

## METHOD AND SYSTEM FOR ASSIGNING SCREEN DESIGNATION CODES

### RELATED APPLICATIONS

**[0001]** The present application is a continuation of U.S. patent application Ser. No. 10/049,271, filed Feb. 6, 2002, naming Gabriel D. Engel and Pita Witehira as inventors, assigned to the assignee of the present invention, and having attorney docket number PURE-P012, which claims the benefit of International Patent Application Number PCT/NZ00/00162, filed Aug. 18, 2000, which claims the benefit of New Zealand Patent Number 337333, filed Aug. 19, 1999. Each of these applications is incorporated herein by reference in their entirety and for all purposes.

### BACKGROUND OF THE INVENTION

**[0002]** Reference throughout this specification shall be made to use of the present invention in relation to the display of data in spreadsheets. However, it should be appreciated that aspects of the present invention can be used in relation to displaying data presented in other formats, perhaps graphically or in some other format for displaying in particular relational data.

**[0003]** There are a number of spreadsheet programs, one of the more prolific being Microsoft Excel. These spreadsheet programs have a number of cells in rows and columns into which data can be input. Often the cells within the spreadsheet are related to each other.

**[0004]** For example, there may be a cell that displays a number which is calculated from the numbers represented in other cells in the spreadsheet. For instance, this particular cell may represent the total of a column of numbers. Any change to the numbers in that column will also be reflected in that cell representing the total.

**[0005]** This system works well when all of the data required to be reviewed can fit onto one computer screen display. However, often the user of the software creates spreadsheets which have more data entered into them than can be shown on one screen display at a time.

**[0006]** To accommodate this need, spreadsheet software often includes a facility akin to an old-fashioned system of having separate sheets of paper or cards except this is displayed on the computer, accessed by a virtual tab. For example, the screen may show one set of data. By clicking on a tab, a second set of data is then displayed on the screen with the first set of data being hidden by the second.

**[0007]** Unfortunately, this is still unsatisfactory. This is because the screen does not show all of the data that the user may wish to see. While the user can choose which spreadsheet to view, the user cannot see the effect that changing a cell on one spreadsheet has on another cell on the other spreadsheet.

**[0008]** Another problem is that it can take some time for a user to locate a particular cell. Not only is this another attempt to address the situation has been the ability to include multiple files on a screen which may be cross-linked in terms of having relational data.

**[0009]** Thus, it is possible for the user to alter data on one part of the screen in relation to one file and see its effect on another part of the screen in relation to another file.

**[0010]** Unfortunately, these attempts are still unsatisfactory. One problem with this system is that although there may be inter-relational data, there is no physical feel of the relationship between the cells.

**[0011]** For example, on each spreadsheet there may be cells relating to similar data in the same columns and rows for each spreadsheet. However, positioning the spreadsheets beside each other on the screen does not provide an intuitive feel of the relationship of the cells to each other.

**[0012]** Another problem that occurs is that often the single cell has two lots of data assigned to it. One data element is the actual number and the other data element is the formula or relationship equation which generates that number. In traditional spreadsheet programs, the formula is usually only displayed when that particular cell is selected.

**[0013]** Therefore, the formula for a number of related cells cannot be displayed at the same time. This is understandably frustrating, particularly when a person is desirous of quickly viewing and assessing the relationship between a number of cells to each other.

**[0014]** It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

**[0015]** Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

### SUMMARY OF THE INVENTION

**[0016]** According to one aspect of the present invention there is provided a method for creating a visual effect in the display of software wherein the software is for the manipulation of data, the method characterized by the steps of a) assigning a particular screen designation code to a first group of data, and b) assigning other screen designation codes to second and other groups of data as desired, wherein the screen designation code determines which physical screen the group of data is displayed in a multi-level screen display.

**[0017]** As stated previously, the software in preferred embodiments is spreadsheet software, although it should be appreciated that the principles of the present invention can apply to other types of software, particularly those which relate to the display of data, such as databases, graphical analysis and so forth.

**[0018]** The term second and other group of data may cover such items as formula, relational information, highlights, error messages, hints and so forth which can be associated with the first group of data.

**[0019]** The screen designation code is merely a code that identifies which physical screen the image or software component is displayed upon.

**[0020]** The inventors of the present invention also invented a multi-level screen display and this is described in detail in PCT Application Nos. PCT/NZ98/00098 and PCT/NZ99/00021.

**[0021]** This is a device which is created by combining multiple layers of selectively transparent screens. Each screen is capable of showing an image. In preferred embodiments, the screen layers are liquid crystal displays. Preferably the screens are aligned parallel to each other with a preset distance between them.

**[0022]** With this invention, images displayed on the screen furthest from the view (background screen), will appear at some depth behind the images displayed on the screen closest to the viewer (foreground screen). The transparent portions on the foreground screen will allow viewers to see images displayed on the background screen.