A METHOD AND APPARATUS FOR SEARCHING A DATABASE FOR INFORMATION INCLUDING PROMOTIONAL INFORMATION

Abstract: A system and method uses a computer system to search a database for vendor promotional information. In one type of search, a category, region and a vendor code based on the vendor's name is submitted to a computer processing system coupled to a database which stores the vendor promotional information. In this type of search, the computer processing system returns a set of vendor promotional information and if a vendor's promotional information is present in the database and matches the search input, the vendor's promotional information is included in the set of promotional information retrieved. In another type of search, an identification number is submitted to the computer processing system and the system returns a set of vendor promotional information which includes a vendor's promotional information if the vendor's promotional information is present in the database. In the latter case, the set includes other vendor information matching the category or region of the identified vendor. Vendor promotional information includes graphical billboard objects which promote the vendor's product or service.

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SPECIFICATION

A METHOD AND APPARATUS FOR SEARCHING A DATABASE FOR INFORMATION INCLUDING PROMOTIONAL INFORMATION

BACKGROUND OF THE INVENTION

5 CROSS-REFERENCE TO RELATED INVENTIONS

This application is related to application entitled “A System and Method For Publishing Promotional Information Including Multi-Media Presentations Over A Computer Network” SN 09/438,626, Filed on November 12, 1999; to application entitled “A System and Method For Publishing Graphical Promotional Information For A Collection Of Vendors From A Common Site”, SN 09/439,146, Filed on November 12, 1999; to application entitled “System For Automated Multi-Media Presentation”, SN 09/439,147 Filed on November 12, 1999; to application entitled “System and Process For The Development of Graphical Promotional Materials” SN 09/438,893, Filed On November 12, 1999; and to application entitled “A System And Method For Automatically Presenting A Sequence Of Promotional Images With Interactive Features” SN 09/438,892 Filed on November 12, 1999.

FIELD OF THE INVENTION

The present invention relates generally to a searching system and more particularly to a system for forming a query to search and retrieve items from a database.

DESCRIPTION OF THE RELATED ART

20 Many search engines exist on the World Wide Web. Some of these search systems allow the user to form a query by stringing together keywords that the user believes are pertinent to the information sought. These systems tend to produce an overwhelming number of search results, many of which are irrelevant to the information sought after. Other search systems attempt to classify information into broad categories to cut down on irrelevant search results. However, it is not always clear that an item sought for is properly included in a particular category. A search of a particular category may produce a negative result but there is no assurance that a negative result is the correct result. The item sought after may exist in the database in a different category. This causes the user to search multiple categories in an effort to determine that a negative result is indeed correct. Furthermore, even if a positive result is obtained within a
category, there are still a great many search results to sort through. This is especially a problem when the user is searching to find a vendor’s product or service because a positive result that returns too much information makes it difficult for the user to locate the sought-after vendor in the results and an incorrect negative result means that the vendor will not be found at all. The result is a potentially lost sale for the vendor.

What is needed is a search system that allows the user to find an item among a small number of items returned in a positive search result and to know that a negative search result is a correct result. The need for such a system is especially acute when promotional information about a vendor’s products or services is sought after.

SUMMARY OF THE INVENTION

The present invention is directed to a method and apparatus that satisfies the above needs.

An apparatus in accordance with the present invention is a system which includes:

a database for storing promotional information for a plurality of vendors; and a computer processing system in communication with the database. The computer processing system is configured to receive a request for vendor promotional information, wherein the request includes fields specifying a category specifying a type of product or service, and a geographic region. The computer processing system is further configured to retrieve, from the database, a set of vendor promotional information based on the received request. In one embodiment of the present invention, the request includes a field specifying search letters by which a vendor wishes to be searched. Alternatively, the computer processing system is configured to receive a request for a vendor’s promotional information, where the request includes a field specifying an identification number, and is further configured to retrieve, from the database, the vendor’s promotional information based on the received request, if the requested information is accessible from the database, and report a negative search result if the requested information is not accessible from the database.

A method in accordance with the present invention is a method which includes: receiving a request for vendor promotional information, wherein the request includes fields specifying a category specifying a type of product or service, and a geographic region; and retrieving, from the database, a set of vendor promotional information based on the received request. Alternatively, the request includes a field specifying an identification number and the method
includes retrieving, from the database, the vendor's promotional information based on the received request, if the requested information is accessible from the database; and reporting a negative search result if the requested information is not accessible from the database.

One advantage of the present invention is that a limited amount of information is returned in response to a search query enabling the user to quickly determine whether the information sought after is included in the search results. Another advantage is that a negative search result is correct for the given inputs. Yet another advantage is that the search results are in the form of vendor promotional information so that vendors are assured of having their promotional information noticed by the user. With yet another advantage, a search using the identification number results in a correct negative or positive result. When a positive result is returned, promotional information related to the positive result is returned as well, yielding a further advantage that vendors in the same geographic area or selling similar products or services as the vendor with the identification number are identified for the user.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. 1A shows a typical system configuration in which the present invention operates;

FIG. 1B shows a computer system representative of a server or client computer as shown in Fig. 1A;

FIG. 2 shows a block diagram of a system in accordance with the present invention;
FIGS. 3A-3F show a flow chart of a system level process in accordance with the present invention;

FIG. 4 shows a block diagram of the receiving system in accordance with the present invention;

FIG. 5 shows a flow chart of the basic processes in the receiving system;
FIGS. 6A-6C show a representative billboard display document in accordance with the present invention and representative full-size and half-size billboards;

FIG. 7 shows a block diagram of the document publishing system;
FIG. 8 shows a representative set of tables for the billboard database;
FIGS. 9A-9C show a flow chart of the document publishing process;
FIG. 10 shows a block diagram of the multi-media publishing process;
FIGs. 11A-11B show a representative multi-media presentation in accordance with the present invention;

FIG. 12 shows a representative presentation timeline for the multi-media presentation shown in FIG. 11;

FIGs. 13A-13E show a more detailed flow chart of the receiving process;

FIG. 14 shows a set of database tables used in the receiving system;

FIG. 15 shows a portion of the object hierarchy for the representative presentation shown in FIGs. 11A-11B; and

FIG. 16 shows a flow chart of the enhancement and compression process.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A typical system configuration in which the present invention operates is shown in FIG. 1A. The configuration in FIG. 1A is a client-server configuration typically encountered when the Internet provides the communications link between the client and the server. In FIG. 1A, client computer system 100 communicates over the Internet 102 with server 104. Server 104 may in turn be connected over a local area network LAN 106 to other servers 108 and 110. Each of the servers 104, 108 and 110 connected to the LAN can be given different functions to carry out or all of the servers can share in carrying out all of the functions.

Client computer system 100 typically has the function of providing an interface to the users of such a system configuration. One important interface function is that of providing a document viewing process 112 to the user. In the context of the Internet, the document viewing process is typically carried out by a browser program, such as Internet Explorer or Netscape Navigator. The job of the browser on the client machine is to obtain and interpret documents, in particular HTML or similar documents, for the user.

Server computer system 104 is shown in FIG. 1A as having the functions of providing a document publishing process 114 and a multi-media publishing process 116. Thus server 104 in FIG. 1A publishes documents for the client computer system 100. These processes are discussed in more detail below.

Server computer system 108 is shown in FIG. 1A as having a database search process 118. Database management system 108 receives queries to search for information from database 120 and 122 and retrieves records from these databases that match the information supplied in the query. One common type of database management system responds to queries in the form of SQL statements.
Server computer system 110 is shown in FIG. 1A as having a receiving process 124. This server system aids in the process of collecting data and verifying to be stored in database 120 and 122. In particular, in a version of the present invention, the receiving system aids in receiving and verifying a vendor order form 126 which contains information about the vendor and the vendor’s order to create a billboard, billboard artwork 128 which contains information needed to create a billboard for promoting the vendor’s products or services and multi-media artwork 130 which is used to create a multi-media presentation promoting the vendor’s products or services. As an alternative, the vendor can submit a completed billboard and multi-media presentation, in which case the receiving system only verifies the information against certain quality standards which are discussed below. In order to meet these quality standards, the receiving system in some cases aids in a compression 132 and enhancement process 134 which improves the quality of the billboard and the multi-media presentation.

Received and verified promotional information is stored in database 120 by database management system 108. The stored promotional information includes vendor billboard files 136, vendor multi-media files 138, vendor order form files 140, artist files 142, log files 144, and archive files including archive billboard files 146 and archive multi-media files 148 and any other temporary files needed in processing.

Server system 104 acts as a publishing system for purposes of the present invention. When publishing documents, server system 104 calls upon the database management system 108 to supply any files such as vendor billboard files 136 needed in the document publishing process 114 and any files such as multi-media files 138 needed in the multi-media publishing process 116.

At the request of the document viewing process 112, the client computer system requests a document from server system 104 which then publishes the document to the client machine. In this context, publishing a document includes the creation or assembly of the document as well as the delivering of the document to the requestor. Thus, when a user at the client machine causes the document viewing process, e.g., a browser, to request a specific document, that request is carried over the Internet 102 and is received by server system 104. Server system 104 invokes its document publishing process 114 to create the document requested. This process 114 requests certain files from the database management system 108 in order to compose the document and when completed the document, e.g. document 150, is delivered over the Internet 102 to viewing process 112 at the client computer system 100. A similar chain of events occurs when the user requests a multi-media presentation.
As stated above, the system configuration in FIG. 1A is a typical configuration in which the present invention operates. Many other configurations are possible including ones in which the server systems cooperate to carry out any of the processes which appear to be dedicated to a particular server. Furthermore, only a client-server relationship need exist between the client computer system 100 and the servers 104. While communication between the client and the server is shown over the Internet 102, this is not a necessary requirement of the present invention. However, it is preferred in the present invention that client and server communicate over the Internet.

FIG. 1B shows a block diagram of a computer system representative of a server or client computer as shown in FIG. 1A. Connected to local bus 156 are a processing unit 160, memory unit 162, monitor and keyboard unit 164, storage device interface unit for operating data storage device 158, and communications interface unit 168. Typically, memory unit 162 holds an operating system and applications programs for execution by the processing unit 160. In the course of processing, processing unit 160 makes accesses to the data storage device 158 and to the communications interface to send or receive data over a network to which the computer system is connected. Users interact with the system via monitor and keyboard interface 164.

FIG. 2 shows a block diagram of a system in accordance with the present invention. In FIG. 2, a system according to the present invention includes a receiving system 170 which receives graphical promotional information 172, vendor information 174 and artist information 176. The receiving system communicates with the database management system 178 to request storage of the promotional information in receiving database 180. Promotional information is then transferred from receiving database 180 to database 182. When promotional information becomes old or is not in service, it is moved to the archive database 184. Reactivated information can be moved back from the archive database 184 to the database 182. Document publishing system 186 and multi-media publishing system 188 request information from the database management system 178 in order to carry out their respective publishing tasks in response to requests from the viewing system. In particular, document publishing system provides viewable documents 192 and multi-media documents 194 to the viewing system 190. A particular viewable document 192 is provided to the viewing system 190 upon receiving selection criteria 196 and a particular multi-media presentation is provided to the viewing system 190 upon receiving multi-media selection information 198. Viewing system 190 acts as a client in a client-server system where the document publishing system 186 and multi-media publishing system 188 are the servers.
Referring now to FIG. 3A-3F, which shows a flow chart of a system level process in accordance with the present invention, the first step, step 220, is to receive graphical promotional information about the products or services offered by each vendor. In some embodiments, step 220 includes either receiving graphical promotional information directly from the vendor 222 or providing vendor artwork to an artist 224 who converts the vendor artwork into the graphical promotional information 226. The artist is chosen from a list of artists available to perform the conversion process. The next step 228 is to review the graphical promotional information to determine whether the information complies with pre-determined quality control standards. These standards relate to the visual quality and computer file size of the information and are discussed in more detail below. After reviewing the graphical promotional information, steps are carried out to assure that the graphical promotional information meets the quality control standards if it is determined in step 232 that the information falls short of the standards. In some versions of the present invention, the graphical promotional information is modified to meet the standards 234. Modification, in some cases, includes enhancing the quality of the information 236 to meet the visual quality standards and compressing the information to meet certain pre-determined computer file size requirements 238. Next, in step 240, the graphical promotional information is entered into a database.

In step 242 a request is received to retrieve some promotional information from the database. The request contains certain selection criteria so the that the promotional information can be located in the database. In one embodiment, the step 242 includes receiving an identification number for a billboard in step 244 or receiving in step 246 a search category, a search region, and a set of vendor search letters. In one embodiment, there are two vendor search letters.

Next, in step 248, the database is searched and graphical promotional information is retrieved which matches the selection criteria. In step 250, a viewable document is provided to the potential customer. Typically, this involves steps of generating the document containing the requested billboard in 252 and transmitting the document to the potential customer’s computer in step 254. This viewable document includes a billboard containing the graphical promotional information that matches the selection criteria.

At this point the user of the system, a potential customer, can select the billboard in step 256, in which case, in step 258 information about the vendor promoted on the billboard is provided to the potential customer. Alternatively, selecting the billboard causes a document such as a vendor’s Web page to be retrieved. After the billboard is selected and the information provided, the user can continue to view the billboard document as shown by arc 260.
Alternatively, following arc 262, the potential customer can input new selection criteria and cause another search to be performed. As another alternative, if there is a multi-media selection input available on the billboard as determined in step 264 and if the user invokes the multi-media selection input in step 266, then a multi-media presentation is provided to the user in step 268 after which the user returns to the current billboard document in step 270. The multi-media presentation is an audio-visual presentation that promotes the products or services of the vendor from whose billboard the multi-media presentation was selected.

Receiving system 170 in FIG. 2 is shown in more detail in the block diagram of FIG. 4. In particular, receiving system includes order processing system 310, order assignment system 312, billing system 314, quality check system 316 and artist login system 338.

The order processing system 310 is responsible for receiving and processing a billboard order form 318 or an artwork order form 320 from vendor 322. Form 318 contains information the system needs to receive and process a vendor provided billboard 324 which is to be stored in the database 327 by server system 328 at the request of the order processing system 310. Form 320 contains information the system needs to receive and process an artist provided billboard. In the latter case the vendor supplies vendor artwork 326 to the server system 328 which the artist will convert into a graphical billboard. The order processing system 310 provides confirmation of a submitted order by sending e-mails to the vendor as shown in arc 330.

Order assignment system 312 receives communications indicating that the vendor has decided to have an artist to convert the vendor artwork into a graphical billboard. The order assignment system 312 is responsible for creating a display of billboards 332 previously created by artists to the vendor 322 so that the vendor can select an artist based on the quality of the artist’s previous work. The order assignment system 312 can send an email confirmation as shown in arc 334 to the artist 336 to inform the artist of the vendor’s selection.

Artist login system 338 allows the artist 336 to gain access to the database management system 328 which stores the vendor’s artwork so that the artist can convert the artwork into a graphical billboard 340.

Billing system 314 processes charges made against the vendor for services provided by the system including the conversion of the vendor artwork by the chosen artist. Billing system 314 sends confirmation emails to the vendor 322 and the artist 336 as needed.

Quality check system 316 operates to review the vendor supplied billboard 324 or the artist supplied billboard 340 for visual quality and computer file size. Quality check system 316 communicates to the vendor 322 and artist 336 regarding the results of the quality check. If the submitted billboard fails to meet the quality requirement, the quality check system can notify the
vendor or artist. The quality check system also transfers a billboard that passes the quality check system to the billboard directory database 342.

FIG. 5 shows a flow chart of the basic processes in the receiving system. A more detailed flow chart of this process is presented in FIG. 13A-13E. In step 362 of FIG. 5, an order form is completed by a vendor. Either the order form is billboard order form or an artwork order form. If the order form is a billboard order as shown by arc 364, then in step 366 the vendor provided billboard is posted to a quality control table, a database table in database 327 of FIG. 4 for holding billboards awaiting approval. If the order form is an artwork order form, then in step 368, vendor artwork is posted in step 370 on the database 327 in FIG. 4. Next, in step 372, the vendor chooses an artist or the system selects an artist automatically. The selected artist, in step 374, then prepares the billboard from the vendor artwork and posts it, in step 376, to the quality control table. Next, the billboards posted in the quality control table are reviewed based on the quality control standards in step 378 and if approved as determined in step 380 are transferred, in step 382, to the billboard directory database 342 as shown in FIG. 4. If the billboard is not approved, then a message to that effect is send either to the vendor as shown by arc 384 or artist as shown in arc 386.

The document publishing system 186 in FIG. 2 creates and delivers, at the request of the viewing system, a document. One document that is delivered to the viewing system is a document that displays a set of vendor billboards. This document is a composite document including a number of discrete parts. FIG. 6A shows a representative billboard display document in accordance with the present invention. The billboard display document includes selection area 420, a set 422 of billboard display areas, splash screen area 424, background image 426, document navigation buttons 428 and 430, scroll bar 432, alternate entry field 434 and search button 435.

In one embodiment, selection area 420 includes a drop down list 436 and drop down list 438, a set of selectable buttons 440, a set of button pairs 442, a go button 444, entry field 446, and search button 448. Drop down list 436 allows the user to select category information and drop list 438 allows the use to select region information. Buttons 440 are labeled with the letters of the alphabet permitting the user to select one of the letters. Button pairs 442 have variable labeling. The first button of each pair in set 442 is labeled with a letter matching a selected or active button in set 440. For example, if the letter B is selected or made active in plurality 440, then the first button of each pair is labeled with the letter B. The second button of each pair of set of button pairs 442 is labeled with one of the letters of the alphabet, thus permitting the user to select any pair of letters from the alphabet. Go button 444 causes the viewing program to
communicate the information contained in the drop down lists 436, 438 and set of button pairs 442 to the document publishing system 186 of FIG. 2. Entry field 446 permits the user to enter an identification number of a graphical billboard and search button 448 sends the information in the entry field 446 to the document publishing system 186.

The set of billboard display areas 422 includes one or more billboard display areas. Each billboard display area can contain either one full-size billboard 450 or two half-size billboards 452. FIG. 6B shows a sample full-size billboard 450 and FIG. 6C shows a sample half-size billboard 452. In one embodiment of the present invention, there are 10 billboard display areas on a billboard display document. In other embodiments, the number can be greater or less than 10 billboard display areas. Any billboard has the option of having multi-media selection buttons 454 on the billboard. Any number of multi-media selection buttons 454 is permitted on a billboard. In one embodiment of the invention, a full-size billboard has 8 multi-media selection buttons and a half-size billboard has 4 buttons. Selecting a multi-media selection button causes a multi-media presentation to be presented to the user. This presentation promotes the products or services of the vendor on whose billboard the button was selected. Multi-media presentations selected by these buttons are discussed in more detail below.

Splash screen area 424 includes a background area 426 and sponsor buttons 458. Background area contains a graphical promotion of an advertiser unrelated to the vendor selected from the information provide in the selection area. Sponsor buttons 458 similarly show the name of a sponsor for the document. In one embodiment, sponsor buttons 458 are selected to retrieve a document, such as a Web page, promoting the sponsor.

Document navigation buttons 428 and 430 permit the user to select the next billboard display document or the previous billboard display document. Previously viewed billboard documents are typically stored in the client computer system 100 in FIG. 1A for quick retrieval. Selecting the next button causes document publishing system to publish the next document in sequence to the currently viewed document and is a way of sequentially viewing the available billboards.

Alternate entry field 434 performs the same function as entry field 446 and alternate search button 435 performs the same function as search button 448.

Scroll bar 432 permits the user to view portions of the document that do not fit on the display device of the client computer system 100 in FIG. 1A. Alternate entry field 434 and alternate search button 435 permit the user to enter new information without having to scroll to the top of the document.
FIG. 7 shows a block diagram of the document publishing system. This system, at the request of the viewing system, has the task of generating a viewable document. To perform this task, the document publishing system assembles the components of the documents. Key components are one or more background files 502 for creating different backgrounds 426 in FIG. 6, a selection area file 504 for generating the selection area 420 in FIG. 4, one or more splash screen files 506 for generating different splash screens, one or more sponsor button files 508 for adding different sponsor buttons to the splash screen areas, one or more billboard files 510 for displaying requested vendor billboards, and page navigation objects 512 which include the next and previous buttons and scroll bar. The document publishing system communicates with the database management system to obtain the above files and other information as shown in FIG. 8, which depicts a representative set of tables for the billboard database.

Shown in FIG. 8 are two tables, the billboard table 540 and the AMPP table 542. The billboard table 540 contains information about every billboard stored in the database 182 of FIG. 2 and the AMPP table 542 contains information about every multi-media presentation available in the database. Each entry in one of the tables is a row of the table.

A row in the billboard table 540 has the following fields. Field 544 is the board_id field which contains an unique identification number for the billboard of the current row. Field 546 contains the vendor’s search code which is usually the first two letters of the vendor’s company name, e.g., AV for Avis; field 548 contains the category of product or service offered by the vendor; field 550 contains the geographic region information in which the vendor offers its products or services; field 552 is the company id which contains information for billing purposes; field 554 contains information identifying an artist that created the billboard; field 556 contains a field specifying the length of time the billboard is displayable, e.g., 1 month, 3 months, 6 months; field 558 indicates whether the billboard is animated; field 560 indicates whether the billboard is a full-size or half-size billboard; field 562 indicates the number of active multi-media presentations for the billboard of the current row; fields 564 and 566 give the uniform resource locator (url) for the billboard, the url taking the viewer to a vendor-designated Web page when the billboard is selected; field 568 gives the start date on which display of the billboard is permitted; field 570 gives the end date after which the display of the billboard is not permitted, at which time the billboard entry is moved to the archive database until the vendor pays a renewal fee; and field 572 indicates a payment type for billboard of the current row, including whether the billboard is provided at no charge or whether it is provided in exchange for other services.
A row in the AMPP table 542 has the following fields. Field 574 indicates the billboard id that has a selection button for invoking the multi-media presentation of the current row; field 576 identifies an unique number for the multi-media presentation of the current row; field 578 is the url for the multi-media presentation of the current row; fields 580 and 582 give a short and long description of the multi-media presentation; and field 584 gives the play time of the multi-media presentation.

From the objects in FIG. 7 and the database tables in FIG. 8, the document publishing system creates a viewable document such as the billboard display document.

FIG. 9 shows a flow chart of the document publishing process. As previously described, the process typically operates on a server system. In FIG. 9, the first step 624 of the process is to receive the search criteria that are entered into a selection area of the billboard display document.

For the initial search, the search criteria only include either the category and region or the billboard identification number. In subsequent searches, the search criteria additionally include a set of vendor search letters along with the category and region. In one embodiment of the present invention, a document having only a portion of the selection area 440, specifically drop down lists 436 and 438, the go button, entry field 446 and the search button 448, is presented for receiving the initial search criteria.

As discussed above, selection criteria for a search subsequent to the first search can be either a category, region and a set of vendor search letters or a billboard identification number. In step 626, the selection criteria is checked to make sure the fields have proper information. In step 628 the first part of the document, i.e., the selection area is constructed. In step 630, the middle portion of the document, the billboard display area is constructed and, in step 632, the bottom part of the document is constructed, the bottom area including the splash screen 424, sponsor buttons and page navigation buttons.

The document publishing system randomly selects splash screen 424 from a set of splash screens stored in the database when a document is first generated and for subsequent documents the document publishing system sequentially selects the splash screen from the set starting at the position of the randomly selected splash screen. This assures that each advertiser whose splash screens make up the set receive approximately advertising time at the viewing program site. Information indicating the selection of the splash screen advertisement by the user is saved in a log file in the database so that the advertiser can receive a report on the effectiveness of his splash screen advertisement. Information indicating the selection of the sponsor buttons is also saved in a log file for reporting click through statistics to the sponsor.
As described above, the first part step 628 constructs the selection portion of the document. This construction involves, in one version of the invention, creating HTML statements that make up the document. These statements include HTML text strings that cause the buttons 440, button pairs 442, the background 426, the drop down lists 436 and 438, the search button 448 and the go button 444 to appear when the viewing program interprets the text strings. In one version of the invention, an HTML statements to place an image map into the document. This map associates links with specific regions of the document, such as the buttons, relieving the server systems from handling this task. In another version, JavaScript is embedded into the HTML document to cache image files for multi-media selection buttons 454 for subsequent use on the billboards.

In FIG. 9A, the middle part step 630 performs the work of deciding which billboards should be placed in the document and where they should be placed. FIG. 9B shows a flow chart for the process of determining which billboards to place in the document. As described above, selection criteria includes either category, region and vendor search letter information or a billboard identification number. Vendor search letter information consists of two letters that are selectable on the selection area of the document. Typically, the two letters match the first two letters of the vendor name, but the vendor may choose letters matching other information about the vendor.

In step 650 of FIG. 9B, a search of the database by category, region and vendor search letters is performed. In one version of the invention, the search is performed by submitting an SQL statement to the database. The results of the search are a set of table rows from the billboard database table 540 in FIG. 8 matching the selection criteria. Also retrieved are any AMPP table rows 542 in FIG. 8 for the billboard table rows that are retrieved.

In step 652 of FIG. 9B a search by billboard identification number is performed. In this case, a database query is formed to find the billboard exactly matching the billboard identification number. If such a search is successful, only one billboard table row is returned and another search in step 654 is performed to obtain database entries for other billboards having the same category and region as the billboard which was found by the billboard identification number. If this search is unsuccessful as determined in step 656, a “nothing found” message in step 663 is returned to the viewer.

Table rows returned from the above searches are sorted according to the age of the billboard. Newer billboards are listed first in the search result table rows and older billboards are listed near the end. Each billboard has an age which is determined from the start date field start_dt 568 in the billboard table 540 in FIG. 8. To obtain a start date and a place in the
database, the vendor pays a subscription fee after his billboard was approved in the receiving system. The age of a billboard is computed by taking the difference between the time at which the search is performed, i.e., the current time, and the contents of the start_dt field.

The reason for this ordering is to place newer billboards nearer the top of the document and older billboards nearer the bottom of the document. Thus, as billboards age they move towards the bottom of the search results table and hence nearer the bottom of the document. Billboards reaching their end date, from field 570 in FIG. 8 are not returned from a search because they have been moved to the archive database 184 in FIG. 2. This encourages advertisers to pay promptly a renewal fee to keep the billboard in the active database. Placing newer billboards nearer the top of the document assures that newer billboard receive some viewing exposure without having to scroll the document, using the scroll bar 432 in FIG. 6. When the search criteria specify an identification number for a billboard and an exact is match is found, the specified billboard is placed at the top of the document as if it were a new billboard and other billboards are displayed below the specified billboard. The reason for giving top billing to the specified billboard is to encourage vendors to advertise their identification number in other conventional advertising media.

Returning to FIG. 9B in step 658 one or more documents has its display areas filled with the search results. This step causes the placement of the billboards returned from the search in the document. Because there are full-size and half-size billboards they must be fitted within the display areas 422 of FIG. 6. This is accomplished according to the steps in the flow chart of FIG. 9C which is discussed below. Next, in step 660 of FIG. 9B, filler billboards are retrieved from the database, if the search results did not produce enough billboards to fill the billboard display areas 422 of FIG. 6 in the document. Similarly, in step 662 one or more documents have their display areas fitted with the billboards returned from the search; in step 664 a new page with the billboard number successfully found and related billboards is displayed. Lastly, in step 666 any filler billboards that are needed are fetched and placed into the document.

FIG. 9C shows the steps for fitting full-size and half-size billboards into a display area. In step 680, a test determines whether there are empty display areas to fill in on the current document. As described above, in one embodiment, there are 10 full-size display areas on a document. These display areas must be filled in with either a fill-size billboard or two half-size billboards. To accomplish this, the size field in a row of the search results is examined. If the size indicates a full-size billboard as shown in arc 682, and the last display area is completely filled in as determined in step 684, a new full-size billboard is constructed, i.e., printed into the document, for the current display area, in step 685. If the size indicates a half-size billboard as
shown in arc 686, and the last display area is completely filled in as determine in step 688, then
the half-size billboard is printed in the left half of the display area in step 690. If the last display
area is not completely filled in, then the half-size billboard is printed in the right half of the
display area in step 692. It may happen, as each row of the search results is examined, after a left

5 half side of the display area is printed, that the next row is not a half-size billboard, but instead a
full-size billboard. In that case, in step 684, the test indicates that the last display area printed is
not complete and the row representing the billboard is saved, in step 694, in a temporary storage
structure. When another half-size billboard is discovered, the billboard is printed, in step 692,
for the right side of the display area and the display area is completed. After this display area is
10 completed and if the last billboard was a half-size billboard as shown in arc 696 and there are
more display areas to fill in on the document, the temporary storage structure is examined and
any saved billboards are printed in the empty display areas in step 698. If the temporary storage
structure is emptied and there are still more display areas to fill in, the processing continues with
full-size billboards in step 685.

15 As discussed above, a billboard on a document can have multi-media selection inputs
454 in FIG. 6. Selecting these inputs invokes the multi-media publication system 188 in FIG. 2.
The multi-media publication system has the responsibility of publishing documents for the
viewing system so that a continuous audio-visual presentation results.

FIG. 10 shows a block diagram of the multi-media publishing process. In FIG. 10,
template documents 720 are incomplete. This means that the documents have parameters in need
of programming. These unprogrammed parameters include timing parameters, sequence
parameters, sound file parameters, and image file parameters. The multi-media publishing
system 726 programs these parameters to create primary presentation documents and, if needed,
secondary presentation documents and auxiliary documents 722.

20 Primary presentation documents, such as show files, receive timing parameter values,
sequence parameter values, and pointers for sound file and image file parameters. The primary
presentation document presents image and sound files for a specified time, called the persistence
time. The persistence time from the standpoint of the viewer is the viewing time for the
particular document.

Secondary presentation documents are documents that are slaved to the primary
presentation documents. Secondary presentation documents receive image file pointers and in
some cases, sound file pointers if the primary presentation document does not control the sound
for the total persistence time.
Auxiliary documents, such as index files and main files receive sequence parameter information. These files set the window environment for the presentation, where the environment includes window partitions for the show files.

To program the template documents, the publishing system relies on presentation datafiles 724. There is one presentation datafile for each unique presentation. A presentation datafile 724 contains timing information for each stage of the presentation. In particular, the presentation datafile 724: (a) specifies exactly how long each viewable document shall persist in the viewing system before it is replace with the next viewable document, i.e., the persistence time; (b) contains file names for each document comprising the sequence of viewable documents so that the documents can be linked together into a presentation; and (c) contains information specifying each document's corresponding image 728 and sound files 730. After the multi-media publishing system 726 has assembled the required information into a template document 720, a viewable document 722 is ready to become part of a presentation, with the viewable document specifying any sound 732 and image files 734 it needs in the presentation. In one embodiment, the publishing system 726 creates the viewable documents as they are needed by the viewing system during the presentation. In another embodiment, some or all of the viewable documents are prepared before the presentation starts.

FIG. 11 shows a representative multi-media presentation in accordance with the present invention. Index document 760 starts the presentation in the viewing system. This document specifies an image file 762 that, in one embodiment, displays a countdown message during which image and sound files that are needed for later steps in the sequence are prefetched and stored in the client computer on which the viewing system operates. In one version of the present invention, such image files include JPEG files and GIF files. In another version of the present invention, the image files include animated GIF files. Prefetching image and sound files assures that when the files are needed by one of the viewable documents in the presentation sequence, the image or sound file is available without delay. Otherwise, it is possible that when an image file is needed in a sequence it may not become available to viewing system in time for display during the persistence time of the currently viewed document, which may be only a few seconds or less. In some versions of the invention, the persistence time for each viewable document is approximately 67 milliseconds, thus achieving a rate of about 15 images per second. The reason that a document may not be available is that the speed of the connection between the viewing system and the multi-media publishing system is slow and quite variable. Accurate document delivery times cannot be guaranteed but delivery within a bounded time period can be guaranteed. For this reason image and sound files are prefetched ahead of when
they are needed and loaded into temporary storage of the client computer on which the viewing system operates for the current presentation. Typically, the image are cached in the viewing system's cache. In an alternate embodiment sound files are prefetched and cached in the viewing system's cache.

Returning to FIG. 11, the persistence time of the countdown document 762 is 20 seconds providing a long time period in which to prefetch and cache the needed image and sound files. In one version of the present invention, during this 20 second time period, document 762 displays one or more image files, each image file being timed by the document. Document timing and document persistence are accomplished by invoking a timer which is programmed with the persistence time or a portion of the persistence time. For example, if the persistence time of a document is 20 seconds and the document requires that five images be displayed in the 20 seconds. Then it sets a timer with the value of 4 seconds. At the end of every 4 seconds a new image is displayed and at the end of 20 seconds a new document is requested according to the sequence parameter in the document.

In FIG. 11, the new document that replaces the viewable document 762 is the index01 document 764. This document divides the viewing system window into two rows, row0 and row1, divides the row0 into two frames, frame0 and frame1, and prefetches the image files needed for row0 and row1. Document index01 764 also requests to be replaced with document main 766. This new document divides frame0 into two columns, show0 768 and right01 770, each of which is a viewable document. The show0 768 document is the primary presentation document and the right01 770 document is the secondary presentation document. Documents show0 768 and right01 770 are sized so that they comprise the viewable window in the presentation, leaving the unused portion of row0 and all of row1 hidden. In some embodiments, sound files are associated with these hidden frames which persist throughout the presentation. In this way a sound file can last through the entire presentation.

In the example shown in FIG. 11, the show0 document 768 specifies a sound file sound0, but the right01 770 document does not because the show0 document controls the presentation i.e., it is a primary presentation document. This means that show0 has the persistence parameter which, in the example, is 7.5 seconds. The document right01 persists as long as it is not replaced with another document. Furthermore, if right01 were to specify a sound file to be played it would conflict with the sound0 file specified by show0 768 because the sound file would be played during the same persistence time as the sound0 file. In some cases, the sound0 file does not last the entire persistence time. This allows the right01 document or the show0 document to specify another sound file to play for the balance of the persistence time. Also during the
persistence time of the right01 document, this document requests that the show02 document 776 and any images relating thereto be prefetched and loaded into the viewing system’s cache. The function of the show01 and other show documents discussed below it to present various image files to viewing system. These images come from GIF files or JPEG files. In some cases, the GIF files are animated.

After the 7.5 second time interval expires, show0 requests main01 from the publishing system. Document main01 771 again alters the frame composition of the window in the viewing system to eliminate the two columns and requests that the publishing system create and provide the show01 document 772 and sound file sound1.

The show01 document and sound1 file persist for 7.5 seconds after which main02 774 is requested. This document reconfigures the window to have two columns and requests that show02 776 and right02 778 fill the columns.

Show02 specifies sound file sound2 and persists for 9.5 seconds in the viewing system. During this time show02 776 causes show05 and right05 and show04 786 and right04 788 to be prefetched and loaded into the viewing system’s cache. After the 9.5 seconds expires, show02 requests main03 780 from the publishing system.

Main03 780 reconfigures the window to remove the columns and requests show03 782 and sound3 to be displayed for 18.5 seconds.

At the expiration of the 18.5 seconds, main04 784 is requested which again reconfigures the window with two columns. Main04 784 requests the document show04 786 and sound4. Show04 persists for 9.5 seconds during which it prefetches additional images relating to show05 and right05. Next, show04 requests main05 790 which in FIG. 11B repartitions the window into two frames and requests that show05 792 and right05 794 occupy those frames.

Right05 persists for 10.5 seconds and show05 lasts for as long as right05. Show05 specifies sound5 during is viewing time at the end of which right05 requests main06 796. Main06 796 repartitions the window again and requests document show06 798.

Show06 798 specifies sound file sound6 and persists for 10.5 seconds. Next, show06 requests main07 800 to repartition the window and main07 requests two new documents, right07 822 and show07 820.

Right07 822 specifies sound file sound7 and persists for 8.5 seconds as controlled by show07 820. Finally, show07 requests documents show08 824 which persists for 7.5 seconds while right07 stays on the window for another 7.5 seconds because it was not replaced. In this latter case no main document was used because the window needed no repartitioning.
FIG. 12 shows a representative presentation timeline for the multi-media presentation shown in FIG. 11. In the timeline, all time in the presentation must be accounted for. Each show document requires an additional 0.5 seconds to be completely loaded into the viewing system, thus adding 0.5 seconds to each of the times discussed in reference to FIG. 11. Grey01 and Grey02 are the persistent images in the hidden areas or row0 and row1 as partitioned by the main document 765. The timeline also shows sound7 persisting through the view time of both show07 and show08.

As described above, FIG. 11 shows a representative presentation. For the presentation shown different image and sound files are allowed, however the partitioning of the viewable window, frame0, and the sequence of changes it undergoes are fixed for this presentation. Furthermore, there is a range of persistence times for each viewable document that can be used for the representative presentation beyond which the presentation will fail to present the sequence as shown. One reason for this is that image and sound files needed for documents specified later in the sequence need to be prefetched and loaded into the viewing system's cache. If the persistence times prior to these later documents are substantially altered (reduced), then the time for prefetching and loading the image and sound files for these later documents is reduced and the image and sound files may not arrive in time for the document which uses them.

Thus, each presentation must conform to a set of rules for correct presentation. The rules must take into account the speed of the connection between the client computer system and the server computer system and must govern the persistence times of each document in the presentation, the size of the image and sound files needed at every stage of the presentation and the size of the window needed to display the image file properly. Each different set of rules prescribes a different presentation and many such presentations can be designed.

PRESENTATION CONTROL

Presentation control has two aspects, as discussed above. The first aspect is determining the persistence time of a document and the second aspect is requesting the next document in the sequence.

The persistence time of a document is controlled by a timer method in the window object, which is a built-in object in the browser object hierarchy that represents a window or frame in which the browser displays a document. In the presentation described above, index01 document sets up the initial frames for displaying the presentation. Each window or frame in the presentation has a window object which the browser uses to keep track of the object and each
window object has a set of methods, properties and event handlers that the document in the window or frame can make use of. One important method available to a document in a window is a timer method, called `setTimeOut(expression, time)`. This method evaluates an expression after a given period of time. In one version of the present invention, the given period of time is the persistence time which is programmed into the document. Also in this version, the expression that is evaluated in the timer method is a function which makes or causes to be made a reference to the url of the next document in the document sequence for the presentation. The reference to the next document is part of the sequence information that was programmed into the document by the publishing system and, when made, the document specified in the url is obtained and loaded into the browser for interpretation. When a document is loaded into a window or frame on the screen of a presentation, an event occurs which either directly or indirectly causes the `setTimeOut` function to be invoked. Thus, the persistence time dates from the completion of the loading of the document into a window or frame and when expired a reference is made to the next document in the presentation sequence.

In some presentations, it is desirable to pause and later resume the play of the presentation. These functions are accomplished by use of event handlers associated with the window or frame containing a document that may invoke them. In one version of the present invention, a presentation is paused by calling a JavaScript event handler when an image of a pause/play button on a frame in the presentation is selected. The event handler then stops the document’s timer method from counting time, resets the timer method, calculates the remaining persistence time and causes the sound file to stop play. In this state, the document persists in the frame until the play of the presentation is resumed. Resumption of play occurs when the pause/play button is again selected. On this selection, the timer method is re-invoked with the remaining persistence time and the sound play is resumed. Upon the expiration of the remaining persistence time, the next document in the sequence is referenced. In one version of the invention, all parts of a presentation have pause/play buttons and other versions some parts of the presentation do not have pause/play buttons thus preventing the suspension of parts of the presentation.

**RECEIVING SYSTEM DETAIL**

Referring to Figure 13, there is shown a more detailed flow chart outlining the process for receiving and filling orders for the preparation and posting of billboards. As previously
mentioned, receiving system 170 provides for the receipt of orders for billboards and the appropriate processing of these orders to produce a finalized billboard for the vendor.

The first portion of the order receiving process is initial order processing 900. The process of developing a billboard begins by the vendor completing an order form as shown in step 902. This completed order form will provide the system with an appropriate amount of vendor information to proceed. This information will typically include vendor name, address and contact information, electronic mail address, credit card information, and order information. This information is place into the temp table 1120 shown in FIG. 14.

Next, in step 902 receiving system 170 determines whether the order is for the placement of an existing billboard or the preparation of a new, nonexistent billboard by testing the post_type field in the temp table 1120. If the billboard already exists, there is no need to prepare additional artwork or graphics for this billboard and the system simply processes the order through its other major steps including billing and quality control.

If it is determined that a billboard does exist, in step 904 the existing billboard is retrieved and posted to the quality control table 1124 in step 906. The quality control table 1124 is a holding location that receiving system 170 utilizes in processing the order. In order to provide meaningful information to the vendor, step 908 sends an electronic mail message back to the vendor indicating that his billboard order has been received and is being processed. Additionally, in step 910 an email is sent to the quality control department indicating that a new billboard has been stored in the quality control table and that quality review is required. At that point, the process is required to go on to its quality control process, which will be further described below.

If step 904 determines that a billboard does not exist and the vendor is requesting the development of a new billboard, the process moves to step 912 where the vendor is allowed to upload up to ten different artwork files, which are to be stored in the artwork table 1122. These uploaded artwork files may include company logos or advertising material which is consistent with other marketing efforts the vendor is pursuing. As could be easily appreciated, it is very common for vendors to desire that these artwork files be incorporated into any advertising piece that is being prepared. Further, the vendor is requested to provide descriptions of each of these files in order to provide an ultimate artist with some insight into the vendor's desires. At the same time, step 914 stores vendor information in an order database. This allows the system to record and maintain details about the order and the vendor.

In the initial order form, the vendor is asked whether they would like to select an artist themselves or have an artist assigned to them. This decision is processed in step 916 to
appropriately direct the receiving system 170. If the vendor wishes to select the artist, the system moves to step 918 wherein the vendor is asked to browse numerous exemplary pieces of artwork provided from the billboard table 540 in FIG. 8 and provide an indication as to which artist they would like to prepare their billboard. Alternatively, if the vendor wishes an artist assigned by the receiving system 170, the process moves to step 920 where the artist with the smallest workload is identified by means of the "working" field in the artist table 1132. The intent of the receiving system is to assign the current billboard project to this identified artist. In this circumstance, workload is simply defined as the number of outstanding billboard projects the particular artist has. Consequently, the artist with the fewest number of billboard projects outstanding, will be identified as the artist with the smallest workload. One advantage of the receiving system 170 of the present invention is the unlimited number of artistic resources it can manage. Via electronic mail connections over the Internet, the receiving system can have access to large number of graphic artists who are capable of preparing high quality graphic artwork pieces. As all information can be transmitted electronically to these artists, the receiving system 170 provides the vendor with artistic resources that they might not otherwise have available to them. This is specifically advantageous to smaller companies who may not have relationships with high quality graphic artists. Further, these companies may not have convenient mechanisms to work with these people. As outlined herein, the automated nature of this process provided by receiving system 170 is particularly well suited to this situation.

Once the artist is identified, either by vendor selection or system assignment, receiving system 170 moves on to step 922 where a work order is created describing the project and identifying the artist to be used. This description includes information that the vendor has provided along with any desires they have for their billboard. The work order is stored in the workorder table 1128. Following the creation of this work order, in step 922, all artwork is stored in the artwork table 1122 in step 924 while an electronic mail message is sent to the vendor confirming the details of their order in step 926. At this point, the initial order processing 900 is completed and the system can move on to the next appropriate steps.

Where the vendor has requested the preparation of a billboard, receiving system 170 must then move on to the initial credit approval process 926. This process starts by simply seeking approval of the credit card of one or more vendors via the batch table 1130, which is relationally linked to the quality control table 1124 and the workorder table 1128. This approval process can be done through any credit organization which is well known to all users of major credit cards. In step 928, the process determines if the credit card has been approved or not. If the credit card has not been approved, the process moves on to step 930 where an electronic mail
message is sent to the vendor indicating that his credit card has been denied and requesting that
the vendor resubmit their order with a new credit card. Next, in step 932 any stored information
related to the order is deleted from the workorder 1128, temp 1120 and artwork tables 1132 as
this order must now be resubmitted.

If the credit card is approved in step 926, the process moves on to step 934 where
appropriate charges are made to the credit card for preparation of the billboard. At this point,
the system moves to step 936 where an electronic mail message is now sent to the vendor
indicating their credit card has been approved and charged for the preparation of a billboard.
This message also confirms that the order will be further processed and a billboard will be
prepared. The approval field in the workorder table 1128 is updated as well.

Next, in step 938 an electronic mail message is prepared and sent to the assigned artist
indicating there is a project waiting for them in the artist directory. This message will include
the exact location of the project, and all information needed by the artist to prepare a billboard.
Additionally, the process now increases that particular artist’s workload count by one in order to
track the number of projects being worked. At this point, the initial credit approval process 926
is completed and receiving system 170 can now move on to its next processing steps.

Again, where the vendor desires a billboard to be prepared, and the vendor has passed
through the initial credit approval process 926, it is now necessary for the artist to prepare the
actual artwork. This artwork preparation process 940 is obviously a necessary step in the
preparation of the billboard, however is not directly carried out by order receiving system 170.
As previously mentioned, the order has been stored by receiving system 170 and appropriate
information has been sent to the artist. The order retrieving system now simply waits for the
artist to do their work and return the finished product to retrieval system.

Artwork preparation process 940 is shown in more detail in Figure 13C. This process
begins by the artist first logging on to the system in step 942. Each artist working on these
billboard projects will be provided with appropriate access instructions and information (e.g.
passwords) so that they may access the appropriate directories within the system. Following log
on, the artist downloads the vendor posted artwork and all information related to this artwork in
step 944. In step 946 the artist prepares the actual billboard artwork using whatever methods the
artist has at their resources. This could include any number of graphics development programs
or processes. This graphics development (step 946) is left entirely to the discretion of the artist,
leaving them with creative freedom to produce a pleasing and innovative product.

Once completed, the artist uploads the completed billboard to the quality control table
1124 in step 948. The quality control table 1124 acts as a holding area for incoming projects for
the quality control department. Lastly, in step 950 an electronic mail message is sent to the quality control department indicating that a recently prepared billboard has been stored in the quality control table and that this billboard now requires quality review. At this point, preparation process 940 has been completed and receiving system 170 can proceed in processing the order.

Referring now to Figure 13D, quality control process 352 is further outlined. Beginning at step 954 the electronic mail message sent in either step 910 or step 950 is received by the quality control department indicating that new billboards have been posted in their database and these billboards now require review. In step 956, the billboard is downloaded by the quality control department for conducting its review. Using any number of standards, the quality control department can then review the billboard to determine if it meets the standards of the quality control department. The standards used by the quality control department can vary widely depending on their goals. For example, the quality control department could simply review billboards to ensure improper or salacious material is not included therein. Alternatively, the quality control department could review the billboard to be sure it includes only high quality graphic art pieces. Other quality control measures may be incorporated depending on the desired goals of the quality control department.

In step 958, the system determines if the billboard is approved. This may be accomplished in many different ways including through manual input of quality approval, or through electronic analysis of the artwork. If the billboard is approved, the process moves on to step 960 where the billboard is transferred to the billing database. Once transferred to the billing database, the receiving system 170 determines whether the billboard was created by the vendor or by an artist in step 962. This information was provided during the initial order processing steps 900. If the billboard was created by an artist, the system decrements the artist’s workload active field in the artist table 1132, in step 964. The order is then forwarded to accounting for billing purposes in step 966. Similarly, if the order was created by the vendor, the process simply moves directly to step 966 where the order is forwarded to accounting for billing purposes. At this point, the order is ready for a final billing process which is further outlined below.

If the billboard is not approved by quality control in step 958, the system then moves to step 968 where it is again determined if the billboard was created by an artist or the vendor. This is an identical inquiry to that of step 962. If the billboard was created by a vendor, the process then moves to step 970 where an electronic mail message is prepared and sent to the vendor indicating that their billboard did not meet quality standards and that the order must be
placed again. Subsequently, in step 972, any information relating to the order is completely deleted from the temp table 1120 and quality control table 1124 as it is now necessary for the order to be resubmitted.

Back in step 968, if it is determined that the billboard was created by an artist, step 974 now prepares an electronic mail message and sends it to the artist indicating that their newly prepared billboard has not met quality standards. Step 974 further indicates that changes to the newly prepared billboard are necessary. Next, the system moves on to step 976 where the unapproved billboard is uploaded to the artist directory once again. Now it is necessary for the artist to do revision work, and then once again upload the billboard to the quality control table 1124 (similar to the process outlined in the billboard preparation process 940).

In final billing step 978, the vendor is billed for the posting of their billboard on the billboard directory. This final billing process 978 is further outlined in Figure 13E and begins with step 980 where credit card approval is sought. Again, this inquiry is identical to the previous credit card approval steps. If the credit card is approved, the system moves on to step 982 where the credit card is actually charged for the initial costs of posting the billboard. Next, in step 984, vendor information and billboard information are transferred to the customer table 1126 and billboard table 540 in FIG. 8. Further, in step 986 the billboard is posted to the billboard table 540. Lastly, in step 988 a confirming electronic mail message is sent to the vendor indicating his billboard has been placed in the billboard directory and corresponding charges have been made to their credit card.

Alternatively, should the credit card not be approved in step 980, the system goes on to step 990 to again determine if the billboard was created by the vendor or by an artist. If the billboard was created an artist, the billboard is then moved to a archive table in step 992. By storing this billboard in this location, it can later be retrieved. The vendor has already been billed for billboard preparation thus it is unreasonable to simply delete the billboard. Should the credit card or financing problems be worked out, this billboard can then be easily retrieved from the archive or return directory and further processed. Alternatively, the billboard could be retrieved and then resubmitted in a new order. In step 994, an electronic mail message is prepared and sent to the vendor indicating their credit card has been rejected and indicating where in the return directory the billboard can be found. This electronic mail message also provides instructions to the vendor to resubmit their order, this time indicating a prepared billboard already exists. Next, in step 996, all information relating to the order, except for the above-referenced storage in the return directory, is deleted from the system. Consequently, a new order must be submitted to further process this billboard.
If the system determines that the billboard was created by a vendor in step 990, step 998 prepares and sends an electronic mail message to the vendor. This message would be similar to other messages previously discussed wherein the vendor is advised that his credit card has been denied and that the order must be resubmitted. Next, the process moves to step 996 where the information relating to this order is now removed from the temp table 1120 and quality control table 1124 and the batch table 1130 is adjusted.

In summary, the process described in Figures 13A through 13E provides an automated system for vendors to access graphic artists who are familiar with the preparation of appropriate billboards. This also provides the mechanisms to allow vendors to have billboards prepared for posting on a billboard directory.

MULTI-MEDIA PUBLISHING SYSTEM DETAIL

FIGs. 11A and 11B show a representative multi-media presentation in accordance with the present invention created by the multi-media publishing system 726 in FIG. 10. As described above, the viewable documents 722 comprise the presentation. These documents control the display of image and sound files in the viewing system. Shown also in FIG. 11A-11B are auxiliary files which set the frames into which the viewable documents are loaded. The auxiliary documents are needed if the framing in the presentation changes at one or more steps along the presentation.

An example of an auxiliary document is the index01 document. This document divides the presentation window into two rows, row0 and row1, and row0 into two frames, frame0 and frame1, thus creating a hierarchy of objects within the presentation window. In this representative presentation, frame0 defines the viewing area for the subsequent documents. Another auxiliary document is the main document 766, which is loaded by the index01 document into frame0. Main 766 subsequently divides frame0 into two columns, one for containing the show0 document 768 and one for containing the right01 document 770 and loads the show and right1 documents, respectively into the two columns. The show0 document 768 presents one or more image files and a sound file, sound0 in its display area and the right01 770 document presents one or more image files in its display area. The show0 document 768 controls the sound for this part of the presentation and the right01 document 770 only presents its image files. Furthermore, the show0 document 768 uses the window timer method, setTimeout(), to determine its persistence time. In this case, the show document is set to persist for 7500 milliseconds after which it loads main01 into frame0. The show document can control the document that gets loaded into frame0 because frame0 is an object in the browser
object hierarchy, in this case the parent, to which all other objects in the hierarchy have access. FIG. 15 shows a portion of the object hierarchy used in the representative presentation.

In FIG. 15, an object named window 1150 is at the top of the hierarchy. Below it are two frames, row0 1152 and row1 1154, created by the index01 document, by means of a frameset tag in the document. Below row0 is are the frame0 1156 and frame1 1158 frames also created by the index01 document. Index01 also loads the main document into frame0 after frame0 is created. Finally, below frame0 are the frames which contain the show 1160 and right1 1162 documents. Main creates these frames and loads the show 1160 and right1 1162 documents into these frames. As can be seen from FIG. 15, when show references its parent, frame0 1156, as the frame to be replaced with a new document, the current frames, containing show 1160 and right1 1162 disappear and a new document, main01, referenced by show, is loaded into frame0. Main01 immediately loads show01 into frame0 and show01 presents its image and sound files for 7500 milliseconds by invoking the setTimeout() method.

The presentation continues in this manner. Each document invoking a replacement document for an object at some level in the object hierarchy. In this way, a frames within the window can be altered at any step along the presentation and by any of the documents involved.

ENHANCEMENT AND COMPRESSION DETAIL

As discussed in reference to FIG. 3C, meeting the quality control standards of the receiving system involves, in one embodiment, an enhancement and compression operations applied to the graphical promotional information including the multi-media images. FIG. 16 shows a flow chart of the basic steps involved in enhancing and compressing an image involved in a promotional presentation.

In step 1220, textual information is received in a Corel file and in step 1222 artwork is received as a Adobe Photoshop 5.02 file.

Next, in step 1224, the textual information and the artwork are merged into an Adobe Photoshop 5.02 *.psd file. In one embodiment, a file size in the range of about 1.6 to 3.5 Megabytes is typically encountered for a merged file, although the file size can vary considerably depending on the textual and artwork content. Furthermore, there is no file size requirement for the merged file.

Next, in step 1226, the merged artwork file is saved as an uncompressed JPEG file using Compupick 4.0.

Finally, in step 1228, using Adobe Photoshop Delux, the Compupick JPEG file is enhanced. The enhancement process includes (a) increasing the contrast of the image until the
colors in the image being to "bleed," (b) incrementally reducing the contrast to obtain maximum contrast without "bleed," and (c) reducing the brightness to decrease color saturation. The compression step is then carried out, in which file is save with a maximum compression setting using five progressive scans and removing the paths of any composite images in the file, i.e., flattening the file. In one embodiment, a file size ranging from approximately 22 to 52 Kbytes is typically encountered for the enhanced and compressed file when the input files size range is approximately 1.6 to 3.5 Megabytes, respectively. There is no requirement that the enhanced and compressed file has a particular size. The goal of the enhancement process is to obtain an image that has the maximum possible contrast and the optimum color saturation. The goal of the compression process is to produce the smallest file size, consistent with goal of the enhancement process.

Although the present invention has been described in considerable detail with reference to certain preferred versions thereof, other versions are possible.

For example, in FIG 2, in one version of the invention, a separate database management system is dedicated to managing database 180 and communicates to the database management system that manages the remaining databases 182 and 184. Also, document publishing system 1856 and multi-media publishing system 188 need not be separate systems. Viewing system in FIG. 2 can be any kind of system capable of interpreting a markup language document.

In FIG. 3F, a multi-media selection input includes not only buttons, but selectable images within the graphical billboard, including animated images or images that change focus when selected.

For example, in FIG. 6, according to another version of the invention, selection of the vendor search letters is accomplished by a drop down list which displays two letters instead of buttons 442 labeled with the letters of the alphabet. In another version, the vendor search letters are entered into a entry field similar to entry field 446. Thus, in accordance with the present invention, selection area 420 provides a mechanism for gathering the category, region and search letters chosen by the vendor and for an initially viewed document, a mechanism for gathering the category and region information.

Further, in FIG. 6, in another version of the invention, instead of using buttons 454 to invoke a multi-media presentation, the presentation is invoked by selecting an anchored image within the billboard itself. Thus, in accordance with the present invention, the graphical billboards provide a mechanism for receiving a selection input to invoke a presentation.
Again, in FIG. 6, the actual placement of the selection area 440, the changeable billboard display area 422 and the advertising areas 424 and 458 can be altered. In some versions, the advertising areas 424 and 458 are not present.

In FIG. 8, the fields of the billboard table 540 and AMPP table 542 can be in any order in the table.

In FIG. 11, the multi-media presentation need not have a sound file for any or all of the show documents. While sound tracks are optional they are preferred for the presentation.

Therefore, the spirit and scope of the appended claims should not be limited to the description of the preferred versions contained herein.
CLAIMS

What is claimed is:

1. A method of using a computer to search a database for vendor promotional information, comprising:
   receiving a request for vendor promotional information, wherein the request includes fields specifying: a category specifying a type of product or service, and a geographic region; and
   retrieving, from the database, a set of vendor promotional information based on the received request.

2. A method of using a computer to search a database for vendor promotional information as recited in claim 1, wherein the request includes vendor search letters for identifying a vendor in the database.

3. A method of using a computer to search a database for vendor promotional information as recited in claim 2, wherein the set of vendor promotional information includes the vendor’s promotional information if the vendor’s information is accessible through the database.

4. A method of using a computer to search a database for vendor promotional information as recited in claim 2, wherein the set of vendor promotional information is a set of graphical billboards.

5. A method of using a computer to search a database for vendor promotional information as recited in claim 4, wherein set of billboards includes the vendor’s graphical billboard if the vendor’s graphical billboard is accessible through the database.

6. A method of using a computer to search a database for vendor promotional information as recited in claim 1, wherein the specified category is one of twenty-six categories.

7. A method of using a computer to search a database for vendor promotional information as recited in claim 1, wherein a set of vendor promotional information includes information for up to about twenty vendors.

8. A search system comprising:
a database for storing a vendor's category, region, vendor promotional information, and an identification number for the vendor promotional information;
an input form for collecting query data;
a database management program for performing a search on the database using the query data collected on the input form;
an output document for reporting the results of the query, the search results including a set of promotional information matching the query data collected from the input form.

9. A search system as recited in claim 8, wherein the query data includes a category field, and a region field, the category field specifying a type of product or service, and the region field specifying a geographic area.

10. A search system as recited in claim 9, wherein the database stores a vendor's search letters; and wherein the query data includes a vendor's search letters, the search letters indicating a vendor whose promotional information is sought after.

11. A search system as recited in claim 10, wherein the set of promotional information includes the vendor whose promotional information is sought after in the database.

12. A search system as recited in claim 8, wherein the input form for collecting query data collects data specifying the identification number for the vendor promotional information.

13. A search system as recited in claim 8, wherein the vendor's promotional information is graphical promotional information.

14. A search system as recited in claim 13, wherein the graphical promotional information is a graphical billboard object.

15. A system comprising:
a database for storing promotional information for a plurality of vendors; and
a computer processing system in communication with the database, the computer processing system configured to:
receive a request for vendor promotional information, wherein the request includes fields 
specifying: a category specifying a type of product or service, and a geographic region; and 
retrieve, from the database, a set of vendor promotional information based on the 
received request.

16. A system as recited in claim 15, wherein the request includes a field specifying search letters 
by which a vendor wishes to be searched.

17. A system as recited in claim 16, wherein the computer processing system includes the 
vendor’s promotional information in the retrieved set of vendor promotional information if the 
vendor’s information is accessible through the database.

18. A system as recited in claim 16, wherein the set of vendor promotional information is a set 
of graphical billboards.

19. A system as recited in claim 18, wherein the computer processing system includes the 
vendor’s graphical billboard in the retrieved set of billboards if the vendor’s graphical billboard 
is accessible through the database.

20. A system comprising:
   a database for storing promotional information for a plurality of vendors;
   a computer processing system in communication with the database, the computer 
   processing system configured to:
   receive a request for a vendor’s promotional information, wherein the request includes a 
   field specifying an identification number; and
   retrieve, from the database, the vendor’s promotional information based on the received 
   request, if the requested information is accessible through the database; and
   report a negative search result if the requested information is not accessible through the 
   database.

21. A system as recited in claim 20, 
   wherein the vendor promotional information is a graphical billboard; and 
   wherein the identification number is a billboard identification number.
22. A system as recited in claim 21, wherein the computer processing system is configured to retrieve a set of graphical billboards including the requested graphical billboard based on the received request if the requested graphical billboard is accessible through the database.

23. A system as recited in claim 22, wherein the set of graphical billboards includes billboards of vendors whose products or services have the same category as the requested graphical billboard.

24. A system as recited in claim 22, wherein the set of graphical billboards includes billboards of vendors whose products or services have the same region as the requested graphical billboard.

25. A method of using a computer to search a database for vendor promotional information, comprising:
   receiving a request for a vendor’s promotional information, the request including a field specifying an identification number; and
   retrieving, from the database, the vendor’s promotional information based on the received request, if the requested information is accessible through the database; and
   reporting a negative search result if the requested information is not accessible through the database.

26. A method of using a computer to search a database for vendor promotional information as recited in claim 25,
   wherein the vendor promotional information is a graphical billboard; and
   wherein the identification number is a billboard identification number.

27. A method of using a computer to search a database for vendor promotional information as recited in claim 26,
   wherein retrieving the vendor’s promotional information includes retrieving a set of graphical billboards, the set including the requested graphical billboard based on the received request, if the requested graphical billboard is accessible through the database.

28. A method of using a computer to search a database for vendor promotional information as recited in claim 27, wherein the set of graphical billboards includes billboards of vendors whose products or services have the same category as the requested graphical billboard.
29. A method of using a computer to search a database for vendor promotional information as recited in claim 27, wherein the set of graphical billboards includes billboards of vendors whose products or services have the same region as the requested graphical billboard.
Begin

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220

receive graphical promotional information about products or services offered by each vendor

228

review the graphical promotional information to determine whether the information complies with pre-determine quality control standards

230

assure that the graphical promotional information meets the quality control standards

240

enter graphical promotional information into a database

242

receive selection criteria for locating vendor promotional information in the database

248

search for and retrieve from database graphical promotional information matching selection criteria

262

input new selection criteria

250

provide a document viewable to the potential customer which includes a billboard containing the graphical promotional information that matches the selection criteria

256

Select billboard?

No

J

258

provide information to the potential customer about the vendor promoted in the billboard

Yes

K

260

H

FIG. 3A

SUBSTITUTE SHEET (RULE 26)
FIG. 3B

receive graphical promotional information directly from vendor

provide vendor artwork to an artist chosen from a list of artists

artist converts the vendor artwork into graphical promotional information
QC Standards Met?

modify the graphical promotional information to meet the standards

enhance the quality of the promotional information

compress the promotional information to a pre-determined size

FIG. 3C
FIG. 3D

receive an identification number for a billboard

receiving a search category, a search region, and vendor search letters
FIG. 3E
Is a multimedia selection input available?

Yes

Is input selected?

Yes

Provide multi-media presentation

No

Return to current billboard document

K

FIG. 3F
Order Form Completed by Vendor

Billboard Order Form

Vendor Billboard Posted To Quality Control Table

Vendor Artwork posted

Vendor chooses Artist or Artist is selected automatically

Artist Prepares Billboard from Vendor Artwork

Billboard is posted to Quality Control Table

Review billboard based on quality control standards

Billboard Approved?

Yes

Approved Billboard Moved to Billboard Directory Database

No, get new billboard from Vendor

No, get new billboard from Artist

FIG. 5
Be a kid again this summer

North Carolina

FIG. 6B
A

E-mail Sent to Customer Indicating Card Denied and Need to Resubmit Order

930

No

Credit Card Approved?

Yes

Credit Card Charged

934

E-mail sent to Customer Confirming Order and Indicating that Credit Card Has Been Charged

936

E-mail Sent to Identified Artist Indicating They Have Been Assigned a New Billboard. Artist Workload Count Increased by One

938

C

FIG. 13B
C

Artist Logs On to the System

Artists Downloads Customer Posted Artwork

Artist Prepares Billboard

Completed Billboard Uploaded to quality control table

E-mail Sent to Quality Control indicating Completed Billboard Has Been Uploaded

B

FIG. 13C
E-mail Received Indicating New Billboard Requires Review

Billboard Downloaded by Quality Control from the quality control table

Is Billboard Approved by Quality Control?

Yes → Billboard Transferred to Billing Database

No →

Was Billboard Created By Customer or An Artist?

Artist Created

E-mail Sent to Artist Indicating that Billboard Was Rejected By Quality Control and that Changes Are Necessary

Unapproved Billboard Uploaded to Artist Directory

Artists Workload Count Reduced By One

Order Forwarded to Accounting for Billing

Customer Created

E-mail Sent to Customer Indicating That Billboard Was Not Approved and Order Must Be Resubmitted to be reconsidered

Any Stored Information Relating to Order Deleted from System

FIG. 13D
28/31

Credit Card Charged

Credit Card Approved?

Yes

Customer And Billboard Information Transferred to Customer and Billboard Tables

No

Was Billboard Created By Customer or an Artist?

Artist Created

Billboard Moved to Billboard Directory

E-mail sent to Customer Confirming that Billboard Has Been Placed on Billboard Directory and Credit Card Has Been Charged.

E-mail Sent to Customer Indicating Card Has Been Rejected, Indicating where Prepared Can Be Downloaded, and instructing Customer To Place Order Again Using Approved Billboard.

Any Stored Information Relating to Order Deleted from System

Customer Created

Billboard Moved to Archive Database

E-mail Sent to Customer Indicating Card Denied and Need to Resubmit Order

FIG. 13E
FIG. 16

1220 Receive Corel file containing text

1222 Receive Artwork in Adobe Photoshop 5.02 File

1224 Merge Text and Artwork into Adobe Photoshop 5.02 *.psd file

1226 Save merged artwork as a *.jpeg file using Compupick 4.0 - no compression

1228 Use Adobe Photoshop Delux (APD) to enhance the Compupick *.jpeg file. Store results as flat APD *.jpg file with maximum compression, with five progressive scans and with paths removed.

Artwork file size is 1.6 to 3.5 Megabytes

Increase contrast until colors bleed and then incrementally reduce to produce maximum contrast, reduce brightness and flatten file. Save as compressed *.jpg file

Output file size is between 22-52 Kbytes.
# INTERNATIONAL SEARCH REPORT

**A. CLASSIFICATION OF SUBJECT MATTER**

<table>
<thead>
<tr>
<th>IPC(7)</th>
<th>G06F 17/30</th>
</tr>
</thead>
<tbody>
<tr>
<td>US CL</td>
<td>705/14</td>
</tr>
</tbody>
</table>

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

| U.S.    | 705/14, 27 |

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 5,918,227 A (POLNEROW et al.) 29 June 1999 (29.06.99), col. 4, lines 25-65</td>
<td>1-29</td>
</tr>
<tr>
<td>X</td>
<td>Anonymous. CMP's ChannelWEB -- <a href="http://www.channelweb.com">http://www.channelweb.com</a> -- Lauches Promotion Center. October 1997, para. 2 and 3</td>
<td>1-29</td>
</tr>
<tr>
<td>A</td>
<td>US 5,740,549 A (REILLY et al.) 14 April 1998 (14.04.98), entire document</td>
<td>1-29</td>
</tr>
<tr>
<td>A</td>
<td>US 5,813,006 A (POLNEROW et al.) 22 September 1998 (22.09.98), entire document</td>
<td>1-29</td>
</tr>
<tr>
<td>A</td>
<td>US 5,850,433 A (RONDEAU) 15 December 1998 (15.12.98), entire document</td>
<td>1-29</td>
</tr>
<tr>
<td>A, P</td>
<td>US 6,098,065 A (SKILLEN et al.) 01 August 2000 (01.08.00), entire document</td>
<td>1-29</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

See patent family annex.

- **"A"** document defining the general state of the art which is not considered to be of particular relevance.
- **"E"** earlier application or patent published on or after the international filing date.
- **"L"** document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified).
- **"O"** document referring to an oral disclosure, use, exhibition or other means.
- **"P"** document published prior to the international filing date but later than the priority date claimed.
- **"T"** later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention.
- **"X"** document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone.
- **"Y"** document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- **"&"** document member of the same patent family.

Date of the actual completion of the international search: 14 February 2001 (14.02.2001)

Date of mailing of the international search report: 08 March 2001

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks

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Form PCT/ISA/210 (second sheet) (July 1998)
Continuation of B. FIELDS SEARCHED Item 3: EAST: database ads advertisement promotion search
DIALOG: vendor merchant retail seller advertisement promotion commercial database information retrievable query