with reference to the accompanying drawings in which:

[0112] FIGS. 1a & 1b is a block schematic diagram of the display layers of a single multi-layer display device prior to and after the transfer of a display element between layers of the display using the present invention,

[0113] FIG. 2 is a flow diagram of information steps executed by software employed in conjunction with a preferred embodiment of the present invention,

[0114] FIGS. 3A & 3B are schematic diagrams of a screen display in a multi-layer display system incorporating the user interface of the present invention, and

[0115] FIG. 4 is a block diagram of apparatus used in conjunction with the flow diagram of FIG. 2.

BEST MODES FOR CARRYING OUT THE INVENTION

Adjustment of Visual Properties and/or Location of Display Elements to Improve Viewing Experience

[0116] FIGS. 1a & 1b illustrate a block schematic diagram of the display layers of a single multi-layer display device prior to and after the transfer of a display element between display layers of the display using the present invention. Each display layer may comprise a LCD display layer which is selectively transparent with the ability to display images thereon.

[0117] In the instance shown, a series of display layers 1a, 1b, 1c are arranged and displaced in a line with respect to one another, however, in use, each of the layers are aligned, one directly in front of the next to form a stacked or sandwiched construction. A single display element, shown in this embodiment as a graphical user interface window 2 is presented on the front layer 1a in the initial situation shown with respect to FIG. 1a. Conversely, after a transfer made in conjunction with the present invention, the same display window has been transferred to the third rear display screen 1c as shown in FIG. 1b. This window 2 has either been repositioned after being selected by a user or observer of the display or automatically selected and moved, as has the display layer 1c on which the window involved is to be displayed.

[0118] In a first preferred embodiment, the transfer of display elements between layers and within layers is substantially automatically carried out with no or minimal user input. In this way, the MLD seamlessly appears to a user to act much like an SLD but with an improved visual experience, for example, improved depth of field, improved contrast of different display elements due to the use of multiple display layers which are at different focal lengths from a users eye.

[0119] This automatic control of the display of display elements on a display system including at least one MLD firstly requires the detection or reception of display elements for display, for example, from the video output of a computer system. Visual properties, such as brightness, contrast and colour of each display element are determined and the display elements are then allocated to appropriate display layers which are known to produce the best viewing experience for a user. For example, it may be best to have bright images/windows presented behind or beneath dark images/windows. Thus, the control system may intuitively allocate display elements to selected display layers in such a way that the ability of the user to view the combined display elements is maximised in a helpful and efficient manner.

[0120] Optionally, each user of the multi-layer display system could have a stored set of viewing preferences in