METHOD AND SYSTEM FOR PROVIDING A KNOWLEDGE EXCHANGE PORTAL

Enable a user to author and post content to the portal from the user’s computer in real time

Manage storage of the content, relationships between the content, and user access to the content

Use the relationships between the content to customize delivery of the content for different users when the content is accessed

Enable users to provide feedback on the customized content and make the feedback accessible on the portal

Provide the portal with content utilization and user statistics so enterprise managers may monitor the portal’s effectiveness

Manage the exchange of selected content with other knowledge exchange network portals

Abstract: A method and system for providing a knowledge exchange portal is disclosed. The method and system include enabling users to author and post content to a network site from the user’s computer (30). The storage of the content and user access to the content is managed on the site (32), such that when users attempt to access the content, the content is customized for different users and the customized content is then delivered to the users (34). The method and system further include enabling users to provide feedback on the customized content, which is then made available on the site to the other users (36).
CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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METHOD AND SYSTEM FOR PROVIDING A KNOWLEDGE EXCHANGE PORTAL

FIELD OF THE INVENTION

The present invention relates to training methodologies, and more particularly to a content authoring and dissemination knowledge exchange network portal.

BACKGROUND OF THE INVENTION

Large enterprise organizations are often dynamic and undergo constant changes. For example, due to the enterprise's industry, the enterprise may be in a rapidly changing market where products change relatively quickly. Or because the market is dynamic, the enterprise may need to perform continual positioning activities due to competitive situations. The enterprise may also be dynamic organizationally, with employees being redeployed and acquisitions being made, and so on. Therefore, there is a need for knowledge dissemination, either to new employees about existing products, or to existing employees about acquired products. There is also a need to share such information with business partners and customers of the enterprise.

In such dynamic environments, there is an ongoing need for fast-paced delivery of rapidly changing information. Traditional methods for knowledge dissemination are typically geared for older, mature businesses, or businesses in a slower pace market, both of which are comparatively static environments.

The most traditional method for knowledge dissemination is classroom training.

In classroom training, trainees are typically all located in one location with a live instructor where information flows in one direction from instructor to the trainees. The traditional classroom approach to training has many disadvantages.

One disadvantage of the classroom approach relates to scheduling issues. For example, one approach to classroom training used for larger audiences is to have instructors travel to the locations of the trainees, rather than having all the trainees travel to one classroom location or to several regional locations. Although this approach may reduce travel costs, the trainees must still schedule their time to coincide with the classroom training session. And because the trainees must learn information when it's convenient for the instructor, rather than when the trainee needs to know the information, the trainee may forget the information by the time it's relevant. Not only does scheduled classroom instruction include information that is not relevant to each
person's particular job role, but the information may not be taught at a time it is relevant to the trainee's work.

Another disadvantage of the classroom approach relates to a timeliness issue because the training is subject to the pace of which the instructor decides to disseminate the material, despite the fact that each trainee may learn at a different pace and may have different levels of expertise. Thus, classroom training may provide some trainees with too much information in areas of little concern, while providing too little information in areas of high concern.

A further timeliness issue associated with classroom training is that classroom training often provides trainees with static and stale information. More than likely, a team of experts developed the course material long before the classroom session during a costly production process. Therefore, the material is often out of date by the time the classroom session is held. Most classroom sessions provide reference material that the trainees take with them, but by the time the trainee uses the material, the information may have changed.

Classroom training also does not provide any ongoing exchange of information besides another training class. New material may be offered at a later time, but the attendees of earlier classes are typically not provided with the updated material. Therefore, classroom training is generally not in compliance with ISO 9000, which includes a document change control standard.

Another disadvantage with classroom training is that although there may be some dialogue between the instructor and the trainees during a session, there's no way to capture any information flow that occurs between the trainees, resulting in a loss of valuable information.

When disseminating knowledge, a large enterprise may wish to convey material to both employees of the enterprise who have access to the enterprise's confidential information, as well as to business partners who are not privy to such information. Classroom training, therefore, requires that the enterprise develop separate training materials and hold separate training sessions for internal personnel and for business partners.

An alternative to classroom training is computer-based training (CBT), such as CD-ROMs and DVDs. CBT approaches are typically highly specialized and therefore require a long production time (e.g., six months). CBT approaches solve the problem of users having to learn material based on the schedule of the instructor because users
can learn from a CD-ROM whenever they desire. However, because CD-ROM production usually requires the use of graphic artists and technology personal to make a visually pleasing presentation from information received from a subject matter expert, CBT approaches suffer from a timeliness issue because of the delay from when production begins to the time the CDs are shipped to users.

Another problem is that CBT approaches typically require the installation of software on the user's personal computer (PC) or requires that users use a PC dedicated for that purpose. Therefore, an effort on the part of the organization's information technology group is required to manage the training software on the PCs. And providing CBT to a business partner requires the help of the business partner's information technology group, which the enterprise has no control over. Also, the producers of the training software have no control over dissemination of changes to the material once the training CD-ROM is released. Thus, CBT learning is also noncompliant with ISO 9000 version change control, and also fails to enable users to exchange information with one another.

Other popular training methods include video and audiotape presentations. Video and audiotapes are older versions of CBT and share many of the same limitations, such as lengthy production times, providing stale information, lack of version control, and a lack of knowledge exchange between users.

One of the newer forms of training is satellite based training. There are two types, one directional broadcasts and two directional broadcasts. Both approaches are similar to a classroom approach where an instructor's presentation is beamed from one location to multiple other locations where the users watch on a screen. The approaches differ in that a two directional broadcast has a feedback loop that allow users to ask questions of the instructor, whereas the one directional broadcast does not. The only advantage of the satellite based training over traditional classrooms is that satellite based training allows for larger audiences in multiple locations around the world. Otherwise, satellite based training shares all the drawbacks and disadvantages of classroom based training.

A virtual classroom is a high technology approach to training where users sit at individual computers and interact with an online instructor as though they were in a classroom. Although virtual classrooms have the advantage that users can communicate via keyboards, there is no post classroom learning experience, and virtual classrooms do not scale to large audiences. Basically virtual classrooms share the
same drawbacks as the classroom approach.

A common element between video, audiotapes, and the satellite approaches is that they all require a studio production to produce the training material. For example, an instructional design specialist is needed to design the presentation and technical specialists are needed to handle lighting, audio, and cameras. All these approaches also require some form of post editing activity. In addition, except for the CD-ROM all the approaches described so far have the characteristic of being synchronous and being variations on the classroom theme.

With the advent of the Internet, training websites have been introduced that solve some of the problems of the prior methods. For example, the access mechanism to web-based training is a standard web browser, so the installation of additional software on a user’s PC is not required as in CBT training. And with training websites, users can use search engines to find relevant training information on demand.

Although web-based training has the advantage of not requiring the use of production personnel, web-based training does require content creators as well as technologists, such as webmasters, that take the content and post it on the web in a presentable format. Another limitation to web-based training is that the information is static in the sense that the training materials are not personalized, but merely posted on the site and may be updated sporadically.

As an example, assume that a large company has many different organizations involved with product development and delivery, and that each organization posts its own respective website. The problem is that each organization may post information about the product in different ways, styles, and content. Supposing sales people wanted to find information about a particular product, the sales people would have to know about the existence of the different sites, what information is available on which site, and then go from site to site to retrieve the essential elements of information. Due to lack of consistency between the sites, the sales people can never be sure they have found all of the relevant information for the product.

In addition to only posting information, another problem with web-based training is that websites have no feedback mechanism for users to contribute content or to provide comments besides email. There are also limited mechanisms for finding out which users viewed what information.

A further problem with prior training methods is that a company’s confidential information is typically mixed in with general training material, so the training material
cannot be easily shared with business partners because there's typically no ability to personalize the content for each user, besides creating different versions of the material. Although a training based website has the ability to recognize individual users, the website has an inability to organize information dynamically because the website is built with off-the-shelf tools. The website also depends on a webmaster to post and organize content, so the website is not a training solution, it's merely a training tool.

Accordingly, what is needed is an improved approach for knowledge dissemination for large dynamic enterprises. The system should provide the right updated content at the right time for the right person and allow every user the chance to contribute real-time feedback on the content. The present invention addresses such a need.

SUMMARY OF THE INVENTION

The present invention provides a method and system for providing a knowledge exchange portal. The method and system include enabling users to author and post content to a network site from the user's computer. The storage of the content and user access to the content is managed on the site, such that when users attempt to access the content, the content is customized for different users and the customized content is then delivered to the users. The method and system further include enabling users to provide feedback on the customized content, which is then made available on the site to the other users.

According to the system and method disclosed herein, a knowledge exchange is provided that allows enterprise personnel to author and publish content without lengthy production cycles, and to disseminate the content to both employees as well as business partners in a timely and personalized manner. In addition, the knowledge exchange is two-way because it captures the feedback and contributions of the users, thereby enhancing the learning experience.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating an elearning platform for large enterprises in accordance with a preferred embodiment of the present invention.

FIG. 2 is a flow chart illustrating a process for providing an elearning platform and knowledge exchange portal in accordance with a preferred embodiment of the present invention.
FIG. 3 is a block diagram illustrating a more detailed view of the eLearning platform in accordance with a preferred embodiment of the present invention.

**DETAILED DESCRIPTION**

The present invention relates to providing a knowledge-exchange network portal. The following description is presented to enable one of ordinary skill in the art to make and use the invention and is provided in the context of a patent application and its requirements. Various modifications to the preferred embodiment and the generic principles and features described herein will be readily apparent to those skilled in the art. Thus, the present invention is not intended to be limited to the embodiments shown but is to be accorded the widest scope consistent with the principles and features described herein.

Referring now to FIG. 1, a block diagram illustrating an eLearning platform 10 for large enterprises is shown in accordance with a preferred embodiment of the present invention. The eLearning platform 10 includes a knowledge exchange portal 12, which is a site on a telecommunications network 14, such as the Internet, that offers users 16 global access to an enterprise's training and education content 20 by providing asynchronous and synchronous (real-time) delivery of the content 20 over the network 14 to an end-user's computer 18.

In a preferred environment, users 16 access the content on the knowledge exchange portal 12 through a web browser interface on the user's computer (PC) 18. Users 16 who access the content 20 on the portal may include not only employees, but also customers, vendors, and business partners of the enterprise. Therefore, according to one aspect of the present invention, the content 20 delivered to each user 16 may be customized for different users 16. The portal 12 customizes the content 20 in real time in response to the individual training and knowledge needs, interests, and skills. The content 20 may also be customized for different departments, locations, and identified group membership associations. Because the knowledge exchange 12 is web-based, the portal becomes an enterprise-wide learning solution that can quickly deliver information to employees at the office or in the field, to vendors, customers, and business partners as well. In a further aspect of the present invention, each user 16, or predefined classes of users 16, may also author and publish content to the knowledge exchange portal 12 directly from their PCs 18, giving employees the ability to publish at the desktop. The result is that enterprises are given the ability to develop high-end
instructional content without lengthy production processes.

FIG. 2 is a flow chart illustrating a process for providing an e-learning platform and knowledge exchange portal in accordance with a preferred embodiment of the present invention. The process begins in step 30 by enabling the users to author and post content to a site on a network from the user's computer in real time (e.g., minutes or hours vs. weeks or months). In a preferred embodiment, the authored content is of many types, including multimedia presentations. After posting the authored content, a server manages storage of the content, relationships between the content, and user access to the content in step 32.

When the content is accessed from a web browser, the relationships between the content are used to customize delivery of the content for different users in step 34. While viewing the customized content, step 36 further enables users to provide feedback on the customized content and to contribute to the customized content, where the feedback and contributions are also stored and made accessible on the site to content authors and other users. The present invention also provides the portal with content utilization and user statistics in step 38 so that enterprise managers may monitor the site's effectiveness. In an alternative embodiment, in step 40 the server manages exchange of selected content with other knowledge exchange network portals that may be owned and/or operated by other entities.

FIG. 3 is a block diagram illustrating a more detailed view of the e-learning platform 10 in accordance with a preferred embodiment of the present invention. The e-learning platform comprises four major components: a content authoring component 50, a content organization and management component 52, a content dissemination component 54, and a reporting and feedback component 57.

The content authoring component 50 comprises authoring enablers 56 working in conjunction with PCs 18 that allow enterprise personnel to create content and post the content on the portal 12 from their PCs 18. The content organization and management component 52 includes at least one master publishing server 58 and one or more optional remote publishing servers 60 that communicate with the authoring enablers 56 via the network 14. The purpose of the publishing servers 58 and 60 is to store and organize the content created through the authoring enablers 56 in order to remove the content from the SMEs desktop and thereby make the content widely accessible.

The content dissemination component 54 includes at least one master portal
server 62 and one or more optional remote portal servers 64 for disseminating the content to users/learners 16b through a standard browser interface 66 on their PCs 18. The reporting and feedback component 57 includes a manager application 68 for collecting content utilization and user statistics for the portal 12 and making the statistics available to enterprise managers. The reporting and feedback component 57 also allows the users to provide feedback to the portal from their PCs.

The users who create the content for the knowledge exchange portal 12 may be referred to as “subject matter experts” (SMEs) 16a because they are the people in the enterprise who are the expert on a topic and typically participate in training production, either by providing content for a training project, or more informally as presenters for training seminars, workshops, and road shows. Conventionally, SME’s 16a create presentation materials using common PC applications, such as MS PowerPoint™ and MS Word™, for example. It should be noted that in many cases, the SME 16a may be the same person as the user 16b.

In a preferred embodiment, the authoring enablers 56 of the present invention are a combination hardware/software desktop video production studio that enables SMEs 16a to rapidly produce high-quality video and audio that may be synchronized with presentation materials (e.g., a PowerPoint presentation). The authoring enablers 56 include a portable studio system (not shown) that attaches to the users PC 18, which includes a high-quality video camera, lights, microphone, and an optional background screen. The authoring enablers 56 also include multiple software plug-ins (not shown) for common PC applications, some of which synchronize the audio and video received from the studio system with the content created in the PC applications to create studio-quality multimedia presentations. The software plug-ins also interface with the content organization and management component 52 for publishing content to the knowledge exchange portal 12 via the network 14.

In use, after an SME 16a generates a slide presentation in MS PowerPoint, for example, the SME 16a may activate the camera and microphone and record an audiovisual narration for each slide. Both the audiovisual data and the slide presentation are saved as a multimedia presentation and are transmitted to the knowledge exchange portal for access by others. By extending the SMEs 16a everyday PC tools with high-quality multimedia production capabilities, the authoring enablers 56 allow the SMEs 16a to contribute quality-training modules to the knowledge exchange portal 12 in a matter of hours, thereby eliminating the need for lengthy production cycles.
while significantly reducing cost.

The master publishing server 58 acts as a repository for the content authored by the SMEs 16a within the enterprise. The master publishing server 58 includes a knowledge database 68 and a knowledge repository (KR) 70. The knowledge database 68 stores a schema and metadata, including control structures, control information, and relationships between the content. The knowledge repository 70 is a hierarchical file system for storing and organizing the content, and an importing interface 72 which is used for importing any type of web-deliverable content.

A small enterprise may only require the use of the master publishing server 58, but a large enterprise may also require the use of multiple remote publishing servers 60. The remote publishing servers 60 may each be associated with organizational entities within the enterprise and located within proximity to the SMEs 16a within those entities.

Whereas the authoring enablers 56 are used primarily by the SMEs 16a, the publishing servers are controlled by a learning administrator 74. As used herein, the learning administrator 74 is a person who coordinates the information being disseminated by the portal 12. The learning administrator 74 creates a knowledge framework for the content and the organizing principles for the underlying data. After the learning administrator 74 creates the knowledge framework for the content, the knowledge framework is filled-in with the content supplied by the SMEs 16a. The collection of published content may be referred to as a library.

The learning administrator 74 creates the knowledge framework by defining categories of information and templates of information relating those categories together with the relationships between the content in the knowledge database 68. For example, the products produced by an enterprise may be categorized within the knowledge framework and product information templates may be defined for each category of products. Assuming a product template includes a “product description” field, the learning administrator 74 may even insert a product description into the “product description” field of the template and let the SME 16a fill in the remaining fields during publication of the content.

During publication, the SME 16a attempts to publish multimedia content using the authoring enabler 56 and the authoring enabler 56 interfaces with the publishing server 58 or 60. The master publisher server 58 then uses the knowledge framework and the templates to question the SME 16a about the authored content (e.g., catalog
information). Based on the category of the content to be published identified by the SME 16a, the SME 16a is prompted to enter information into the fields of the template corresponding to that category. In a preferred embodiment, the learning administrator 74 defines questions for the information fields within the templates so that the SME 16a may provide the information during a question and answer session.

As an example, assume the company has published content regarding products A and B on the knowledge exchange portal 12, and wants to add content for product C. The learning administrator 74 will not have to enter detailed information into the knowledge database 68 regarding products C, just general category and description information, such as product C belongs to the Alpha line. And because the Alpha line has certain templates associated with it, when the learning administrator 74 associates product C with the Alpha line, those templates will apply to product C. When an SME 16a subsequently attempts to enter detailed information about product C, the system questions the SME 16a using the questions retrieved from the templates associated with the Alpha line in order to allow the SME 16a to quickly enter the information about product C.

After the question and answer session, the publishing server 58 receives the content and information provided by the SME 16a and stores the data in the knowledge repository 70. According to the present invention, the publishing server 58 parses the content into discrete elements of data, referred to as chunks, and indexes the chunks with information provided by the SME 16a so that the chunks may be individually retrieved based on the indexes and relationships between the indexes.

As will be explained in more detail below, this content organization and management scheme allows the knowledge exchange portal 12 to quickly build sets of information customized for individual users 16b by pulling together various combinations of chunks of data from the library. Users 16b then have a choice during a learning experience about which chunks are relevant and how much time to spend on each chunk. In addition, views of the information may be provided for internal enterprise users 16b, while other views are built for external users 16b such as business partners and customers.

At times during the publication process, the SME 16a will be unable to answer all the questions about the authored content. In order to fill in the gaps in the information provided by the SME 16a, the learning administrator 74 may use the import interface 72 on the publishing servers to import information from sources external to the
knowledge exchange portal 12 on the network into the knowledge database 68. Utilizing the import interface 72 allows the learning administrator 74 to ensure the completeness and depth of the published content.

Rather than importing information from an external source, the knowledge database 68 may include metadata that points to an external reference, such as another database or website. In a preferred embodiment, this pointer is implemented as an XREF statement, which is well-known in the art. Using an external reference eliminates the need to import knowledge from other sources, while still allowing the system to create knowledge relationships in the knowledge database 68.

As can be appreciated, the eLearning platform 10 enables an enterprise to create and store content and relationships by merging content from both internal and external sources, and the content may comprise new training material, existing training material, and off-the-shelf courseware.

When an SME 16a publishes multimedia content on the desktop by the authoring enabler 56 in a system having multiple remote publishing servers 60, the published content is transferred to the remote publishing server 60 assigned to the local group of SMEs 16a. The remote publishing server 60 then produces multiple versions of the original content in multiple formats, such as HTML, MP3, Microsoft Word, audio only, a transcript, and streaming video, and so on. Once the content is in final form, the multiple versions of the content are transferred from the remote publishing server 60 to the master publishing server 58. In an alternative embodiment, the original content may first be transferred from the remote publishing servers 60 to the master publishing server 58 where the multiple versions of the original content are produced.

Other functions of the master publishing server 58 include creation of packages of relationships and content for exchange with other eLearning platforms belonging to other entities.

The master publishing server 58 interfaces with the master portal server 62 and distributes the metadata in the knowledge database 68 and the content in the knowledge repository 70 to the master portal server 62. In other words, the master publishing server 58 releases unpublished content to the master portal server 62 for publication and outside access. The master portal server 62 handles the delivery of the training content to the users 16b and receives all of their feedback and contributions, all through a standard web browser 66. For a large enterprise, there may be at least one master portal server 62 and one or more remote portal servers 64 downstream from the
master portal server 62. In an alternative embodiment, the remote portal servers 64 may not be provided by the enterprise, but instead may be provided directly by an Internet service provider. Preferably, the remote portal servers 64 are located in geographic proximity to the targeted users 16b.

Other functions of the master portal server 62 include performing user 16b authentication and customizing the content of the library for each user 16b or groups of users 16b. In order to perform authentication, a link is provided between the master portal server 62 and the enterprise’s authentication method, which may include LDAP, a standard directory service, Windows NT, and so on. Each user 16b also has an account 76 on the system where information is kept regarding what content the user 16b accessed, when the access occurred, and the results of any test the user 16b takes. This information is used by the management application 68 to provide system statistics.

The primary purpose of the master portal server 62 is to use the content relationships to filter and customize the content from the library specifically for each user 16b.

According to the present invention, the elearning platform 10 allows each user 16b of the portal 12 to set up a personal dashboard on the master portal server 62 in order to tailor the contents of the library to the interests and job role of the user. The personal dashboard is a management tool for managing the learning activity, controlling access to the content in the knowledge repository 70, performing user 16b authentication for security, and supporting searching.

By virtue of the user’s job, the knowledge database 68 may include content targeted towards that job role. Some content in the library may be pushed to a user 16b by virtue of the group, or groups, the user 16b is associated with. Other content from the library may be pulled by the user 16b by the user 16b indicating his/her preferences and by enrolling in other groups. For example, a user 16b may have an interest in a particular product area and may want to be on the distribution list for that product area so that the user 16b is notified of any new developments. The user 16b may then have this particular element added to his/her personal dashboard. Because everything the user 16b has done on the system is tracked, the user 16b may also be notified whenever something they have previously accessed is updated.

In operation, a user 16b accesses the master portal server 62 via a web browser and logs in with an ID and password. After the user’s ID and password are
authenticated, the user 16b may browse the library. Instead of showing the user 16b a view of the entire library, the master portal server 62 shows only the view of the library the user 16b is entitled to see. Based on the user’s ID and password, the master portal server 62 retrieves the group, or groups, from the database that the user 16b is associated with. The groups may include groups that the user 16b was assigned to by the company, as well as the groups the user 16b signed voluntarily joined (assuming the user 16b had authorization to do so).

Based on the groups the user 16b is identified as belonging to, the master portal server 62 dynamically builds web pages showing the user 16b the content associated with his/her groups using XML and style sheets. As an example, assume an enterprise has established a CFO group. A user 16b who belongs to that group will be shown financial data for the company, but users 16b not identified as being a member will not be shown the data.

Style sheets are associated with each defined group of the enterprise and control the look and feel of the information when displayed to the users 16b of those groups. Because the look and feel of the web pages are applied dynamically, a personalized learning experience is created for each user 16b depending on their roles in the company. Depending on the user’s role, one user 16b may view the same content as another user, but one user 16b may be shown a blue background and one set of options, while the other user 16b be shown a red background, different icons, and another sets of options. According to the present invention, the chunks of data comprising the library are selectively distributed to the right target audiences, thereby providing targeted learning through personalization.

The reporting and feedback component of the elearning platform 10 enables users to put content specific information back into the system using a web browser 66, the master portal server 62, and the management application 67. This is accomplished by displaying a form to the user to fill-in. Since the system knows the author of the content that the user is commenting on, and the groups the user belongs to, due to the relationships stored in the knowledge repository 70, some fields in the form, such as the author and group membership info may be pre-filled in.

The feedback provided by the user 16b may include test scores, comments to the author, comments to the publisher, questions about the content, and contributions to the content. All feedback is specific to the chunk of data and to the groups that the user 16b is participating in. Therefore, only other users 16b in the same groups of
membership are able to see the contribution because the contribution is associate with the particular learning chunk.

For example when a user 16b wishes to send e-mail to an author regarding a particular element of data in an article, for example, the e-mail is not sent to the author of the article. Rather, the e-mail is sent to the author of that particular chunk of data within the article. Similarly, when a user 16b wishes to make a contribution to the portal 12, the user 16b is not making a contribution to the general library, they are making a contribution to the particular product information they are viewing.

Another function of the reporting and feedback component 57 is providing management reporting through the manager application 67. The manager application 67 accesses data from the master portal server 62 and creates a set of management reports that is targeted to several different audiences: the SME 16a, the user 16b, the learning administrator 74, a system administrator of the servers, and enterprise managers.

For example, the manager application 67 may allow the learner to obtain transcripts of progress through the learning material. The manager application 67 may also generate a series of reports for the hardware system administrator regarding scaling information and potential system problems. And the enterprise manager may require information from the manager application 67 on the effectiveness of the programs being published. For example, the manager may want to know whether a certain population of users 16b is actually reading the information being sent to them. The manager application 67 may also produce reports on geographic performance, such as whether the east coast salespeople and the west coast sales perform on the same level, for instance. The enterprise manager may also use the manager application 67 to make sure that the users 16b have the right training material at the right time.

A further aspect of the present invention is allowing the users 16b to learn off-line by downloading packaged information from the publishing servers 62 and 64, and the ability to provide feedback after reviewing the content. This requires the ability to package related information in order for the information to be downloaded and taken off-line. In order to create the downloadable version, the publishing server must know what items to bring together into the off-line learning package. Part of the items being requested may be data stored outside the system on the web. When defining a package that includes a reference to outside data, the package not only includes and
XREF statement, but also the scope of the XREF statement. For example, and XREF statement may be a single hyperlink for a single web page, or a series of related hyperlinks for nested levels of web pages. When the package is created, the hyperlinks are traversed and the content from those links are pulled into the package.

This notion of packaging is also important because the platform 10 is designed to work worldwide because most enterprises that create information and knowledge about their products and who create these packages will be motivated to share these packages with other companies. Therefore, according to the present invention, one master publishing server 58 from one company is able to communicate and exchange packages with another master publishing server 58 from another company anywhere in the world on a peer-to-peer basis.

Two companies can agree on what packages are exchanged. This means that the person responsible for the first master publishing server 58 (learning administrator 74) is able to have a business relationship with the person responsible for the second master publishing server 58 and they can agree on what packages the companies will exchange and when. As long as this agreement is in place, whenever these packages are updated they may be scheduled for delivery to the other company. The schedule may include control items such as reports on successful exchanges and pending exchanges so that the learning administrator 74 can decide whether to have the updates entered automatically or only by approval. Exchanging packages between two enterprises in accordance with the present invention provides personalization of the data for business partners.

Accordingly, an enterprise may deal with a business partner in one of two ways. One method is through the delivery system where the business partner acts as a user 16b and accesses the training material from the enterprise’s master portal server 62. The other method is for the business partner to have its own eLearning platform 10 and to exchange packages between the two master publishing servers 58 and deliver the training material to their own people.

The present invention allows employees of an enterprise who have specialized knowledge about a subject to quickly author content about that subject and have the content made available over the Internet to other users 16b of the eLearning portal 12 in such a way that the content is customized for viewing based on which users 16b or class of users 16b are accessing the content. The author and managers of an enterprise may also be provided with statistics of which users 16b viewed the
information, and whether the users 16b had any comments, feedback, questions, comments or contributions. In response, the author may answer the questions, and share the contributions of colleagues. The present invention solves the obsolescence issue because as soon as the content and responses are posted, all users 16b have access to the most current information, unlike video, books and CD-ROMs. Because there's only one up-to-date and current copy of the information at any given time, the issue of the information becoming stale or out of date becomes moot, and ISO 9000 change management requirements are satisfied.

An elearning platform 10 for providing enterprises with knowledge exchange portals for capturing and distributing knowledge quickly, efficiently and effectively has been disclosed. The elearning platform 10 of the present invention provides a comprehensive environment for developing and delivering multimedia presentations. The elearning platform 10 embodies elements of synchronous or "live communication" environments, such as video conferencing and web-based presentation delivery, and the quality of high-end asynchronous computer-based training environments (real-time playback). Using the elearning platform 10 of the present invention, elearning portals 12 provide knowledge transfer, training and communication that is fast, self filtered and relevant.

The present invention has been described in accordance with the embodiments shown, and one of ordinary skill in the art will readily recognize that there could be variations to the embodiments, and any variations are would be within the spirit and scope of the present invention. In addition, it should be understood that the servers and described herein are controlled by software applications operating in accordance with the present invention that reside within on a computer-readable medium. Accordingly, many modifications may be made by one of ordinary skill in the art without departing from the spirit and scope of the appended claims.
CLAIMS

What is claimed is:

1. A method for providing a knowledge exchange portal, comprising the steps of:
   a) enabling users to author and post content to a site on a network from the user's computer;
   b) managing storage of the content and user access to the content;
   c) customizing delivery of the content for different users when users attempt to access the content; and
   d) enabling users to provide feedback on the customized content and making the feedback available to other users.

2. The method of claim 2 further including the step of:
   e) providing content utilization and user statistics for the portal.

3. The method of claim 3 further including the step of providing at least one publishing server for managing storage of the content and user access to the content.

4. The method of claim 4 further including the step of providing authoring enablers on the users' computers for authoring and posting the content, the content being of many types, including multimedia presentations.

5. The method of claim 4 further including the step of allowing the user to enter information regarding the content for indexing the content on the publishing server.

6. The method of claim 5 further including the step of including an external reference on the publishing server to content stored externally from the knowledge exchange portal.

7. The method of claim 1 further including the step of providing at least one portal server for customizing delivery of the content.
8 The method of claim 7 further including the step of storing the content as discrete elements of data.

9 The method of claim 8 wherein the step of customizing the content further includes the step of delivering various combinations of the discrete elements to different users.

10 The method of claim 9 wherein the step of customizing the content includes the step of determining group membership associations.

11 The method of claim 1 further including the step of allowing employees, customers, and business partners to access the content on the knowledge exchange portal.

12 The method of claim 2 wherein the step of managing storage of the content further includes merging new training material and existing training material.

13 A system for providing a knowledge exchange portal over a network, comprising:
   a content authoring component for enabling personnel to create content and post the content on the knowledge exchange portal from personal computers;
   a content organization and management component in communication with the content authoring component for storing the content and relationships between the content;
   a content dissemination component in communication with the content organization and management component for disseminating the content to a user of the knowledge exchange portal through a standard browser interface on the user's personal computer based on the relationships between the content; and
   a reporting and feedback component in communication with the content dissemination component for collecting content utilization and user statistics for the knowledge exchange portal and making the statistics available to the enterprise.

14 The system of claim 13 wherein the content disseminated to the user is customized for the user.
15 The system of claim 14 wherein the content is customized based on group membership association.

16 The system of claim 14 wherein the content is customized based on a personal dashboard setup by the user that controls access to the content stored on the knowledge exchange portal.

17 The system of claim 14 wherein the content authoring component comprises authoring enablers working in conjunction with the personal computers.

18 The system of claim 17 wherein the authoring enablers include software plug-ins for application programs.

19 The system of claim 14 wherein the content organization and management component comprises at least one a master publishing server and one or more remote publishing servers that communicate with the authoring enablers via the network.

20 The system of claim 19 wherein the master publishing server further includes a knowledge database for storing a database schema, and a knowledge repository for storing the content.

21 The system of claim 20 wherein the knowledge database includes an external reference to content stored externally from the knowledge exchange portal.

22 The system of claim 21 wherein the content dissemination component includes at least one master portal server and one or more remote portal servers.

23 The system of claim 22 wherein the reporting and feedback component comprises a manager application.

24 An elearning platform, comprising:
a plurality of computers coupled to a network, wherein at least a portion of the computers include a browser and an authoring enabler, wherein the authoring enabler
synchronizes audio and video with content created on the computer to create multimedia content; and

a knowledge exchange portal accessible to the computers over the network, the knowledge exchange portal including,

5 at least one publishing server for receiving the content from the computers, and for organizing and storing the content in discrete elements, and

at least one portal server coupled to the publishing server, the portal server for, authenticating users who log into the knowledge exchange portal,

customizing the content stored on the publishing server based on an identity of the user,

delivering the customized content to the user's browser for viewing, and allowing a user to provide feedback based on the viewed content, such that the feedback is stored on the publishing server for access by other users.

15 The elearning platform of claim 24 wherein the authoring enablers include a portable studio system that attaches to the computers, the studio system including a high-quality video camera and lights, the authoring enablers further including at least one software plug-in for application programs.

20 The elearning platform of claim 25 wherein the feedback provided by the user is associated with a particular element of content being viewed.

25 The elearning platform of claim 26 wherein the portal server further functions to allow the user to download packaged information for off-line learning.

28 The elearning platform of claim 27 wherein the packaged information includes imported content from external websites.

29 The elearning platform of claim 28 wherein the publishing server is capable of sharing content with a publishing server that is external to the knowledge portal.
FIG. 1
Enable a user to author and post content to the portal from the user's computer in real time

Manage storage of the content, relationships between the content, and user access to the content

Use the relationships between the content to customize delivery of the content for different users when the content is accessed

Enable users to provide feedback on the customized content and make the feedback accessible on the portal

Provide the portal with content utilization and user statistics so enterprise managers may monitor the portal's effectiveness

Manage the exchange of selected content with other knowledge exchange network portals

FIG. 2

SUBSTITUTE SHEET (RULE 26)
### A. CLASSIFICATION OF SUBJECT MATTER

- **IPC(7)**: G06F 17/60; G06F 15/16
- **US CL**: 705/1; 709/217, 218, 219

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

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

- **U.S.**: 705/1; 709/217, 218, 219

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 practicable, search terms used)

Please See Extra Sheet.

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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<tbody>
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<td>MILES, J., Groupware: Facilitating Corporate and Network Communication, Apparel Industry Magazine, January 1998, Vol. 59, No. 1, pp. 80, see especially last three paragraphs of main article.</td>
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- **X** Further documents are listed in the continuation of Box C.  
  - **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
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  - **A** document member of the same patent family

Date of the actual completion of the international search: 27 November 2001

Date of mailing of the international search report: 20 Dec 2001

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks

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B. FIELDS SEARCHED
Electronic data bases consulted (Name of data base and where practicable terms used):