SYSTEM AND METHOD OF DIRECTING A USER TO ACCESS AN INFORMATION SITE

Method of directing a user to access information at an information site is disclosed in which a computer application is operated and requires data, a user identifies a target information site, the target information site is accessed, accessing of the target information site is logged, and information is provided to the computer application in dependence upon the accessing of the information site.
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The present invention generally relates to the accessing of information from an information site such as a web page.

The use of the internet for both business and personal use has expanded rapidly over the past few years. In particular, the use of the worldwide web has expanded such that many businesses now have a presence on the web in the form of web pages. Web pages can provide useful commercial information about a company and can be used for direct commercial dealings such as the selling of products in addition to the advertisement of products. Thus, it is considered by most businesses to be vital to have a "presence" on the worldwide web to increase the profile of the business and to advertise products. Businesses are therefore keen to attract potential customers to view their web sites.

In addition to the use of worldwide web by businesses, it is also extensively used for leisure and educational purposes. Games such as "Quake" have been developed which are now played over the worldwide web.

Further, the worldwide web is used for teaching purposes. For example the WebQuester site operated by McGrawHill (http://www.mhhe.com/webquest) allows a teacher or professor to set a series of questions which require answers from particular web sites. This system
therefore provides a teaching aid whereby pupils learn about particular subjects by reading about it on particular web sites to which they are directed and answering the particular questions set. Answers are given either by a text entry or by a choice from possible answers.

To date business and leisure or educational interests have been serviced independently.

In accordance with one aspect of the present invention there is provided a method and apparatus for directing the user to access information at an information site. The user is encouraged to access an information site by tasks which are set by a processing application. For example, the processing application can be some form of game which requires information in order to progress through the game. Alternatively, the processing application could be an educational application whereby questions are asked and require answers. In order to input the necessary information the user is required to identify and access information at an information site. The act of accessing the information is logged to provide a record of access and the user is subsequently able to progress the processing by providing information to the processing application.

It can thus be seen from this aspect of the present invention that, whilst allowing the user to retrieve the necessary information and therefore progress the
processing application, a record can be kept of the accessing of the information sites. This record can be kept at any one of a number of locations e.g. at the location of the user, at the location of the information site, or at a remote monitoring site.

In an embodiment of the present invention the information sites comprise web pages which can either be made available locally to a computer e.g. they can be stored in storage medium within a machine, and/or they can be made available over a network such as the internet or a company’s intranet. In such an embodiment the user interface means and accessing means comprises a web browser such as Netscape (Trademark) or Internet Explorer (Trademark).

Thus whilst a user benefits from the game or educational information provided, they are being directed to particular web pages. Such web pages can be owned by commercial organisations who wish to promote their products or services. Thus this aspect of the present invention, whilst providing a benefit to the user, also provides a benefit to the proprietor of the web sites in that people are encouraged to access and view their web pages. Proof of visitation to the web pages is available to the commercial organisation thus enabling not only the identification of how often the web site is visited, but also by whom.
Thus in accordance with this aspect of the present invention hypertext mark up language (HTML) can be provided to a user's computer to be implemented by a browser to operate an application with which the user wishes to interact and which can direct the user to retrieve information from desired web pages. Thus, it is possible for the designers of the HTML code to operate with the proprietors of the web pages. Thus the designers of the HTML code are able to offer a service to businesses whereby subscribers to the service are provided with increased traffic to web pages and information identifying the people viewing their web pages.

In order to provide the information on the accessing of the web page, information identifying the user can be provided to a control apparatus associated with the web page e.g. the web server. In this way access log information is provided directly to the web server. This can either be provided every time the web page is accessed or an access log can be stored at the user's machine and then transmitted to the web server either at the end of a game for example, or periodically.

Alternatively information on the accessing of the web pages by the user i.e. identification of the user and the accessed web page can be provided to monitoring apparatus e.g. a server operated by the providers of the service to the proprietors of the web pages. The
information could either be sent to the server every time
the web page is accessed, or a log can be kept on the
user's machine and this can be transmitted to the
monitoring apparatus at appropriate times e.g. at the end
of the game or periodically. The latter method is
preferred since this requires a reduced band width for
the transmission of the information as a log to the
server.

Another embodiment of the present invention the
information required by the processing application is
available on the web page and the user is thus able to
retrieve the information once the web page has been
located and retrieved. The information can then be
transferred into the processing application e.g. where
an answer to a question is required in the form of text,
the text can be located in the target web page and cut
and pasted into the processing application.

In another embodiment of the present invention, the
information required by the processing application is
input by the user after having viewed the web page. In
this embodiment either the information in the exact
required form is not present or although information may
be required to be retrieved from the web site, further
information is required to be input by the user in order
to answer the question and progress through the game for
example.
In an embodiment of the present invention the status of the processing application can be sent to the monitoring apparatus. Thus in this embodiment where a service is provided to commercial organisations owning the target web pages, and it is necessary to monitor the progress of the users e.g. for purposes of marking the questions for determining the winner of a game, information identifying the progress by the user can be sent to the monitoring apparatus. For security this can be encrypted. This level of control also allows the monitoring apparatus to send status information to the user’s machine when a user re-enters a game for example. The received status information allows the game to be re-started at the position at which it was last left by the user. This holding of the status information remote from the user’s computer provides a level of security.

In order for processing apparatus to progress to process information, it must be determined whether the information which it is provided with is the required information e.g. whether the answer to the question put to the user is correct. This checking can either be carried out at the user’s machine or at the monitoring apparatus. Where the checking is carried out at the user’s apparatus, it is necessary for the apparatus to have stored therein the answers to the questions i.e. it must have knowledge of the required information. This information can either be initially be provided with the
code for implementing the processing application, or it can be downloaded from the monitoring apparatus.

In accordance with a second aspect of the present invention there is provided a computer game apparatus for playing a game, the apparatus comprising:

output means for outputting the status of the game to a user;

user interaction means for use by a user to interact with the computer game apparatus to progress through the game;

location means responsive to said user interaction means to locate information sites which must be accessed to progress through the game;

verifying means for verifying that information at said information sites has been accessed; and

game processing means responsive to said user interaction means after accessing of the information to progress the status of the game.

In accordance with a further aspect of the present invention there is provided a method of apparatus for playing a game wherein the status of the game is output to the user, a user can interact with the computer game to progress through the game, information sites holding information required to progress through the game can be located by the user, information can be retrieved from the information sites and a game application receives the retrieved information to progress the status of the game.
In accordance with another aspect of the present invention there is provided a method of processing data, the method comprising implementing a processing application requiring data, implementing a web browser application, the web browser directing the user to target web pages, responding to user interactions in the web browser to retrieve and view the target web pages, and passing data selected by the user from the displayed web pages to the processing application, wherein the processing application processes the selected data if it is the required data.

Thus in accordance with this aspect of the present invention, data can either be retrieved from the web pages and input to the processing application, or the web browser can add the data required by the processing application to the retrieved web pages and display the modified web pages having the added data to the user. The user is thus able to select the required data which has been added to the web page so that the data can be passed to the processing application.

Since all the aspects of the present invention can be implemented by a conventional computer apparatus operating a computer program, the present invention also provides a storage medium for storing instructions for controlling a processor to carry out processing steps to implement the method. Further, since the computer program can be downloaded in an electronic form over a
network such as the internet, the present invention also provides an electronic signal carrying code for controlling a processor to carry out the method.

In an embodiment of the present invention all of the computer code can be downloaded from a remote server over a network such as the internet by a user machine to participate. The remote server will thus contain information regarding the user and the target web pages to which the user is to be directed.

In an alternative embodiment a backbone or structure for the computer code is provided locally on the user's computer for example by an initial download or on a storage medium such as a CD ROM or floppy disk in order to avoid downloading all of the code required every time the user wishes to play the game. All that is required in this embodiment is the downloading of particular parameters e.g. clues or questions in order for a game to be played.

In a further embodiment it is also possible that all of the computer code is provided locally and no parameters are downloaded when the game is played. This will provide a limited game which is not upgradable on-line and would not allow the updating of the target web page addresses should these change.

In yet another embodiment of the present invention all of the programs are provided remotely at a server so that a user's machine can be of minimum capability. Only
graphics and/or text are sent over the network to the user's machine. This arrangement is applicable to for example web TV "Set Top Boxes". An aspect of the present invention is also applicable to a system wherein the proprietors of the target web pages do not cooperate with the designer of the computer program. In this case, the proprietors of the visited web pages do not obtain useful statistical information which can be made available as a result of the operation of the system.

The present is not limited to use over the internet and is applicable to any network which enables information to be passed over it. Thus, in a large company for example, the present invention can be employed to encourage employees to visit company web pages over the intranet.

Another aspect of the present invention provides a system for training a user in the use of an information retrieval system e.g. the worldwide web. In the specific embodiment of the worldwide web, by providing an interface in the form of a game for example, the user is encouraged to interact with the computer in order to play the game. Such an interaction causes the user to have to navigate to web pages following for example clues in order to retrieve the necessary information in order to progress through the game. Thus this embodiment of the present invention provides a web training system.
The embodiments of the present invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a schematic diagram of the system in accordance with one embodiment of the present invention;

Figures 2a is a flow diagram illustrating the operation of Figure 1 in accordance with a first embodiment of the present invention;

Figure 2b is a flow diagram illustrating the operation of Figure 1 in accordance with a second embodiment of the present invention;

Figure 3 is a schematic view of the system in accordance with the third embodiment of the present invention;

Figures 4a and 4b are a flow diagram of the operation of the third embodiment;

Figure 5 is a schematic diagram of the game server in the system of Figure 3;

Figure 6 is a schematic drawing of the user’s computer in the system of Figure 3;

Figure 7 is a schematic illustration of the web browser interface;

Figure 8 is a schematic illustration of the game interface;

Figure 9 is an illustration of the structure of a token;
Figure 10 is a schematic drawing of the construction of a computer in accordance with a further embodiment of the present invention.

In Figure 1 a user's computer 1 comprises a personal computer capable of running a web browser application such as an Netscape (Trademark) or Internet Explorer (Trademark) which is capable of running Java (Trademark). The user's computer 1 is connected to the internet 2 via a modem and a telecommunications line 3 for example.

The web browser application implements hypertext mark up language (HTML) which includes a Java applet which implements a processing application such as a game or educational application which requires information to be input. Thus, when a user implements a system, initially the web browser is loaded and this will load an initial web page which will cause the Java to be launched thus implementing the game or the like.

Also connected to the internet 2 are one or more servers 4 and 5. A server comprises a web server storing HTML code which is retrievable over the internet by the web browser implemented on the user's computer 1 in order to view the information contained within the web page. The servers can for example comprise servers operated by businesses which wish to advertise their business or products.
The operation of Figure 1 in accordance with a first embodiment of the present invention will now be described with reference to Figure 2a.

In step S1 the browser is loaded and in step S2 the task such as a game or educational application is loaded as a web page. In step S3 the display illustrates the current step or position in the task e.g. game which the user has progressed to and which requires information to progress further. In step S4, based on a displayed clue or question for example, the user can select to go to a particular web page as necessary in order to progress the task. In step S5 the selected web page is then loaded via the internet from one of the servers from Figure 5. In step S6 the user then views the information in the web page and in step S7 the visitation to the web page is logged. In step S8 information can then be added in to the task in order to progress the task. In step S9 it is determined that the information is incorrect the process then returns to step S3. If the information is correct, in step S10 it is determined whether the task is completed. If not in step S11 the next step in the task is displayed which requires information and the process returns to step S4. If the task has been completed, the task is ended in step S12.

Thus in this embodiment of the present invention visitations to the target web sites are monitored and logged. This information can then be used by the
proprietors of the target web sites for example, marketing purposes. Information can only be entered into the tasks after the web page has been visited. This information can either be entered using information directly from the web page or information can be entered manually.

This embodiment to the present invention any method of logging the visit to the web page can be used. For example, the URL of the visited web page can be stored locally together possibly with the time of access. This information can then be sent to the server for the target web page at a later date together with information identifying the user. The information could be transmitted for every time the web page is accessed or periodically.

Alternatively when a user accesses a target web page, an identification (ID) for the user is transmitted. If the server for the target web page has no information regarding the user from the user ID, it can request the sending of details on the user. For subsequent accesses of the web page it is sufficient for the user’s machine to send the user’s ID.

The transmission protocol which can be used for the transmission information between the user’s computer and the server can be any of the internet protocols e.g. FTP or HTTP.
The operation of Figure 1 in accordance with another embodiment of the present invention will now be described with reference to Figure 2b. In this embodiment like steps to the first embodiment are given like references in this embodiment. The only differences between the two embodiments is that after the web page has been loaded in step S5 instead of merely viewing the information on the web page, the user must search for the information which is required and it is selected in step S13. Then in step S14 the information is retrieved from the web page and it is entered in the task directly.

Thus in this embodiment of the present invention no manual input of information is required. The information can either be contained within the retrieved web page or it can be added to the web page during the loading step S5.

Figure 3 illustrates a third embodiment of the present invention similar to the embodiment illustrated in Figure 1 except that a game server 6 is additionally connected to the internet 2. The game server 6 is provided by the designers of the program operated by the user's computer 1. The principle of the embodiment of Figure 3 is to provide a game to the user 1 with an incentive of a prize for the winner of the game, and to provide a service to the proprietors of the target web
pages whereby marketing information is provided as obtained during the implementation of the game.

In this embodiment it is assumed that the user’s computer 1 has already received the game structure either from a previous download over the internet from a suitable web server e.g. game server 6, or from a storage medium such as a CD ROM or floppy disk.

When a user initially uses the software it will be necessary for them to connect over the internet to the game server 6 in order to register. The process of registration requires the user to enter the minimum details e.g. name, address and telephone number in order to be assigned a user identification number (user ID) and password. The registration process can be carried out by the user accessing a registration web page. Registration for playing the game may require a payment or subscription which may go towards the prize money. The user may also be encouraged to enter further marketing information by virtue of an incentive such as a reduced subscription.

Once a user has registered, in order to play the game as will be described in more detail hereinafter, it is necessary for a user to log on to the game server 6 whereupon game parameters are downloaded enabling the user to play the game. In this embodiment only game parameters are downloaded and not all of the computer
codes and graphics. This has the benefit of reducing the network traffic.

Figures 4a and 4b are flow diagrams illustrating the operation of this embodiment of the present invention.

In step S20 the browser is loaded and automatically loads HTML code which causes a start web page to be displayed and the Java contained within the code launches a navigation bar which replaces the conventional navigation bar of the browser.

Figure 7 schematically illustrates the layout of the display. The bulk of the display is taken up by the web page 50. At the top of the web page 50 is displayed the navigation bar 41 which is provided with certain navigation icons. The icons 42 and 43 comprise the back and forward buttons. The icon 44 comprises a button to select a target index page (as will be described in more detail hereinafter). Icon 45 is a button used to retrieve information from a web page. Icon 46 is used to select the game window and can illustrate the current game being implemented. Icon 47 illustrates the current clue or question. Icon 48 is a button for bookmarking the current web page. This button adds the address of the current web page into the browser’s bookmark file. Icon 49 is a button allowing the display of player statistics for the game e.g. number of the questions answered, the number of objects retrieved, and the number of questions left.
In step S22 of Figure 4a a connection is then made to the internet in order to load the game server logon page. The user then enters the user ID password in order to logon to the game server (this may be a manual or automatic operation) in step S23 and in step S24 in response to a successful logon the game server home page is loaded. The user can then select to launch the game window using the icon 46.

The game application is then launched as a Java applet and a game window 60 is generated as illustrated in Figure 8. The window 60 comprises a clue or question area 61 in which the clues or questions to be answered are illustrated. A game area 62 illustrates the game and an area 63 is provided for storing the retrieved information in an inventory. Icon 64 provided in the left hand part of the display 60 allow the selection of the game being played. In this example, there is an option of five different games. This is merely however, a matter of design.

The game area displays the game as it is being played. For example, if the game comprises a crossword, the game area will illustrate crossword and clue/question area 61 will illustrate the clues/questions. The inventory area 63 will illustrate answers which have been retrieved i.e. words which can then be inserted into the game area.
There are many different types of games which can be played, some of which require the information to be inserted into the inventory and then correctly placed in the game area, others of which many require the information to be retrieved whereupon they will automatically be inserted into the correct position in the game area. Other games may require not just the retrieval of the information into the inventory, but also the additional input by the user e.g. the answering of additional questions, or, in a chess game, making chess pieces move once they have been collected from target web pages.

The browser window illustrated in Figure 7 and the game window illustrated in Figure 8 can be shown either side-by-side or in a tiled arrangement as is conventional in the Windows (Trademark) operating system.

Once the game has been launched and the window opened in step S25 a user can select a game using the icon 64. When the icon 64 is selected in step S27 the data set for the selected game can be downloaded from the game server 6. The data set comprises the parameters necessary for the operation of the game but need not comprise the code for the structure of the game. For example, for the crossword game, the user's computer already contains a code for implementing a crossword. What is downloaded are the clues, layout parameters i.e. positions of the answers within the crossword, the
answers, and information on the current state of the game
(required so that a user can exit the game and re-enter
at the same position).

In step S28, the game window illustrates the current
state of the game. In step S29 a user can then select
to play another game and if they do so in step S30 a data
set for the selected game is downloaded and the process
returns to step S28. If the user decides to proceed with
the game they select a clue or question in step S31
whereupon the clue or question is displayed. A user may
decide not to answer the clue or question in which case
the process returns to step S31 to allow the user to
select either a clue or question. If a user decides to
answer a clue or question, the user must go to a target
web page. In order to do this the user uses icon 44 in
order to select to display the target index page in step
S34.

The target index page comprises a web page which is
an index of all the selected target web pages to which
the player of the game can navigate. The user can select
to go the target web page simply by selecting a display
icon within the web page area 50 of the display in step
S35. The target web page is then loaded in step S36
allowing the user to search for and select an object as
required in order to answer the question for as
identified by the clue. The object which can be selected
by a user can comprise any type of information e.g. text,
audio, video, or image data. The selected object can then be retrieved using the retrieve icon 45. The action of retrieving the object from the target web page causes the formation of a token in step S38.

Figure 9 illustrates the data contained within a token for an object. The token contains the object itself i.e. text, audio, video, or image data, the universal resource location (URL) for the target web page, a time stamp indicating the time of accessing the web page, the players user ID, and a session ID. The session ID is assigned to a session when a user logs on. This session ID is transmitted to the user during the logon sequence together with the data set. The session ID comprises a public key to be used for encryption. Thus the retrieved data, the URL for the target web page, time stamp data and the player ID are all encrypted using the session ID to form a token for the retrieved object.

The retrieved object is then loaded into the inventory in step S39. The step of loading the object comprises the storage of a token in temporary memory in the user’s machine and the display of an image of the object in the inventory area 63 in the game window 60 in step S40. The displayed object can then be dragged from the inventory area 63 to the game area 62. If the object is not the correct object (step S42) the process returns to step S36 to load the target web page to allow the user to try again. If the object is correct the process
proceeds to step S43 to determine if the game is complete i.e. all the objects have been collected. If the game is not complete the process returns to step S31 to allow the selection of a further question or clue. If the game is complete, the user can select another game in step S44 whereupon the process returns to step S27. If no other game is selected, in step S45 the process of logging off from the game server is carried out whereupon information regarding the current status of the game or games can be transmitted to the game server. Such information includes the collected tokens and any other parameters which may have been entered by the user manually. The game window is then closed and the browser is exited in step S46.

Figure 5 illustrates schematically the structure of the game server 6. Within the game server 6 there is provided the database 19, a security module 13, a game download storage module 14, a communications I/O port 15 and a web server 18 all of which are interconnected via a data and control bus 20.

The communications I/O port 15 allows the interconnection of the server to the internet 2 via a telecommunications link. Thus, the communications I/O port receives and transmits information.

The web server 18 acts as an internet web server and thus hosts the registration web site 16 and the home web site 17. The game download storage module 14 stores
computer code which may be in compressed form which can be downloaded to a new user to be installed on a user's computer. Thus, initially when a user wishes to use this embodiment of the present invention the code which implements the structure of the games can be retrieved and downloaded over the internet using for example the file transfer protocol (FTP). The software can then be installed on the user's machine. Thus, when the newly installed software is run using a browser for the first time, the user is directed to register at the registration web site 16 the web server 18 of the game server 6. As described hereinabove, in order to register a user enters their details such as name and address which is then entered into the player database 11 within the database (19). If the player enters additional marketing information this can also be entered into the player database (11) and thus the player database retains the user's ID together with information on them.

Once a user has registered, when a user wishes to logon subsequently, they will transmit their user ID and password, this can be matched with the user ID and password within the player database 11 to determine whether there is a match. If a match is found, the security module 13 generates a public key (session ID) which is transmitted to the user. Also, when logged on data sets for games are transmitted to the user. The current states of the game for each player is held in a
player database 11. Part of the data set can also include the questions (although these may actually be part of the computer code initially downloaded and installed). The questions can be read from the game database 10 under the control of the security module 13 which will decide which questions are to be transmitted to the user. Also, answers which are stored in the game database 10 can be transmitted to the user as part of the data set and the answers can be encrypted by the security module 13. Also the security module 13 can determine the order and number of the answers to be transmitted to the user. Thus the security module 13 generates the order of the questions for each player and can also determine the order of the games played by each player.

The data set also includes layout parameters e.g. the layout of a crossword and such parameters are available from the game database 10.

The game database 10 also includes instructions for the modification of the target web pages. The pages which are downloaded can be modified by the web browser using for example, Java and such modifications can be global for all games or can be different for different games. For example, when a web page is downloaded, the browser could add an icon into the web page which is the object which is to be retrieved from the web page and added to the inventory.
The web server 18 hosts the game home web site part of which is public and part of which is private for players. The private part of the home web site is only accessible using a user ID and password.

In the database 19 there is provided a sponsors database 12. Within this database the name and details of sponsors associated with target web sites are kept. The sponsors database 12 can include processed information on the accesses made to the sponsors web pages and information on the players whose access the web page. Thus a sponsors may subscribe to the service offered in order to ensure the maximum exposure to the public of their web site and to gain information on people playing the games. The information from the sponsor's database 12 can be provided to the sponsors' either periodically under the control of the game server, or the host server for the target web pages may have access to the sponsors database 12 with appropriate security measures.

Either periodically during the game or when a user logs off from the game, status information is transmitted to the game server 6 together with tokens. The status information can be stored in the players database 11 and the tokens can be validated by the security module 13 using a private key for decryption of the public key encrypted token.
Other parameters which may possibly be transmitted to the user are player statistics and these are available from the players database 11.

The database 19 can be implemented as a database application which can be interfaced to the web server application 18 using Perl for example. Also, the security module 13 can be implemented in C or cgi Perl which is also interfaced with the web server 18.

Figure 6 is a schematic illustration of the structure of the user's computer. The components of the computer are connected together via a data and control bus 30. The computer is connected to the internet via the communications I/O port 33. A game program storage module 34 is provided to store:

1. The HTML files for interpretation by the web browser;
2. The media files, e.g. the image, video and any text files which are used either to construct the web pages or in the construction of the game window 60; and
3. Java class files for implementation by the browser.

A storage unit 35 is also provided to store the users ID and password permanently before transmission to the game server during the log on sequence.

The browser 32 is implemented initially to display in the browser window a displayed web page and
subsequently a navigation bar and a game window are launched as Java applets.

During a game temporarily stored within the memory of the computer are various parameters comprising:

1. Collected tokens;
2. Questions;
3. Answers;
4. Layout parameters;
5. The session key;
6. Instructions for modifying the sponsors web page; and
7. Game status information.

Thus it can be seen from the description above, since question and answers are transmitted on the internet, security measures are needed. Answers, when transmitted, are encrypted. There are two extremes for dealing with checking whether the answers are correct. Either the answers are never transmitted to the user and thus the user can never know whether the answers are right until the tokens have been transmitted to the game server, or all the answers are transmitted to the user so that a check can be made at the user’s machine as to whether the collected tokens are correct. This latter method however, suffers from the disadvantage that the answers are present on the user’s machine and thus could be decrypted. It does, however, provide the advantage
that the user has immediate feedback as to whether the answers are correct or not.

It is of course possible to operate between these extremes for example, by transmitting some of the answers. Only some of the questions together with their answers could be transmitted to the user and only when the user successfully answers these questions are further questions and answers sent.

It may be desirable to only release questions on certain days in order to make the game last over many days. The problem with this is that the game server will experience a heavy demand for downloading the questions when they are released. This problem can be avoided by randomly releasing different questions to different users.

The method by which the answers can be checked with the correct answers depends upon the form of the object or token retrieved from the web page. If the object retrieved is a passage of text, this can simply be compared with text which comprises the correct answer. If the object retrieved is an image, audio, or video file, a comparison can be made of the file name for retrieved image, audio or video with the correct file name.

When not all of the answers are downloaded to the users machine, it is necessary to know the form of the answers i.e. the type of objects which are to be
retrieved from the web page e.g. audio, text, or images. This ensures that the correct type of object is retrieved from the web page so that a comparison of data in the correct form with the answer can be made.

If the object to be retrieved comprises any images, audio or video, a representation of the retrieved data must be provided in the inventory area. Thumbnail images can be generated either when the data is retrieved from the web page, or it can be provided with the answers so that only thumbnail images of the correctly retrieved objects can be inserted in the inventory. Replacement of the retrieved objects in the game can then take place by dragging the thumbnail from the inventory area to the game area.

Although in the flow diagram of Figures 4a and 4b, it is illustrated that whenever a user requests a new game, the data set is transmitted for that game, it is also possible that when a user logs on, the data sets for all games are transmitted. This of course increases the initial data transmission and removes the need for requesting further data when a user selects another game.

Within the embodiments described above, the target web pages are remote to the user’s computer over the internet, this need not be the case. The target web pages can be provided locally within the user’s PC. For example, it can be provided on a suitable storage medium e.g. on a CD ROM or a floppy disk.
Figure 10 illustrates the structure of a user's computer in accordance with an embodiment of the present invention wherein the web pages are provided locally.

The components of the system are interconnected via a data and controlled bus 40. A communications I/O port 43 is provided for downloading software and for possibly uploading game status information to a game server. This is not however essential. A game program storage medium is provided storing HTML files the media files and the Java class files. A browser 42 is provided which generates a displayed web page and launches Java applets to generate a navigation bar and a game window. The HTML code and media files (and possibly Java class files) for the target web pages are stored in the target web page storage medium 41. These can thus be accessed locally by the browser 42. A temporary storage area 45 is provided for storing game status information and objects retrieved from the target web pages.

This embodiment can thus either be implemented as a method of teaching how to use a browser with local web pages, or it can be used to play a game wherein a prize is available for successful completion of this game. The successful completion of the game can for example, be automatically communicated to a remote game server using the communication I/O port 43.
Examples of Games

Crossword

In this game the game area 62 of the game window 60 displays a crossword and the clue/question area 61 displays crossword clues. The inventory area 63 displays words which have been collected from target web pages.

In order to select the row or column of the crossword to be answered, a user can click using a pointer over the desired number box. A clue corresponding to the selected row or column will then be displayed. The clue could be a graphical image or a usual crossword clue.

MAZE

A two-dimensional or three-dimensional maze can be displayed in the game area. Within the maze certain "GATES" can be provided which comprise web sites to be visited to retrieve a particular object. Thus in order to navigate through the maze it is necessary to visit web sites and retrieve the specified object.

CHESS

The game area can display a chess board which initially can have a number of chess pieces missing. In order for the game to be played it is necessary to collect chess pieces by navigating to certain web pages for which there may be clues provided. Thus a clue may direct a user to a web page and when the web page is downloaded, it is modified by the Java applet to include
a displayed chess piece which can be retrieved in place of the inventory. The player can then move the chess piece to the correct position on the board. Once all of the chess pieces are collected either the game will play automatically to a conclusion, or a player can be required to play the game to a successful conclusion against the computer.

JIGSAW PUZZLES

The game area initially displays an image. This could be required to be retrieved by a player from a specific web site based on a clue. Once the image has been retrieved a jigsaw outline is overlaid to the displayed image and the picture is then cut and "overcome as explained" from the window. Pieces are then scattered either around the web site from which the picture came, or at multiple web sites. In order to find each piece the user has to have a clue as to their whereabouts.

The pieces can be found in a number of ways:

1. The clue points to the page location and the pieces are visible on the page i.e. it has been added via the Java applet;

2. The clue points to an object e.g. a picture on the page and the user has to click on that object to reveal the jigsaw piece; and

3. The clue points to an object e.g. an image on the page and the user has to retrieve the object into the inventory whereupon it is translated into a jigsaw piece.
Claims

1. Apparatus for directing a user to access information at an information site, the apparatus comprising:
   processing means for processing information;
   user interface means for identifying to a user an information site;
   accessing means responsive to said user interface means to allow a user to access the information at the information site;
   access record means for recording the accessing of the information at the information site by the user; and
   providing means responsive to said accessing means to provide information to said processing means.

2. Apparatus according to claim 1, wherein said access record means is adapted to provide an identification of the user to control apparatus associated with the accessed information site.

3. Apparatus according to claim 2, wherein said access record means is adapted to provide an identification of the user to the control apparatus associated with the accessed information site when it is accessed.

4. Apparatus according to claim 2, wherein said accessing means is adapted to allow a user to access the information site any number of times, and said access
record means is adapted to store record data for a number of access occurrences and to provide the record data to the control apparatus associated with the accessed information site.

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5. Apparatus according to claim 1, wherein said access record means is adapted to provide an identification of the user and the accessed information site to monitoring apparatus.

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6. Apparatus according to claim 5, wherein said access record means is adapted to provide an identification of the user and the accessed information site to said monitoring apparatus when the information site is accessed.

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7. Apparatus according to claim 5, wherein said access record means is adapted to store record data for a plurality of access occurrences and to provide the record data to said monitoring apparatus.

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8. Apparatus according to any preceding claim wherein said providing means is adapted to retrieve information required by said processing means from the information site.
9. Apparatus according to any one of claims 1 to 7 wherein said user interface means is adapted to allow a user to input information, and said providing means is adapted to receive input information from said user interface for processing by said processing means after said accessing means has allowed a user to access the information at the information site.

10. Apparatus according to any one of claims 5 to 7, including status means for sending information on the status of said processing means to said monitoring apparatus.

11. Apparatus according to claim 10, including encryption means for encrypting the information on the status prior to sending to said monitoring apparatus.

12. Apparatus according to claim 10 or claim 11, including means for receiving information on the status of processing for a previous processing period at the start of a new processing period; wherein said processing means is adapted to be set in response to the received status information.

13. Apparatus according to any preceding claim wherein said processing means is operative to compare the information provided with the required information, to
process the information if it is the required information and if the provided information is not the required information, to control said user interface means to indicate to the user that the information is not the required information.

14. Apparatus according to claim 10 including means for receiving information from said monitoring apparatus as a result of the status information, said information indicating if the information provided to said processing means by said providing means is not the required information.

15. Apparatus according to any preceding claim wherein said information site comprises a web page and said user interface means and said accessing means comprise processing apparatus operating a web browser application.

16. Apparatus according to any preceding claim wherein said processing means is operative to implement a game, and said required information comprises information required to progress the game.

17. Apparatus according to claim 15, wherein said web browser application is operative to modify accessed web pages to output modified web pages to the user.
18. Apparatus according to claim 17, wherein said web browser application is operative to add information required by said processing means to the accessed web page.

19. Apparatus according to claim 17 or claim 18 wherein said web browser application is operative to implement a java application to modify accessed web pages.

20. A method of directing a user to access information on a web page, the method comprising:

- operating a computer application requiring data;
- using a web browser to identify to a user a target web page;

- retrieving and displaying the target web page using the web browser;
- recording the retrieval of the target web page; and

- providing data to the computer application after the display of the target web page.

21. A method according to claim 20, wherein the recording step comprises providing an identification of the user to a server associated with the target web page.

22. A method according to claim 21, wherein the recording step comprises providing an identification of
the user to the server when the target web page is retrieved.

23. A method according to claim 21, wherein the user can access a plurality of target web pages associated with the server, and/or can access the target web page a plurality of times, and the recording step comprises storing record data for a plurality of retrievals of the or each target web page associated with the server, and providing said record data to said server.

24. A method according to claim 20, wherein the recording step includes providing an identification of the user and the retrieved web page to monitoring apparatus.

25. A method according to claim 24, wherein the identification of the user and the retrieved web page is provided to the monitoring apparatus when the web page is retrieved.

26. A method according to claim 24, wherein the recording step comprises storing record data comprising the identification of the user and the retrieved web page for a plurality of web page retrievals, and providing the record data to said monitoring apparatus.
27. A method according to any one of claims 20 to 26, wherein the providing step comprises:
    passing the required data from the retrieved web page to the computer application.

28. A method according to any one of claims 20 to 26, wherein the web browser modifies the retrieved web page to display a modified web page to the user.

29. A method according to claim 28, wherein the data required by the computer application is added to the retrieved web page, and the providing step comprises passing the required data from the modified web page to the computer application.

30. A method according to claim 29, wherein the web browser implements a Java application to modify the retrieved web pages.

31. A method according to any one of claims 20 to 26, wherein the providing step comprises inputting the required data.

32. A method according to any one of claims 24 to 26 including sending information on the status of the computer application to the monitoring apparatus.
33. A method according to claim 32, including encrypting the information on the status prior to sending to said monitoring apparatus.

34. A method according to claim 32 or claim 33 including receiving information on the status of processing for a previous processing period at the start of a new processing period and setting a processing status of the computer application in response to the received status information.

35. A method according to any one of claims 20 to 34, wherein the computer application compares the provided data with the required data and if the provided data is not the required data, indicating to the user that the provided data is not the required data.

36. A method according to claim 32, including receiving information from said monitoring apparatus as a result of the status information, said information indicating if the provided data is not the required data.

37. A method according to any one of claims 20 to 36 wherein said computer application is implementing a game and the required data is required to progress the game.
38. A method according to claim 37, wherein the game is a Java applet launched by the web browser.

39. A method according to any one of claims 24 to 26, including passing the identification of the user and the retrieved web pages from the monitoring apparatus to a server associated with the retrieved web pages.

40. A computer game apparatus for playing a game, the apparatus comprising:

   output means for outputting the status of the game to a user;

   user interaction means for use by a user to interact with the computer game apparatus to progress through the game;

   location means responsive to said user interaction means to locate information sites which must be accessed to progress through the game;

   verifying means for verifying that information at said information sites has been accessed; and

   game processing means responsive to said user interaction means after accessing of the information to progress the status of the game.

41. A computer game apparatus according to claim 40, wherein the information sites comprise web pages, and
said user interaction means, said location means and said accessing means are implemented by a web browser.

42. A computer game apparatus for playing a game, the apparatus comprising:

output means for outputting the status of the game to the user;

user interaction means for use by the user to interact with the computer game apparatus to progress through the game;

location means responsive to said user interaction means for locating information sites holding information required to progress through the game;

retrieval means responsive to the user interaction means for retrieving information from the information sites; and

game processing means responsive to said user interaction means and the retrieved information to progress the status of the game.

43. A computer game apparatus according to claim 42 wherein the information sites comprise web pages, and said location means, and said retrieval means are implemented by a web browser.
44. A method of processing data, the method comprising:
   implementing a processing application requiring data;
   implementing a web browser application on said processing apparatus, said web browser directing the user to target web pages;
   responding to user interaction with the web browser to retrieve and view the target web pages; and
   passing data selected by the user from the displayed web pages to the processing application;
   wherein said processing application processes the selected data if it is the required data.

45. A method according to claim 44, wherein the web browser adds data required by said processing application to the retrieved web pages, and displays modified web pages having the added data.

46. A computer storage medium for storing instructions for controlling a computer to implement the apparatus of any one of claims 1 to 19 or 40 to 43.

47. A computer storage medium for storing instructions for controlling a processor to carry out the method of any one of claims 20 to 39, 44 or 45.
Fig 1
Fig 2a

S1: START BROWSER

S2: LOAD TASK AS A WEB PAGE

S3: DISPLAY CURRENT STEP IN TASK REQUIRING INFORMATION

S4: USER SELECTS TO GO TO A WEB PAGE

S5: LOAD WEB PAGE

S6: USER VIEWS INFORMATION

S7: LOG VISIT TO WEB PAGE

S8: INFORMATION ENTERED IN TASK

S9: INFORMATION CORRECT?

S10: TASK COMPLETED?

S11: DISPLAY NEXT STEP IN TASK REQUIRING INFORMATION

S12: END TASK
S1: START BROWSER

S2: LOAD TASK AS A WEB PAGE

S3: DISPLAY CURRENT STEP IN TASK REQUIRING INFORMATION

S4: USER SELECTS TO GO TO A WEB PAGE

S5: LOAD WEB PAGE

S13: USER SEARCHES FOR INFORMATION REQUIRED AND SELECTS IT

S14: INFORMATION RECEIVED FROM WEB PAGE AND ENTERED IN TASK

S9: INFORMATION CORRECT? YES, TASK COMPLETED?

S12: END TASK

S11: DISPLAY NEXT STEP IN TASK REQUIRING INFORMATION
Fig 3
5/12

S20 LOAD BROWSER

S21 LOAD START WEB PAGE AND NAVIGATION BAR

S22 CONNECT TO INTERNET AND LOAD GAME SERVER LOGON PAGE

S23 LOGON TO GAME SERVER

S24 LOAD GAMES SERVER HOME PAGE

S25 USER SELECTS TO GO TO OPEN GAME WINDOW

S26 USER SELECTS A GAME

S27 DATA SET FOR SELECTED GAME DOWNLOADED FROM GAME SERVER

S28 SHOW CURRENT GAME STATE

S29 USER SELECTS ANOTHER GAME?

S30 DOWNLOAD DATA SET FOR SELECTED GAME

S31 USER SELECTS A QUESTION OR CLUE

S32 DISPLAY QUESTION OR CLUE

S33 USER ANSWERS THE QUESTION OR CLUE?

S34 GO TO TARGET INDEX PAGE

Fig 4a
C

A

B

S35 SELECT TARGET WEB PAGE

S36 LOAD TARGET WEB PAGE

S37 USER SEARCHES FOR AND SELECTS OBJECT TO ANSWER THE QUESTION OR AS IDENTIFIED BY THE CLUE

S38 TOKEN FORMED FOR OBJECT

S39 OBJECT LOADED INTO THE INVENTORY IN THE GAME WINDOW

S40 DISPLAY GAME WINDOW WITH OBJECT IN THE INVENTORY AREA

S41 DRAG OBJECT TO GAME AREA

S42 CORRECT OBJECT?

S43 GAME COMPLETE?

S44 USER SELECTS ANOTHER GAME

S45 LOGOFF GAME SERVER

S46 CLOSE GAME WINDOW AND EXIT BROWSER

Fig 4b
Fig 7
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<th>TOKEN</th>
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Fig 9
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F17/30 G06F19/00

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)
IPC 6 G06F

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
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<th>Category</th>
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<td>X</td>
<td>WO 97 10561 A (MICRO FORTE PTY LIMITED ; LEWIS STEPHEN (AU); MARGHERITI JOHN DE (A)) 20 March 1997 (1997-03-20)</td>
<td>1-12, 46-49</td>
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<td>A</td>
<td>abstract page 1, line 29 – page 6, line 37 claims -----------------------------------</td>
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :
  * "A" document defining the general state of the art which is not considered to be of particular relevance
  * "E" earlier document but 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
  * "S" document member of the same patent family

Date of the actual completion of the international search
15 July 1999

Date of mailing of the international search report
29/07/1999

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel: (+31-70) 340-2040, Tx: 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer
Abbing, R
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