IMPROVEMENTS IN ELECTRONIC DIRECTORIES

This invention relates to a method of organizing electronic directories in order to facilitate faster searches by users and to give prominence to subscribers.

Directories store names, addresses and contact information for individuals and organisations and provide search methods through one or several indexes. Paid advertisements are usually placed within the directories to earn revenue for the compilation of the directory. An electronic directory is one which stores information in an electronic form, usually on hard-disk or CD-ROM, and displays this information visually through a display device.

Many directories which have been available in hard copy are now available in electronic format. For example, telephone directories and real estate sales directories are now available electronically and can be accessed through the Internet. However, the search engines associated with these directories perform essentially the same simple searching routine that the user employs with the hard copy. It is an object of the present invention to provide a more sophisticated search engine which at the same time remains user-friendly.

Trade directories have also been produced electronically, but they have not generally included display advertising material and have not accorded prominence to paying advertisers and subscribers to the directory. It is a further object of the present invention to lead users who are looking for a particular item to the display advertisement of a supplier of those items who is a subscriber to the directory.

According to the present invention, an electronic directory of information comprises a database of more than one index, a search engine for interrogating said indices, and a graphic user interface for displaying information on a screen.

The invention is described in greater detail below by way of example only, with

reference to the accompanying drawings in which;

Figure 1 is a flow chart of the method used to lead a user towards an advertisement for the item sought

Figure 2 is a diagram showing the interaction of the three super indexes of the exemplary directory, vis. products/services, brands and company names

Figure 3 shows cross-referencing between items within the products/services index

Figure 4 shows the first screen which a searcher calls up, displaying one of the super indexes

Figure 5 shows the next screen displaying an advertisers list box and a general listings box

Figure 6 shows the next screen displaying a list of related classifications

Figure 7 shows a further screen displaying a list box surrounded with teaser advertisements

Figure 8 shows a screen displaying an expanded advertisement

Figure 9 shows a screen displaying the text of a company profile

Figures 10, 11, 12, 13 and 14 show sequences of screens generated during typical searches

Following is an account of the screens which would appear during a typical search. An introductory display appears first (not shown) which allows the user to choose to begin the search either by the type of product or service, a brand name or a name of a company or an individual. In all cases, a super index list is displayed (Figure 4), which allows the

user to select a particular classification, brand or company.

If a product or service is selected, a display with a list of companies relevant to that product or service classification is generated (Figure 5). A second list is also generated to show the companies which advertise within the directory. If a group is selected, a list of sub-classifications and primary classifications related to the group selected would be generated and displayed on the item buttons. If the classification selected is a primary classification, then a list of sub-classifications related to that classification is generated and displayed on the *item* buttons.

If the classification selected is a sub-classification, then a randomly determined primary classification related to that sub-classification is deemed selected, and a list of sub-classifications of that primary classification would be generated and displayed on the *item* buttons with the sub-classification originally selected highlighted. Navigation buttons are provided in the interface to allow the listing of more sub-classifications in the event that the number of sub-classifications exceeds the number of *item* buttons available.

If an *item* button is selected and the item is a primary classification, then a new list of sub-classifications related to that primary classification would be generated and displayed, and the general list and advertisers list would be changed to reflect the companies related to the new primary classification selected.

If an advertiser is selected from the list, the advertisement is then shown. If a non-advertiser is selected, then the non-advertisers display is shown. The user may further refine the search by selecting one of the *item* buttons. A new list of companies and advertisers, is then generated and shown. A button is also provided to toggle the display between showing the different types of *item* buttons.

If a brand classification is selected from the super-index, the screen of Figure 5 is shown, with a list of brands relevant to the classification selected being displayed on the *item* buttons. The particular brand selected is then highlighted and the list of companies generated is only of companies relevant to the brand selected. Buttons are also provided to toggle the

display between *item* buttons showing the brands and *item* buttons showing sub-classifications.

If a non-advertiser is selected from the list of companies shown in Figure 5, a display is generated showing the information relevant to the non-advertiser, as well as teaser advertisements for subscriber companies which are relevant to the classification previously selected (Figure 7). Selecting any of the teaser advertisements causes the full advertisement of the subscriber company to be displayed (Figure 8).

If a company is selected from the companies super index, then the display shown in Figure 6 is generated. A list of classifications relevant to the company is displayed on the *item* buttons. Navigation buttons are also available to change the list if the number of buttons in the display is insufficient to display all the classifications. Selecting any button causes a non-advertiser display to be generated (Figure 7) if the company is a non-advertiser, or the full advertisement of the company (Figure 8) if it is an advertiser.

A full screen, full colour advertisement (Figure 8) is displayed when the user accesses an advertisement. If additional information about the advertiser is required, by selecting the *profile* button a text box containing text-based information about the advertiser is displayed (Figure 9). This text box is scrollable to accommodate more information. If the advertiser has more than one full-screen advertisement, the *More* button can be operated to allow the user to view the additional advertisements.

Following is an account of the architecture which underlies the programming of the electronic directory of the subject invention. Figure 2 illustrates the three super indices of products/services, brands and company names from which all displays are generated. The product/services index is the most complex and is organised in a hierarchy of group, primary and sub-classifications. It also contains aliases ie. alternative names for the same item.

Classification of the products/services index is organised according to a hierarchy, with each level being a more specific subset of the higher level. For example, in Figure 3, the classification of pumps has 3 subsets including air pumps, sewerage pumps and

centrifugal pumps. A set of classifications has been selected as primary classifications. Sub-sets of primary classifications are called sub-classifications. Groups are classifications which have primary classifications and sub-classifications as sub-sets eg. the group classification *Flow Control Equipment* has the primary classifications *Pumps* and *Valves* as sub-sets as shown in Figure 3.

Classifications can have more than one super-set classification ie. they can be sub-sets of more than one classification eg. *Aluminium Products* and *Door Frames* are both super-sets of *Aluminium Door Frames* as shown in Figure 3. Classifications can also have more than one sub-set classification eg. *Aluminium Products* have *Aluminium Door Frames, Aluminium Grilles, etc.* as sub-set classifications, also shown in Figure 3.

Items which have alternative names have *Aliases*. Whenever an *Alias* is selected instead of a classification in the products/services super index, the proper classification for the aliases is automatically selected eg. If *Motor Cars* is a classification, aliases for *Motor Cars* include *Automobiles, Vehicles* and *Cars*. If *Vehicle* is selected, the classification *Motor Cars* would then be deemed selected.

Companies which are associated with a particular classification are also associated with all its super-set classifications eg. if a company is associated with *Air Pumps*, it will also be associated with *Pumps*, and likewise *Flow Control Equipment*. Every brand is associated with at least one primary classification. Companies are associated with brands-primary classifications relationships eg. the brand *Abex - Pumps* is associated with companies which sell valves and the brand name *Abex* is associated with the item *Valves*. As both sub-classifications and brands are related to primary classifications, this method allows users to refine their search from a primary classification through either a sub-classification or brand name.

The series of screens displayed in Figures 10, 11, 12, 13 and 14 serve to illustrate the possible paths through the flow chart of Figure 1. The user can commence a search with any one of the three super indexes displayed. In Figure 10, the user selects the products/services super-index, and then selects a classification eg. *Pumps*. If he then selects

a non-advertiser from the general list box, the display screen with the teaser advertisements appears, which will lead him then to a full display advertisement of a paying subscriber. If at the earlier screen, he had chosen a subscriber from the advertiser listing, then the full screen advertisement for that advertiser would have been displayed. Similarly, Figures 11, 12 and 13 illustrate that it does not matter where the searcher starts the search, nor what path he takes through the various screens, he will always end up at the full screen advertisement of a subscriber.

This is a particularly novel feature of the directory of the subject invention viz. the discrimination between companies in the companies index which are subscribers to the directory and those who are not. At any point in the search in which the user selects a subscribing company advertiser, the user will be lead directly to the full display advertisement and subsequently the profile text box of that company. However, if the user selects a non-subscribing company, it will be displayed on the screen shown in Figure 7 which is a list box surrounded by advertisements for the same item or brand supplied by subscriber companies. Accordingly, the user will be lead by the "teaser" advertisements to a full advertising display of the subscribing company as shown in Figure 8. By this means, the directory gives prominence to paying subscribers over non-subscribers.

In addition to this feature, the electronic directory of the subject invention incorporates a number of features which render the directory extremely user-friendly. The graphic user interface provides large visual displays for indices and screens of uniform layout to promote familiarity with the interface. Navigation tools are provided to allow the user to page or scroll through information and uniform sets of operable buttons are provided to select items and proceed through the search. For example, the five buttons at the bottom of the display in Figures 4 to 8 are always presented in the same manner, with the appropriate functions appearing on the screen presented.

Other user-friendly features include:-

a) a large, multi-column, alphabetical list box for the super-indices to facilitate quick visual searches by users (Figure 4)

b) several navigation controls to assist users to locate items on the super index list box (Figure 4). The controls include:-

i) standard scroll bar which allows the user to scroll through the entire index.

ii) navigation buttons which allow the user to page through the entire index.

iii) quick access buttons that allow the user to immediately access parts of the index alphabetically.

iv) a search string feature which allows the user to locate an item on the super index by keying in a partial or full textword of the item.

c) means for the user to further refine the search through a visual display by selecting buttons (Figure 5).

d) using buttons instead of a list box with scroll-bars to implement a list control. A fixed set of buttons with navigation controls is used to implement the list control. Each *item* button represents a single item (classification or brand). A set of *navigation* buttons eg. Figure 5 allows the user to page through the different items. In this manner, the number of items that may be displayed is not limited to the number of *item* buttons provided. Using buttons is more advantageous than a standard list box since:-

i) it will be immediately obvious to users that selections can be made on buttons rather than from list boxes.

ii) buttons being larger and more eye-catching attract the attention of the user more easily.

iii) buttons tend to be less threatening, and also they appeal to the human button pressing urge of "button pressing" ie. the human curiosity of finding out what will happen if the button is pressed.

e) the same display (Figure 4 and Figure 5) is used for multiple functions so that the user does not need to relearn the interface each time a different function is used eg. the screen of Figure 1 is used for products/services super index, brands super index

and company super index, and that of Figure 2 is used for refining searches through sub-classification or brands.

f) means so that the user can refine a search either through brands or sub-classification of a particular classification (Figure 5). This ability to refine searches allows more accurate information to be generated and displayed to the user. Also it provides the user with flexibility to refine the search.

g) allowing users to begin the search through more than one indexing method (Figure 4). The following types of indexes may be used:-

i) The product/services super index consist of an alphabetical list of all groups, primary classifications, sub-classifications and aliases in the directory.

ii) The brand super index consists of a comprehensive list of all brands of products listed alphabetically. Where a particular brand is related to several classifications of products, it will be displayed multiple times with the particular classification as a qualifier eg. if the brand *Abex* exists for both the classifications *pumps* and *valves*, the brands super index will include an item with the brand *Abex* with *Pumps* as qualifier eg. *Abex - Pumps*, and the brand *Abex* with *Valves* as qualifier eg. *Abex - Valves*. Both these items will cause different lists to be generated for the display in Figure 5.

iii) The company super index includes the names of all companies in the Directory, listed alphabetically.

The following features add value for those companies which are subscribing advertisers, and give prominence to them over non-subscribers;

a) the immediate display of a full screen advertisement should the user select an item in the advertiser list box (Figure 5).

b) the display of general listing information with surrounding relevant teaser advertisements (Figure 7). This means that the user will always be exposed to

advertisements whenever information the user seeks is displayed.

c) general listing (non-advertiser) information will only be displayed after the user has indicated the specific classification of interest; thus teaser advertisements of interest can be generated and shown.

d) the attraction of users towards the advertisers through
   (i) use of bigger letters in the advertisers list box
   (ii) use of the teaser advertisements (Figure 7)

e) providing a full screen, full colour advertisement on the screen to attract the attention of the user.

f) providing a text-based company profile screen which provides additional information that may not be cost-effective to include within the full-screen advertisement, eg. a full list of brands carried, names and extension numbers of personnel in the company, history and strategic goals of the company, etc.

Those skilled in the development of software and in particular graphic user interfaces, will appreciate that the detail of the above functions and features can be varied considerably without departing from the unique "look and feel" of the screen displays of the subject electronic directory. All such variations and modifications which have the same "look and feel" fall within the scope of the present invention.

CLAIMS:-

1. An electronic directory of information comprising a database of more than one index, a search engine for interrogating said indices, and a graphic user interface for displaying said information on a screen.

2. The directory of claim 1 in which the database contains three indices relating products/services, brand names and company names to provide trade information.

3. The directory of claim 2 in which the products/services index is arranged in group classifications, primary classifications and sub-classifications and also contains aliases.

4. The directory of claim 3 in which the items within the products/services index are cross-referenced within the various classifications.

5. The directory of claim 2 in which the search engine leads to the selection of a screen advertisement of a preferred company which supplies the products/services required by a user.

6. The directory of claim 1 in which the search engine provides a toggle to switch between and within indices.

7. The directory of claim 1 in which the search engine provides navigation techniques to facilitate scrolling, paging and accessing indices.

8. The directory of claim 1 in which the search engine provides navigation techniques to proceed through a series of screens.

9. The directory of claim 1 in which the graphic user interface generates screens displaying one or more information boxes, and one or more operable buttons.

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10. The directory of claim 2 in which the graphic user interface generates list boxes containing said indices.

11. The directory of claim 9 in which the operable buttons relate to items of the indices.

12. The directory of claim 9 in which the operable buttons relate to navigation techniques to be executed.

13. The directory of claim 9 in which the graphic user interface generates full screen advertisements.

14. The directory of claim 5 in which the user is lead to the advertisement of a preferred company when a non-advertiser is selected.

15. The directory of claim 2 in which the trade information is displayed together with relevant teaser advertisements.

16. The directory of claim 15 in which the teaser advertisements lead to full screen advertisements.

17. Any novel feature or combination of features disclosed herein.

