TITLE

Real-Time Document Management System

FIELD OF THE INVENTION

The present invention relates to a real-time document management system. The invention has particular, although not exclusive, utility in relation to Internet based worldwide web document management systems.

BACKGROUND ART

The increasing use of the Internet for commercial purposes has created a growing desire for businesses to develop a presence on the Internet by virtue of a worldwide website, commonly referred to as a website.

The cost of having a website professionally created can be prohibitive to many small and medium businesses. Further, the maintenance costs of a website can be significant. These factors have lead many businesses to attempt to create their own website.

Businesses which create their own websites can find hypertext mark-up language (HTML) difficult to understand. Furthermore, producing error-free HTML documents can be challenging where advanced features such as tables and frames are used. Where a website consists of multiple web pages, as is usually the case, producing consistent HTML documents can provide added complexity.

More recently, HTML authoring tools have become available for people wishing to create their own website. However, changing from one development tool to another can introduce errors in the HTML documents and has typically been a difficult procedure. Further, once the HTML document is created, it still needs to be uploaded onto the Internet service provider's server. In itself, this can introduce further errors, especially in hypertext links, whereby the incorrect use of

either relative or absolute links can cause a link to fail when uploaded onto the Internet service provider's server, even if that link works on the client's local machine.

In addition, considerations such as the design and layout of the website can prove a challenge for inexperienced users. As a result of the above, many businesses have not created an Internet website. As such, there is a demand for a system which is easy to use, does not require a knowledge of HTML, but which can be used to produce a website having consistency across pages and which is easy to modify. In particular, it is desirable for such a system to reflect any modifications made in real-time.

Other languages used in websites, such as Shockwave™ from Shockwave Corporation pose similar problems for inexperienced users.

DISCLOSURE OF THE INVENTION

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

In accordance with one aspect of this invention, there is provided a real-time document management system, comprising:

processor means in communication with data storage means;

the data storage means including a public area from which the documents can be accessed and a private area including data relating to the documents;

the processor means being responsive to said data to produce the documents according to a predetermined format, whereby said documents reflect the current data in the private area.

Preferably, the processor means is in communication with a network to receive further data therefrom, the processor means storing the further data in the private area and creating or modifying any documents affected by the further data in real-time.

Preferably, the network is a local area network, a metropolitan area network or the Internet, the public area comprising a website.

Preferably, the further data is entered and edited using a computer connected to the network and communicated to the processor means over the network.

Preferably, the processor means requests a password before granting access to the private area.

Preferably, said data includes global data and local data, the global data being used by the processor means in creating all documents and the local data being used by the processor means in creating one or more documents.

Preferably, the data includes content data and control data, where content data relates to the content of a document, and control data is used by the processor means in producing the document.

Preferably, the content data includes embedded codes.

Preferably, the control data includes whether each document corresponding to the control data is accessible from the public area, the processor means arranged to allow or deny access to each document accordingly.

Preferably, the control data contains data indicating which content information is to be included in each document.

Preferably, the control data further includes data indicating other files that are to be processed in producing each document.

Preferably, the control data includes data indicating which predetermined format selected from a plurality of predetermined formats is to be used in producing each document.

Preferably, the data storage means is a distributed storage system.

Preferably, the real-time document management system is a multi-user real-time document management system, the public area providing access to the documents of all users, and the private area including data for each user.

Preferably, the private area includes global data and local data for each user, the global data for each user being applicable to all documents for that user.

Preferably, each user is assigned a password for accessing their data in the private area.

Preferably, each user changes their data in the private area using client software in communication with the processor means.

Preferably, the processor means forwards a form to the client software including data from the private area, amendments to the data being effected by the user submitting the amended data to the processor means using the form, the processor means arranged to write the amended data to the private area and process the data to update the relevant documents.

Preferably, the processor means writes each document to the public area.

Preferably, user account data is stored in the private area accessible using an administrator's password a forms-based interface, with changes being made in real-time.

Preferably, administration of users may be performed remotely through a connection to the processor means.

The invention provides a real-time document management system which allows users to create and manage multiple documents having a consistent format without requiring the user to be familiar with the formatting syntax of the document. That is, the invention provides a document management system where a user can manage documents on a content basis whilst still providing the user with some control over the global format of their documents.

The invention is particularly useful in relation to HTML documents such as those used on Internet websites. In this application, the invention allows users to create HTML documents and websites without requiring any knowledge of HTML. Further, the creation of the documents can be effected using a simple forms-based interface whereby the document content is entered into the forms and the HTML documents created from the information content by the processor means. In this application, the public area would comprise a website accessible on the Internet. The private area may also be accessed over the Internet, using a secure forms system. Access to the private area requires each user to enter their password in order to access their information. Conveniently then, each user can edit the information in their documents on the Internet and have any changes effected in real-time. Further, the use of predefined formats ensures the website has a consistent format and avoids the user having to determine the formatting and layout of their website, thereby simplifying the creation process.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described with reference to one embodiment thereof and the accompanying drawings, in which:

Figure 1 is a conceptual flow chart of the real-time document management system of the embodiment;

Figure 2 is a functional flow chart of the operation of the system administration area-account administration zone;

Figure 3 shows the system account administration main page;

Figure 4 shows the system administration-add user form;

Figure 5 shows the confirmation message received upon clicking the add user button shown in figure 4;

Figure 6 shows the system administration-modify user form;

Figure 7 shows the confirmation message received upon clicking the modify user button in figure 6;

Figure 8 is a flow diagram of a user's webpage produced in accordance with the embodiment;

Figure 9 shows the webpage administration system presented to each user;

Figure 10 is a flow diagram of the account administration zone shown in figure 9;

Figure 11 is a flow diagram of the global settings administration zone shown in figure 9;

Figure 12 shows a global settings administration form;

Figure 13 shows a message confirming changes to the global settings;

Figure 14 is a flow diagram of the mailing list administration zone shown in figure 9;

Figure 15 is a flow diagram of the enable/disable pages administration zone shown in figure 9;

Figure 16 shows an enable/disable pages form;

Figure 17 is a flow chart of the about administration zone shown in figure 9;

Figure 18 shows an about administration form;

Figure 19 is a flow chart of the staff members administration zone shown in figure 9;

Figure 20 shows an add new staff member form;

Figure 21 shows an edit/remove staff member form;

Figure 22 shows a confirm removal of staff member page;

Figure 23 shows an edit staff member page;

Figure 24 is a flow chart of the products administration zone shown in figure 9;

Figure 25 shows an add new product form;

Figure 26 shows an edit/remove products form;

Figure 27 shows an edit product form;

Figure 28 is a flow chart of the services administration zone shown in figure 9;

Figure 29 shows an add new service form;

Figure 30 shows an edit/remove services form;

Figure 31 shows an edit service form;

Figure 32 is a flow chart of the news administration zone shown in figure 9;

Figure 33 shows an add news story form;

Figure 34 shows an edit/remove news story form;

Figure 35 shows an edit news story form;

Figure 36 is a flow chart of the feedback administration zone shown in figure 9;

Figure 37 shows a feedback administration form;

Figure 38 is a flow chart of the links administration zone referred to in figure 9;

Figure 39 shows an add link form;

Figure 40 shows an edit/remove link form;

Figure 41 shows an edit link form;

Figure 42 is a flow chart of the contact details administration zone shown in figure 9;

Figure 43 shows an edit contact details form;

Figure 44 is a flow chart showing the operation of the "add" function;

Figure 45 is a flow chart showing the operation of the "edit-only" functions;

Figure 46 is a flow chart showing the operation of the "edit" function; and

Figure 47 is a flow chart showing the operation of the "remove" function.

DESCRIPTION OF THE BEST MODES

The embodiment is directed towards a document management system for a plurality of users in which each user is able to create and maintain an Internet website.

The document management system of the embodiment is implemented as a computer having a storage medium in the form of a hard disk. The computer includes software to enable it to act as an Internet web server. For the purposes of the embodiment, the hard disk includes a public area and a private area. This has shown conceptually in figure 1, with the public area shown at 10 and the private area shown at 12.

The public area is freely accessible to anyone via the worldwide web. That is, the documents stored in the public area 10 can be accessed via the Internet by virtue of the web server software running on the computer.

The private area 12 includes data files shown at 14 for each user which are used by the computer to create documents in the public area 10. In the embodiment, this is achieved by virtue of the computer executing perl scripts as will be described below. The computer executing the perl scripts is collectively referred to as the website administration area and is shown in figure 1 at 16.

Although the documents in the public area 10 are freely accessible, in order to access the private area 12, a user name and password authentication is required. The private area 12 can be accessed from anywhere in the Internet, provided the required user name and password are known. For security reasons, it is preferred that all access to the private area 12 is via a secure connection, including the password authentication procedure.

It should be appreciated that although all users website documents are stored in the common public area 10, each user may have a domain name or delegated domain name pointing to their documents in the public area 10.

In summary, the document management system operates as follows. A user accesses the private area 12 using a Internet web browser. After user name and password authentication has occurred, the user gains access to the website administration area 16 in which they can add, modify or remove various components of their website. The website administration area 16 is presented to the user has HTML web page documents, with information being submitted and edited using forms. As such, a user is not required to familiarise himself with any HTML authoring tools. Any changes to the information on any of the user's documents are submitted to the website administration area 16 by the user clicking the submit button (or equivalent) on the appropriate form. This information is then written to the data files 14 in the private area 12. The documents affected by the changes submitted by the user are automatically recreated by the website administration area 16 and written to the public area 10. Any changes made by a user to their website is automatically reflected in the public area 10. Accordingly, the embodiment provides a real-time document management system for users' websites. Further, the information in the data files 14 from which the documents in the public area 10 are created are stored on the computer, rather than on the user's computer, thereby avoiding the user being required to upload created documents onto the computer.

The embodiment will now be described in more detail, firstly with reference to a system administration area 18, which forms part of the website administration area 16. A flow chart of the system administration area 18 is shown in figure 2.

The primary purpose of the system administration area 18 is the administration of users. Access to the system administration area 18 in the embodiment is via an Internet web browser, although other forms of access may be used in other embodiments. Password and user name authentication is required to access the system administration area to prevent unauthorised access. The system administration area 18 is not intended to be accessible by users. Accordingly, the password should be known to the system administrator of the computer alone.

A user account administration page is shown diagrammatically in figure 2 at 20. Figure 3 shows the user account administration page 20 in detail. The system administrator can perform the following functions in relation to a user: create user account, modify user account, suspend user account and terminate user account. Each of these will be described in turn below. A search facility of existing users is also provided for convenience of the system administrator. The search facility allows the system administrator to search for an existing user name, organisation name or contact name.

To create a new user account, the system administrator enters the desired user name in the space provided and clicks the submit button. The administrator is then presented with an add new account form, denoted in figure 2 at 22 and shown in detail at figure 4. The system administrator than enters details regarding the user in the spaces provided, such as name, address, phone and fax number and so forth.

Further, the add new account form 22 includes a section 22A where the system administrator can set quotas on various portions of the user's website. Facilities are provided to enter quotas for the number of e-mail aliases, the number of staff member descriptions, the number of product descriptions, the number of service descriptions, the number of news stories and the number of links to other pages. A mailing list facility is also provided by the system and is enabled by virtue of a check box 22B.

The user account is created by clicking the "add user" button on the add account form 22. When a user is added, empty data files 14 are created for the user, and the user's details and quotas entered on the add new account form 22 are entered into a user data file. When the "add user" button is clicked, the system administrator is presented with an account creation confirmation page represented in figure 2 at 24 and shown in detail in figure 5. The account creation confirmation page 24 automatically forwards to the user account administration page 20 after 5 seconds.

To modify the account details of a user, the system administrator enters the user name into the "modify account" section of the user account administration page 20 and clicks the submit button. If the user name entered by the system administrator exists, the system administrator is taken to an edit user account form 26, otherwise the system administrator is presented with an alphabetical list of user names at 28 which are closest to that entered by the system administrator. The system administrator can then select a user name to edit from the list and proceed to the edit user account form 26.

The edit user account form 26 is generated using a perl script which accesses the user data file in creating the form 26. As such, the form 26 is similar in nature to the add new account form 22, except that the user's existing details are already entered, as shown in figure 6. The system administrator can then modify any of the details for the user and effect the modifications by clicking the "modify user" button. When the "modify user" button is pressed, the amended details in the edit user account form 26 are written back to the user data file and the system administrator is presented with a modification confirmation page 30 shown at figure 7. This page will automatically forward to the user account administration page 20 after 5 seconds in a similar manner to the user account created page 24 described above.

The system administrator can also suspend and terminate a user account from the user account administration page 20. To suspend or terminate an account, the system administrator types the desired user name into the appropriate space and clicks the submit button. In a similar manner described above in relation to the edit user application, if the exact user name entered by the system administrator is present, the action proceeds, otherwise a list of users appear from which a selection may be made. Account suspension retains the users files on the computer but prevents access to the files to all persons, including the user until the account has been reactivated. Account termination involves removing the user account from the computer, including the deletion of any stored files.

In the embodiment, a single predetermined format is presented for all users. However, it should be appreciated that the embodiment is readily extendable to the provision of a plurality of formats from which each user can select one. A flow chart of the predetermined format of each user's website is shown in figure 8. Each user's public website consists of a main page 32, with links to the following pages: about page 34, products page 36, services page 38, news page 40, feedback page 42, links page 44, contact page 46 and copyright page 48.

The about page 34 consists of a description about the company and its objectives and contains an index of links to staff pages 50 having details of staff members.

The products page 36 is an index of products offered by the user, consisting of a list of links. Each link is to a separate products page 52 containing details of that product.

Similarly, the services page 38 is an index for services offered by the user consisting of links to individual service pages 54 detailing each service.

Further, the news page 40 contains an index of news items, with links to individual news pages 56 containing single news items.

The feedback page 42 is a form in which people accessing the user's website can provide feedback to the user. After submitting the feedback, the person submitting the feedback is presented with a thank you page 58 which auto-forwards back to the main page 32 after 5 seconds. The user submitting the feedback is also automatically sent an e-mail message thanking them for their feedback.

The links page 44 contains a list of links to other Internet sites along with a short description of those sites.

The contact page 46 contains contact details of the user, such as address, phone and fax details.

The copyright page 48 contains a copyright notice.

The operation of the website administration area 16 from a user's perspective in creating and maintaining a website of the above form will now be described.

Figure 9 shows a website administration main page 60, which can be accessed by each user of the system. As previously discussed, in order to access the website administration main page 60, each user must enter their user name and password using a secured transaction, and each of the website administration pages to be described uses secure communications.

The website administration main page 60 contains links to the following pages, referred to as zones: account administration zone, global settings administration zone, mailing list administration zone, enable/disable pages zone, about administration zone, staff administration zone, products administration zone, services administration zone, news administration zone, feedback administration zone, links administration zone and contact administration zone. Each of these will be described in turn below.

A flow chart of the account administration zones is shown in figure 10. The account administration zone consists of the account administration main page 62, from which the user can select to change their administration area password via a form 64, add, edit or remove an e-mail alias via form 66 or change the settings for their main page 32 of their website via form 68. After each action, the user is presented with a complimentary message and is then auto-forwarded to the account administration main page 62.

A flow chart of the global settings administration zone is shown in figure 11. The global settings administration zone consists of a global settings administration form 70 which is shown in detail in figure 12. The global settings administration form 70 allows the user to select the colour of the background and text from a predetermined list, the font size of the default text, the font of the default text, the graphics and icons used in the website from a predefined list, a short description

of the user or the user's organisation, and a list of key words describing the user or organisation. The description and key words are used to build a site database which is searchable by users on the Internet wishing the find a particular home page but without knowing the address thereof.

Any amendments made to the global settings are effected by the user clicking the "save settings" button. The amended information is written to a global settings data file 14. Conveniently, this global settings data file is "included" by each document in the user's website. Accordingly, it is not necessary to recreate each of the user's documents - the changes to font size, etc will automatically take effect when any of the documents in the public area 10 are next accessed.

When the settings have been changed, the user is presented with a confirmation page shown at figure 13, following which the user is automatically forwarded to the website administration page 60 after 5 seconds. Further, the user is sent an e-mail message confirming the global settings for the website have been changed. Throughout the remainder of this description, where reference is made to a confirmation screen and e-mail message, a screen similar to that shown in figure 13 and e-mail message of similar form is intended.

A flow chart of the mailing list administration zone is shown in figure 14, including a mailing list administration main page 72. From the main page 72, the user can choose to add a subscriber to the mailing list via form 74, edit and remove subscribers from the mailing list via form 76 and send a message to the mailing list via form 78.

Prior to presenting the user with the add subscriber form 74, the user's quota of subscribers is checked. If the user's quota is currently full, an error page 80 is displayed instead of the add subscriber form 74. From the error page 80, the user can either return to the mailing list administration main page 72 or go to the edit/remove subscriber page 76 to remove some subscribers.

The edit/remove subscriber page 76 contains a list of current subscribers each of which has a check box adjacent thereto. By clicking on any of these subscribers, the user is taken to the edit subscriber page 82. Alternatively, checking one or more of the check boxes next to any of the subscribers and then clicking a "remove subscriber" button will remove the selected subscribers. Before removing the subscribers, the user is presented with a confirmation page 84 requesting confirmation of the removal action. Confirmation is then sent to the user of their action with the mailing list and the appropriate changes made to the user's mailing list data file.

Figure 15 is a flow chart of the enable/disable pages zone, consisting of a pages administration form 86 shown in detail in figure 16. The form 86 consists of a first check box 86A which can be used to enable or disable the entire website. The form 86 also includes a second section 86B which includes a check box for each of the about page 34, products page 36, services page 38, news page 40, feedback page 42, links page 44 and contact page 46. A tick in the check box corresponding to any of the proceeding pages corresponds with that page being enabled, and therefore accessible from the user's main page 32. The user can enable and disable individual pages by checking or unchecking the appropriate check boxes and can make the changes by clicking the "make changes to site" button. When this button is pressed, control data is written to a file indicating which pages are enabled and disabled. In the embodiment, disabling a page results in the link to that page not appearing in the main page 32. For instance, disabling the services page 38 results in the services link 38A being removed from the main webpage 32. Accordingly, a person visiting the user's main webpage 32 will not see a link to a services page. Pages may be enabled or disabled for a number of reasons, including that the user or the user's organisation provide products only or services only, or the user may wish to disable a specific area until revisions or fresh data has been entered. Disabling the entire site using the check box at 86A prevents access to the main page 32, thereby preventing access to any of the subsidiary pages. Once the control data has been written to the data file, the user is presented with a confirmation

message and is sent a confirmation e-mail, and is thereafter auto-forwarded to the website administration page 60 after 5 seconds.

Figure 17 is a flow chart of the about administration zone, consisting of an about administration form 88, which is shown in detail in figure 18. The form 88 is created by a perl script, which reads from the data files 14 and inserts the current information into the form 88 ready for editing. The form 88 consists of four sections: mission statement section 88A, philosophy section 88B, profile section 88C and history section 88D. Each section includes a check box to enable or disable that section in the about page 34 and a text box which can be used to enter and edit text described in the mission statement, philosophy, profile or history as appropriate. The form 88 further includes a "reset form" button, which resets the information in the form 88 to that in the currently stored data file. The form 88 further includes a "save changes" button, which is used to save the current information in the form 88 in a data file, and update the about page 34 accordingly. In a similar manner to that described in relation to the enable/disable pages form, the check boxes in the about administration form 88 are used to indicate whether each of the mission statement, philosophy, profile and history sections will appear in the about page 34. When the "save changes" button is pressed, the information in the form 88 is written to a data file, and the about page 34 is recreated using the saved information. In this regard, the check boxes in the form 88 are saved as control data which is referenced by the perl script generating the about page 34.

Figure 19 which is a flow chart of the staff administration zone which can be used to add and remove staff members profiles. The staff administration zone includes a staff administration main page 90 from which the user can select to add a new staff member or to edit/remove an existing staff member.

When the user selects the add staff member link, the computer checks the user's quota and compares the current number of staff member profiles to the user's staff member quota. If the quota is already full, the user is presented with a error

message at 92 from which, the user can either return to the staff administration main page 90 or go to the edit/remove staff member page 94 to remove an unwanted staff member and thereby make space for a new staff member.

If the check of the user's quota indicates that the user's quota is not full, the user is presented with the add staff member form 96 which is shown in detail in figure 20. The form 96 includes text boxes for entry of the following details regarding the staff member: name, position, phone number, mobile phone number, e-mail address and profile. Of these, check boxes are provided adjacent to the phone number, mobile phone number, e-mail address and profile sections so that the user can enable or disable each of these sections. The status of each check box is stored as control data and is used in creating the staff member page 50 and the about page 34. The relevant details are entered by the user, and the "add to staff list" button is used to save the data. When this button is pressed, the data in the form 96 is stored, and a staff page 50 for the staff member is created. Further, the about page 34 is recreated to include a link to the new staff page 50. The user is presented with a confirmation page which auto-forwards the user to the staff administration main page 90. The user is also sent an e-mail message confirming the addition of the new staff member.

If the user selects to edit/remove a staff member, the edit/remove staff member form 94 is presented, shown in figure 21. The form 94 is generated by a perl script by reading the data file of current staff members. The form includes two sections, a "remove profile" section 94A containing a check box for each staff member stored in the data file, and a "edit profile" section 94B containing a list of names of each staff member.

To remove one or more staff members, the check boxes in the remove profile section 94A are checked and the "remove selected members" button is pressed. The user is asked to confirm they wish to delete the selected members via the confirmation form 98 shown in figure 22. If the user confirms the deletion of the selected staff members, the staff member data file is updated to reflect the

deletion of the selected staff members, the staff pages 50 for the deleted staff members are deleted from the public area 10 and the about page 34 is updated by removing the links to the deleted staff members pages therefrom.

The staff members names appearing in the edit profile section 94B of the edit/remove staff member form 94 are formed as links, and clicking on any one of the staff members takes the user to the edit staff member form 100 shown in figure 23. The edit staff member form 100 is similar in layout to the add staff member form 96, with the same sections available. The edit staff member form 100 contains the current information for the selected staff member, in a similar manner to that described in relation to the "about administration form 88". The user can then edit the details for the current staff member and save the changes, reset the form to the currently saved changes or select to not make any changes. Selecting the save changes results in the current data in the edit staff member form 100 being written as the data for the selected staff member, and the staff members page 50 being updated accordingly. The user is also presented with a confirmation page which auto-forwards to the staff member administration main page 90 and e-mailed a confirmation message.

Figure 24 shows a flow chart of the products administration zone, which is functionally similar to the staff member administration zone shown in figure 18. The products administration zone includes a products administration main page 102, from which a user can choose to add a new product, or edit/remove an existing product. The add product function operates in a similar manner to the add staff member function described above, with a check of the user's quota of products being performed prior to an add product form 104 being displayed to the user. If the user's quota of products is fully, an error page 106 is presented, from which the user can return to the products administration main page 102 or move to the edit/remove product form 108.

The add product form 104 is shown in detail in figure 25 and includes text boxes 104A for information to be entered on the following topics: product name,

description, features, benefits, costs and comments. A "point of contact" section is also included, from which the user can select a staff member from the currently defined list of staff members using a drop down list at 104B. Check boxes 104C are included for the following sections: description, features, benefits, costs, point of contact and comments. The check boxes 104C can be used to enable and disable these areas for the current product. Further, check boxes 104D are provided adjacent each text box 104A in the features and benefits sections to permit the individual enabling and disabling of each feature and benefit. When the "add product" button is pressed, the computer operates in a similar manner to that described in relation to "add staff member" above, in that the information in the add product form 104 is written to the product data file, and the product page 36 is updated to include a link to the new product, and a further product page 52 is created for the product.

The edit/remove products form 108 is shown in figure 26 and is of a similar design to the edit/remove staff members form shown in figure 21. The edit/remove products form 108 operates in the same manner as the edit/remove staff members form described above, with check boxes provided for removing individual products, and the names of products forming links to an edit product page for each product.

The edit product page 110 is shown in figure 27 and is of the same general layout as the add products form shown in figure 25. The edit product form 110 is presented to the user with the current information regarding the product already entered therein for editing by the user. If the user clicks the save changes button, the computer performs the same actions as described above in relation to the add product form 104, however instead of saving new information regarding a product, the computer updates the existing information regarding the product and the product page 52.

Figure 28 shows a flow chart of the services administration zone which operates in an identical manner to the products administration zone shown in figure 24.

However, the services administration zone is used to manipulate the services data and updates the services page 38 and the individual service pages 54. Figure 29 shows the add new service form 112 which operates in a similar manner to the add new product form 104 shown in figure 25. Figure 30 shows the edit/remove service form 114 which operates in analogous manner to the edit/remove products form 108 shown in figure 26. Further, the edit service form 116 is shown in figure 31, and is of the same general form as the add new service form 112 shown in figure 29. The operation of the add new service form 112, the edit/remove service form 114 and the edit service 116 are identical to the corresponding product forms described above.

Figure 32 shows the news administration zone which also functionally operates in the same manner as the staff member administration zone shown in figure 19. The news administration zone consists of a news administration main page 118 from which the user can select to add a new news item, or to edit/remove an existing news item. If the user selects to add a new news item, a check of the user's news item quota is performed, and if the quota is currently full, an error page 120 is displayed to the user following which the user can return to the news administration main page 118 or move to the edit/remove news item page 122. If the user's quota is not currently full, the add news form 124 is displayed to the user which is shown in figure 33.

The add news item form 124 includes text boxes for the title and the story, and a check box to enable or disable the storage. The add news item form 124 further includes an expiry section, where the user can elect that the news item either never expires or expires no predetermined period of time.

Finally, the user can provide a contact name for the news story if desired. The add news form 124 is processed in a similar manner to that described above in relation to an add new staff member, in that the new news story is stored in the data files, and the news page 40 is updated to reflect a link to the new news story, and a individual news item page 56 is created for the new story. The

edit/remove news item form 122 is shown in figure 34 and operates in an identical manner to the edit/remove staff members form described above. The edit/remove news item form 122 includes a further column titled "category" in which an indication of whether each news item is current or has expired is indicated. This provides a convenient mechanism for the user to remove expired news items.

The removal of news items is performed in a similar manner to that described above in relation to staff members and is processed by the computer in an analogous manner. The edit news item form 124 is shown in detail in figure 35 and is of the same general form as the add news item form 124 shown in figure 33. However, the edit news item form 124 provides an indication of the current expiry date of the news item, and contains a facility for the user to enter a different expiry date, or change the expiry date to never expired. The edit news form 124 operates in an analogous manner to the edit staff member form described above.

Figure 36 is a flow chart of the feedback administration zone, consisting of a feedback administration form 128, which is shown in detail in figure 37. The feedback administration form 128 includes two predefined options for an auto-response message, and an option to provide a customised message. The selected message is used by the computer in auto-replying to any person that submits feedback via the feedback page 42. Changes made to the feedback administration form 128 can be effected by pressing the "save changes" button, whereupon the information in the feedback administration form 128 is stored as data for future reference by the computer when auto-replying to a person submitting feedback.

Figure 38 is a flow chart of the links administration zone, which is functionally similar to the staff members administration zone, products administration zone, services administration zone and news administration zone shown in figures 19, 24, 28 and 32 respectively. The links administration zone includes a links

administration main page 130 from which a user can select to either add a link or edit/remove an existing link.

If the user selects to add a link, a check of the user's quotas of links is made, and if the user has already filled their quota, an error message is displayed at 132, from which the user can select to return to the links administration main page 130 or move to the edit/remove form 134. If the user's quota has not been filled, the user is presented with an add link form 136 shown in detail in figure 39. The add link form 136 includes text boxes for the entry of the name of the link, the Internet URL and a description of the link. A check box is also provided to enable/disable the description portion. Clicking the "add new link" button saves the information in the add link form 136 as data, and updates the links page 44, in a similar manner to that described in relation to the add staff members form 96. The edit/remove link form 134 is shown in detail in figure 40 and operates in an analogous manner to the edit/remove staff member form 94 described above.

The edit link form 138 is shown in figure 41, which operates in a similar manner to the edit staff member form 100 described above. The edit link form 138 is presented to the user precompleted with information stored in the data regarding the selected link. The general layout of the edit link form 138 is similar to that of the add link form 136.

Figure 42 shows a flow chart of the operation of the contact administration zone, consisting of a contact administration form 140. The contact administration form 140 is shown in detail in figure 43 and contains text boxes for the following information: organisation name, trading name, company number or business registration number, building/suite, street address, suburb, state/county, postcode/zip code, country, phone number, fax number, e-mail address number 1, e-mail address number 2 and e-mail address number 3. Further, check boxes are provided for each of the above items, with the exception of organisation name, to enable/disable the corresponding item. The contact administration form 140 is precompleted with existing details when presented to the user. Clicking

"change contact details" button saves the current information in the contact administration form 140 as data, and updates the contact page 46. The operation of the contact administration zone is functionally similar to the about administration zone described above.

It will be appreciated from the foregoing that the embodiment provides users with a significant degree of flexibility in their website, whilst providing a simplified system of administering a website which doesn't require any knowledge of HTML. However, the system also provides flexibility for more advanced users. For instance, in any of the text boxes where information can be entered by the user, the user can enter embedded HTML tags, such as the anchor tag partially shown in figure 27 in the comments box. This HTML tag is interpreted as plain text by the perl script and included in the corresponding HTML document. Accordingly, the embedded HTML tag will be interpreted by the browser of the user visiting the document.

It will also be appreciated that the changes or additional information are edited by a user, possibly remotely from the computer, the edited information is then submitted to the computer via the form and stored on the computer, and then processing of the information and generation of the website occurs on the computer. Since the various relevant webpages are updated as soon as revised or additional information is submitted to the computer by one of the forms, the website is effectively updated in real-time.

The operation of the perl scripts operating on the computer will now be described.

Figure 44 is a flow chart explaining operation of the "add" functions, such as the add staff form, and new product form, add new services form, add new news item form and add new link form.

The links in the staff administration main page 90, products administration main page 102, services administration main page, news administration main page 118 and links administration main page 130 to "add" a new item are links to a first perl

script similar to that shown in figure 44 at 142. To simplify the following description, figure 44 will be explained with reference to the products administration zone, although it should be appreciated that the following description is readily extendable to the staff, service, news and link administration zones.

The perl script 142 reads the user's product quota from the data files and then reads the users current products data file and counts the number of products contained therein. The perl script 142 then compares whether the user's quota would be exceeded if a new product were added and if so generates the error page 106. The error page 106 will auto-forward to the edit/remove product form 108 after 5 seconds.

If the perl script 142 finds that a new product can be added without exceeding the user's quota, the perl script generates the add product HTML form 104 which will then be displayed to the user. If the user clicks the "go back" button on the add product form 104, corresponding with a decision not to add a new product, the user is taken to the product administration main page 102. If the user clicks the "add product" button, corresponding with a decision to add the new product, details of which have been entered by the user into the add product form 104, the information on the add product form 104 is submitted to a second perl script shown at 144.

The perl script 144 reads the existing list of products from the data file 14 and adds the new product thereto. The perl script 144 then writes the products data file including the new product. The perl script 144 then writes the products page 36 to the public area 10 and then writes an individual product page 52 for the new product to the public area 10. In this regard, the perl script 144 overwrites any existing products page 36 when writing to the public area 10. The perl script 144 then sends a confirmation e-mail message to the user regarding the addition of the new product and finally outputs a confirmation HTML page to the user, which auto-forwards to the products administration main page 102 after 5 seconds.

Figure 45 shows the operation of flow chart of the edit-only administration zones, namely the global settings administration zone, the enable/disable pages administration zone, the about administration zone, the feedback administration zone and the contact details administration zone. Figure 45 will be described with reference to the enable/disable pages administration zone, however it should be appreciated that the following description is applicable to the other zones. It should further be appreciated that in some instances the number of pages which are written to by the perl script will vary according to the number of pages which the data change refers to.

The website administration area 60 link to the enable/disable site zone is a link to a third perl script 146. The perl script 146 reads from the data files 14 as to which zones are enabled and disabled and whether the entire site is enabled and disabled. The perl script 146 then creates the enable/disable pages administration form 86 with the check boxes 86A and 86B appropriately checked or unchecked to reflect the current settings. The user can then check and uncheck the check boxes as desired. If the user clicks the "back" button on their browser, they return to the website administration main page 60. If the user selects the "make changes to site" button, the information on the enable/disable pages administration form 86 is forwarded to a fourth perl script 148. The perl script 148 writes the information as to which pages are enabled and disabled to the data files 14, writes the appropriate web pages to the public area 10, sends the user an e-mail confirmation message and displays a confirmation webpage to the user, which auto-forwards to the website administration main area page 60 after 5 seconds. Which pages in the website the perl script 148 writes to depends upon which changes have been made to the sites enabled and disabled. For instance, if any of the individual zones are enabled or disabled, the main page 32 is re-written to reflect the change.

Figure 46 is a flow chart of the edit/remove facility, with particular reference to the edit facility, such as is shown in the staff administration zone, the products administration zone, the services administration zone, the news administration

zone and the links administration zone. The following description of figure 46 will be made with reference to the products administration zone, although it should be appreciated that the flow chart in figure 46 is equally applicable to the other zones described above.

The link in the products administration main page 102 to edit/remove a product is a link to a fifth perl script 150. The perl script 150 reads from the data files 14 the current list of products and generates the edit/remove product form 108. If the user selects the "return" button on the form 108, the user is returned to the products administration main page 102. The names of the products in the form 108 are links to a sixth perl script 152, including an indication as to which product is to be edited. The perl script 152 reads from the data files information regarding the selected product and generates the edit product form 110 with the current information regarding that product completed. The user can then modify the information on the form 110. If the user selects the "save changes" button on the form 110, the information on the form is submitted to a seventh perl script 154, which firstly reads the current products index page 36 to obtain the name of the edited product therefrom. This is necessary since the user may have edited the name of the product on the form 110. However, the product will be identified by a product number passed to the perl script 154. The current information is then written to the data files 14 regarding this product. The products index page 36 is then written, as is the individual product page 52 for the current product. An e-mail message is then sent to the user confirming the changes have been effected, and finally a confirmation message is displayed to the user. The confirmation message forwards the user to the products administration main page 102 after 5 seconds.

Figure 47 shows a flow chart of the edit/remove item function with particular reference to the remove function present in the staff administration zone, products administration zone, services administration zone, news administration zone and links administration zone. Figure 47 will be described with reference to

the products administration zone, however it should be appreciated that figure 47 is equally applicable to the other zones.

As described in relation to figure 46, the link in the products administration main page 102 to edit/remove a product is a reference to the perl script 150. The perl script 150 generates a list 108 from which the user can either select to edit a product or remove one or more products. If the user check marks one or more of the check boxes and clicks the remove product button, the information on the form 108 is forwarded to an eighth perl script 156. The perl script 156 reads from the data files 14 the names of the products selected and produces a confirmation page 111. If the user confirms the removal, a ninth perl script 158 is called, which reads the current products from the data files 14, removes the products selected by the user from the list of products, writes the remaining products to the data file 14, deletes the individual product pages 52 corresponding to the deleted items and rewrites the product index page 36. The perl script 158 then forwards an e-mail confirmation message to the user and displays a confirmatory message, which auto-forwards the user to the products administration main page 102 after 5 seconds.

It should be appreciated that the scope of this invention is not limited to the particular embodiment described above.

In particular, it should be appreciated that each user's data can be stored in a number of different ways, either in a single file, in a number of separate files, or as part of a database. Further, although the embodiment has been described with reference to perl scripts, it should be appreciated that a number of other languages and systems may be used. Furthermore, it will be appreciated that the flow charts in the embodiment are not the only way of achieving the invention, but are the preferred embodiment of the applicant.

Although the embodiment has been described with reference to HTML documents, the invention is applicable to other forms of documents, such as shockwave.

Further, it is envisaged that the processor means can be distributed across several Internet sites without loss of functionality.

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

CLAIMS

1. A real-time document management system, comprising:

processor means in communication with data storage means;

the data storage means including a public area from which the documents can be accessed and a private area including data relating to the documents;

the processor means being responsive to said data to produce the documents according to a predetermined format, whereby said documents reflect the current data in the private area.

2. The real-time document management system of claim 1, wherein the processor means is in communication with a network to receive further data therefrom, the processor means storing the further data in the private area and creating or modifying any documents affected by the further data in real-time.

3. The real-time document management system of claim 2, wherein the network is a local area network, a metropolitan area network or the Internet, the public area comprising a website.

4. The real-time document management system of claim 2 or 3, wherein the further data is entered and edited using a computer connected to the network and communicated to the processor means over the network.

5. The real-time document management system of any one of claims 2 to 4, wherein the processor means requests a password before granting access to the private area.

6. The real-time document management system of any one of the preceding claims, wherein said data includes global data and local data, the global data being used by the processor means in creating all documents and the local data being used by the processor means in creating one or more documents.

7. The real-time document management system of any one of the preceding claims, wherein the data includes content data and control data, where content data relates to the content of a document, and control data is used by the processor means in producing the document.

8. The real-time document management system of claim 7, wherein the content data includes embedded codes.

9. The real-time document management system of claim 7 or 8, wherein the control data includes whether each document corresponding to the control data is accessible from the public area, the processor means arranged to allow or deny access to each document accordingly.

10. The real-time document management system of any one of claims 7 or 9, wherein the control data contains data indicating which content information is to be included in each document.

11. The real-time document management system of claim 10, wherein the control data further includes data indicating other files that are to be processed in producing each document.

12. The real-time document management system of any one of claims 7 or 11, wherein the control data includes data indicating which predetermined format selected from a plurality of predetermined formats is to be used in producing each document.

13. The real-time document management system of any one of the preceding claims, wherein the data storage means is a distributed storage system.

14. The real-time document management system of any one of the preceding claims, wherein the real-time document management system is a multi-user real-time document management system, the public area providing access to the documents of all users, and the private area including data for each user.

15. The real-time document management system of claim 14, wherein the private area includes global data and local data for each user, the global data for each user being applicable to all documents for that user.

16. The real-time document management system of claim 14 or 15, wherein each user is assigned a password for accessing their data in the private area.

17. The real-time document management system of any one of claims 14 to 16, wherein each user changes their data in the private area using client software in communication with the processor means.

18. The real-time document management system of claim 17, wherein the processor means forwards a form to the client software including data from the private area, amendments to the data being effected by the user submitting the amended data to the processor means using the form, the processor means arranged to write the amended data to the private area and process the data to update the relevant documents.

19. The real-time document management system of claim 17, wherein the processor means writes each document to the public area.

20. The real-time document management system of any one of claims 14 to 19, wherein user account data is stored in the private area accessible using an administrator's password a forms-based interface, with changes being made in real-time.

21. The real-time document management system of claim 20, wherein administration of users may be performed remotely through a connection to the processor means.

