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STRUCTURED COAUTHORING

BACKGROUND

5 [0001] In multi-user environments, it may be desirable for multiple users be able to edit the same document at the same time. Often, when multiple users are editing the document, confusion can exist as to how the various edits are added to the document. For example, sometimes multiple versions of the document are edited, making it difficult to merge the edits into a single, complete document.

10 [0002] Even in systems that support multi-user editing of a document, users typically cannot control when the users' edits are shown to others editing the document. Further, it can be difficult to define which user is working on which particular part of the document, thereby resulting in possible conflicts in the changes made to the document.

15 [0002A] It is desired to provide a method, system, or computer storage medium that alleviate one or more difficulties of the prior art, or to at least provide a useful alternative.

SUMMARY

20 [0002B] In accordance with some embodiments of the present invention, there is provided a method executable on a computer system for co-authoring a document by a plurality of users, the computer system having at least one data storage device communicatively coupled to at least one processing unit, the method comprising:

accessing the document, wherein the document is organized into a plurality of sections;

25 receiving first user access permissions associated with a first section of the plurality of sections of the document, wherein the first user access permissions define an extent to which a first user of the plurality of users can access a first section of the plurality of sections of the document;

30 receiving second user access permissions associated with the first section of the document, wherein the second user access permissions define an extent to which a second user of the plurality of users can access the first section of the document;

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displaying a dynamic control adjacent to each section of the document, wherein the dynamic control for a given section is selectable for setting one or more customized rules for dynamically changing one or more user access permissions associated with the given section of the document;

5 in response to a selection of the dynamic control adjacent to the first section, setting customized rules for dynamically changing the second user access permissions for the first section upon satisfaction of a condition;

receiving first updates to the first section of the document, wherein the first updates are made to the first section according to the first user access permissions;

10 receiving a request from the first user to share the first updates with the second user, wherein the second user is specifically selected from the plurality of users;

receiving second updates to the first section of the document, wherein the second updates are made to the first section according to the second user access permissions;

15 receiving a request from the second user to share the second updates with a third user, wherein the third user is specifically selected from the plurality of users;

displaying a first user control indicating that the first user is accessing the first section of the document;

displaying a second user control indicating that the second user is accessing the first section of the document;

20 determining that the condition has been satisfied; and

in response to the determination, dynamically changing the second user access permissions for the first section in accordance with the one or more customized rules.

[0002C] In accordance with some embodiments of the present invention, there is provided
25 a computer system for co-authoring a document by a plurality of users comprising:

at least one processing unit; and

at least one data storage device, communicatively coupled to the at least one processing unit and containing computer-readable instructions that are executed by the at least one processing unit to perform the following steps:

30 displaying the document, wherein the document is organized into a plurality of sections;

receiving first user access permissions, wherein the first user access

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permissions define an extent to which a first user of the plurality of users can access a first section of the plurality of sections of the document;

displaying a first access control adjacent to a first user control, wherein the first access control identifies the first user access permissions;

5 receiving second user access permissions, wherein the second user access permissions define an extent to which a second user of the plurality of users can access a first section of the plurality of sections of the document;

10 displaying a second access control adjacent to a second user control, wherein the second access control identifies the second user access permissions, wherein the first user access permissions and the first access control are different from the second user access permissions and the second access control;

15 displaying a dynamic control adjacent to each section of the document, wherein the dynamic control for a given section is selectable for setting one or more customized rules for dynamically changing one or more user access permissions associated with the given section of the document;

in response to a selection of the dynamic control adjacent to the first section, setting customized rules for dynamically changing the second user access permissions for the first section upon satisfaction of a condition;

20 receiving first updates to the first section of the document, wherein the first updates are made to the first section according to the first user access permissions;

receiving a request from the first user to share the first updates with the second user, wherein the second user is specifically selected from the plurality of users;

25 receiving second updates to the first section of the document, wherein the second updates are made to the first section according to the second user access permissions;

receiving a request from the second user to share the second updates with a third user, wherein the third user is specifically selected from the plurality of users;

30 displaying the first user control indicating that the first user is accessing the first section of the document;

displaying the second user control indicating that the second user is

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accessing the first section of the document;
determining that the condition has been satisfied; and
in response to the determination, dynamically changing the second user
access permissions for the first section in accordance with the one or more
5 customized rules.

[0002D] In accordance with some embodiments of the present invention, there is provided
a computer storage medium, not consisting of a modulated data signal, and encoding
computer executable instructions that when executed by a processing unit perform a
10 method for co-authoring a document by a plurality of users, the method comprising:

accessing the document, wherein the document is organized into a plurality of
sections;

receiving first user access permissions associated with a first section of the plurality
of sections of the document, wherein the first user access permissions define an extent to
15 which a first user of the plurality of users can access the first section of the document;

receiving second user access permissions associated with the first section of the
document, wherein the second user access permissions define an extent to which a second
user of the plurality of users can access the first section of the document, and wherein the
second user access permissions are different from the first user access permissions;

20 displaying a dynamic control adjacent to each section of the document, wherein the
dynamic control for a given section is selectable for setting one or more customized rules
for dynamically changing one or more user access permissions associated with the given
section of the document;

in response to a selection of the dynamic control adjacent to the first section, setting
25 customized rules for dynamically changing the second user access permissions for the first
section upon satisfaction of a condition;

receiving first updates to the first section of the document, wherein the first updates
are made to the first section according to the first user access permissions;

receiving a request from the first user to share the first updates with the second
30 user, wherein the second user is specifically selected from the plurality of users;

receiving second updates to the first section of the document, wherein the second
updates are made to the first section according to the second user access permissions;

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receiving a request from the second user to share the second updates with the third user, wherein the third user is specifically selected from the plurality of users;

displaying a first user control indicating that the first user is accessing the first section of the document;

5 displaying a first user access control indicating the first user access permissions adjacent to the first user control;

displaying a second user control indicating that the second user is accessing the first section of the document; displaying a second user access control indicating the second user access permissions adjacent to the second user control;

10 determining that the condition is satisfied; and

in response to the determination, dynamically changing the second user access permissions for the first section in accordance with the one or more customized rules.

[0003] The present disclosure relates to systems and methods for structured coauthoring of
15 a document.

[0004] According to one aspect, a system for structured coauthoring of a document comprises a server including one or more documents, each document being organized into sections, a document permissions module that stores user access permissions for each
20 section of a document, a document update processing module that processes requests from a user to share document updates with other users and that processes requests from a user to receive document updates from other users and a document rendering module that renders a document for display on a client, the document being rendered so that sections of the document are updated with shared document updates made by users, the shared
25 document updates being requested by the user on the client. The user access permissions determine the extent to which a user can modify each section of the document, permitting different user access permissions to be stored for one or more sections of the document. The system permits two or more users to coauthor one or more of the sections of the document so that each user has specific access rights to one or more of the sections of the
30 document, so that the user can specify whether updates made by the user to the one or more sections of the document can be displayed to other users, and so that the user can

view the names of other users accessing the one or more sections of the document and can selectively obtain updates to the document from those users.

[0005] According to another aspect, a method for structured coauthoring of a document
5 comprises: opening a document on a client by a user, the document organized into
sections, each section representing a part of the document, the document displaying user
access permissions for one or more sections of the document and the document displaying
the names of users who are editing one or more of the sections of the document;
performing operations on one or more sections of the document, the operations being
10 consistent with the user access permissions granted for the one or more sections of the
document; identifying updates to the document that can be shared with other users so that
the updates to the document are shared with other users; and identifying one or more users
from which document updates to one or more of the sections of the document are to be
obtained, the one or more users selected from the names displayed on the document, so
15 that the document updates are obtained from the document server and displayed in the
appropriate sections of the document.

[0006] According to yet another aspect, a method for coordinating the structured
coauthoring of a document at a document server comprises: dividing a document into a
20 plurality of sections, each of the sections including a paragraph of the document; storing
user access permissions to each of the sections of the document for a plurality of users of
the document, the user access permissions defining an extent to which each of the plurality
of users can view, edit and comment on the sections of the document; storing the names of
users who are accessing each of the sections of the document; rendering an instance of the
25 document to the users of the document, the rendered document including access controls
that indicate user access permissions for each of the sections of the document, the rendered
document including the names of the users who are editing each of the sections of the
document, the rendered document including action controls providing actions including
requesting updates to the sections from the users and designating that updates a user made
30 to the sections are made available to users; storing updates to the document made by the
users of the document; receiving a request from a first user to share updates to the
document made by the first user with other users; in response to the request from the first
user, enabling the document updates made by the first user to be shared with other users;
receiving a request from a second user to receive updates to the sections of the document

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made by other users; and in response to the request from the second user, rendering an instance of the document for the second user that includes the shared updates to the sections requested by the second user, the shared updates being rendered in new document sections located directly above the requested document sections.

5

[0007] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

10

DESCRIPTION OF THE DRAWINGS

[0007A] Some embodiments of the present invention are hereinafter described, by way of example only, with reference to the accompanying drawings, wherein:

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[0008] The accompanying drawings incorporated in and forming a part of the specification illustrate several aspects of the present disclosure, and together with the description serve to explain the principles of the disclosure.

[0009] Figure 1 shows an example system for coauthoring documents.

[0010] Figure 2 shows a structure of an example document used for coauthoring.

[0011] Figure 3 shows a portion of an example document for coauthoring.

20

[0012] Figure 4 shows an example of displaying document updates from another user for a portion of the example document shown in Figure 3.

[0013] Figure 5 shows example modules of an example document server.

[0014] Figure 6 shows a flowchart for an example method for coauthoring a document.

25

[0015] Figure 7 shows a flowchart for an example method for coordinating the coauthoring of documents at a document server.

DETAILED DESCRIPTION

[0016] The present application is directed to systems and methods for structured coauthoring of a document.

[0017] In examples described herein, a document is organized into sections, and users are assigned specific access permissions to one or more sections of the document. The access permissions define the extent to which a user can view, edit, or comment on a section of the document. Structured coauthoring also permits users to share document updates. A user can make changes to the document and decide which, if any, of these changes are shared with other users. In addition, a user can request to see shared updates to the document made by one or more other users.

10 [0018] Figure 1 shows an example system 100 that supports structured coauthoring of documents. The system 100 includes clients 101, 102 and one or more document servers 104. More or fewer clients and document servers can be used.

[0019] In example embodiments, the clients 101, 102 are computing devices, such as desktop computers, laptop computers, personal data assistants, or cellular devices. The clients 101, 102 can include input/output devices, a central processing unit (“CPU”), a data storage device, and a network device.

[0020] Typical input/output devices include keyboards, mice, displays, microphones, speakers, disk drives, CD-ROM drives, and flash drives. Other types of input/output devices can also be used.

[0021] Computer readable media, such as the data storage device, provides for data retention. By way of example, computer readable media can include computer storage media and communication media. Computer storage media includes physical volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions, data structures, program modules or other data. Communication media typically embodies computer readable instructions, data structures, program modules or other data in a modulated data signal such as a carrier wave or other transport mechanism and includes any information delivery media. The term “modulated data signal” means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal.

[0022] Among the plurality of information stored on the data storage device is a client operating system (“OS”) and client applications. The client OS is a program that manages the hardware and software resources of the client system. The client applications utilize the resources of the clients 101, 102 to directly perform tasks specified by the user. For example, the clients 101, 102 include one or more software applications, such as word processing programs, that are used to create and edit document files. One example of such an application is Microsoft Word from Microsoft Corporation of Redmond, Washington. Other examples of such applications are also applicable.

10 [0023] The network device enables the clients 101, 102 to send and receive data to/from the server 104 through a network such as a LAN or the Internet. Other configurations for the clients 101, 102 are possible.

15 [0024] The document server 104 is a file server that is accessible through a network. The document server 104 stores a plurality of files. These files can include both software applications and documents, as described further herein. The document server 104 controls access to the documents stored by the server 104.

20 [0025] In example embodiments, the document server 104 can be located within an organization or can be part of an Internet-based shared document system. An example Internet-based shared document system is a SHAREPOINT® team services portal server services provided by Microsoft Corporation. An example shared document server is Microsoft Office SharePoint Server 2007 provided by Microsoft Corporation. Other configurations can be used.

25 [0026] Figure 2 shows an example document 200 that is rendered by a word processing application 201 on example client 101.

30 [0027] In the example shown, the document 200 is organized into a plurality of sections, designated as sections 202 through 212, respectively. A section corresponds to an editable piece of a document. Typically, a section can be any subpart of a document, for example paragraphs, headings, drawings, tables, etc. A document may contain only one section, for example a table or a single paragraph or sentence.

[0028] Alongside each section of the example document 200 are example user controls 222-232 that display the names of users who are currently coauthoring the section. The example document 200 also includes example access controls 242-252 that display the access permissions of each user for the document section and example action controls 282-5 292 that permit the user to take one or more specific actions for the document section. The specific actions may include assigning the document section to another user, marking the document section reviewed, marking the document section completed, etc. In addition, the example document 200 also includes example dynamic controls 262-272 that define rules for dynamically changing the access permissions for a section of the 10 document. Other functionality for the controls is possible. The controls may include text boxes, list boxes, pull-down list boxes, icons or any other user interface control types that may be appropriate.

[0029] In the example shown, the user controls 222-232 list the names of the user or users 15 who are currently editing the note section 202-212 of the documents. For example, if user A and user B are currently editing section 202 of the document, the names of user A and user B are listed in the user control 222 so that everyone that has the document 200 open can see that user A and user B are currently editing the section 202. A user is considered to be editing a document section when the user makes changes to the document section, 20 for example by typing in the document section.

[0030] The access permissions of the access controls 242-252 indicate the extent to which a user may edit a section of the document 200. Example user access permissions include full control, read/write, review only, comment only, read only and no access. Other user 25 access permissions may be possible.

[0031] In example embodiments, the names of all users with any level of access permission to the document section are displayed via user controls 222-232. In example embodiments, the names of users with read only access may not be displayed, for example 30 if the list of such users is long.

[0032] When a user is assigned full control, the user has full read/write access to the section of the document and, in addition, the user can use any aspect of the user interface. For example, with full control, the user can change the formatting of the document. When

a user has read/write control, the user has read-write permission to a section of the document, but cannot make formatting changes. With review only permission, a user can make changes to the document that are tracked via a technology like Track Changes in Microsoft Word. With comment only permission, the user can insert comments to a
5 section of the document but cannot alter the text within the section of the document. With read only permission, the user can view the section of the document but cannot make any changes to it and cannot insert any comments.

[0033] With no access permission, certain sections of a document may not be viewable to
10 users. For example, there may be confidential information in a document that one or more users are not permitted to view. Therefore, when presented to a user, one or more sections of a document may be redacted to prevent a user from viewing it. This is illustrated by shaded sections 206 and 208 in Figure 2, which have been defined as no access for some of the users. In some embodiments, confidential sections may not be displayed at all to a
15 user that is not permitted to view them. In example embodiments, sections of a document may be redacted if a user is not permitted to edit them. For example, in a document that includes both engineering and financial sections, the financial sections may be redacted when an engineer is viewing the document and the engineering sections may be redacted when a financial person is viewing the document.

20
[0034] In example embodiments, user access permissions and rules may be assigned and edited by an owner of the document (i.e. the person or persons having ownership permission for the document). This may be done on a section by section basis or globally for the entire document. The user access permissions and rules are stored on a document
25 server.

[0035] The user access permissions described can also be enforced without network connectivity. Assigned user permissions to sections of a document can be cached in the client's software application or stored within the document. In this way, the access
30 permissions can be used if the client is disconnected from the network or working on the document from a different computer.

[0036] The action controls 282-292 permit the user to take a specific action regarding the document section. For example, the user may wish to obtain updates to the document

section from one or more other users that may be editing the document section or the user may wish to share updates that the user made to the document section with one or more other users. Other example actions that the user may make include sending an email to a user or instant messaging a user to find out status. Other actions are possible.

5

[0037] The dynamic controls 262-272 are used to define rules that permit the access permissions for a section of the document to dynamically change when a user completes a task. For example, one or more users may be designated reviewers, but a user may not want the document to be reviewed until it is completed. In an example embodiment, when
10 a user marks a section of a document as complete, the access permission for a reviewer dynamically changes from read/only to review only.

[0038] When a user opens and begins editing the document 200, the user can view the corresponding example coauthoring control 222-232 to determine who else is currently
15 editing the various sections of the document. Typically, the user may know one or more other users and may want to see any changes that the other users have made before the user makes any additional changes. The user can indicate via example action controls 282-292 that the user wants to view the changes of one or more other users, and if those users have designated that their changes can be shared, the changes made by the one or
20 more other users will be displayed on the document shown to the user.

[0039] In example embodiments, the user also has the flexibility to decide when to share edits with other users. When editing a document, the user may not want to share changes until those changes are in a state with which the user feels comfortable. In one example
25 embodiment as discussed above, the user selects an example action control 282-292 to specify a user with which changes can be shared. In another example embodiment, when the user wishes to share changes with other users, the first user highlights the section of the document to be shared and clicks example Share button 205 on the user interface. This notifies the document server 104 that changes to the document section document are to be
30 shared. In example embodiments, clicking the example Share button 205 may bring up a list of users with which the document section changes may be shared. Other implementations are possible.

[0040] In addition to example Share button 205, the example user interface also includes an example Save button 203 and an example Assign button 207. The example Save button 203 operates as a standard save button, allowing the user to save changes into client or server memory. However, the save operation does not result in sharing updates with others. The example Assign button 207 permits the owner of the document to assign access permissions to other users.

[0041] Figure 3 shows an example embodiment of a document 300 for structured coauthoring of an example document section 306. To the left of the example document section 306 are example user controls 312, 318 displaying the names of two users currently coauthoring the document section. In this example, the two users are Heidi Craig and Tom Anderson. Associated with the users are example access controls 314, 320 and example action controls 308, 316. For user Heidi Craig, the example access control 314 is shaded to indicate full access. For user Tom Anderson, the example access control 320 has a different shading to indicate write access. In other embodiments color, shape of icon, text, etc. may be used to indicate access status.

[0042] The example action controls 308, 316 permit the user to select one or more actions to be taken regarding the document section. In an example embodiment, when the user moves a mouse over an action control (for example the action control 308 for Heidi Craig), a list of available actions 307 is presented. In this example embodiment, if the user selects the example action 309 for obtaining updates, the user will obtain updates to the document section from Heidi Craig that Heidi has designated for sharing. If the user selects the example action 311 to share updates, the changes the user made to the document section will be shared with Heidi Craig. If the user selects example action 313, the user can send an email to Heidi Craig. Moving the mouse over the example action control 316 for user Tom Anderson provides the same set of action options for Tom Anderson.

[0043] In another embodiment, the action control 308, 316 is a pull-down list box that provides a list of choices for the user. Other embodiments for action controls are possible.

[0044] Also shown in Figure 3 is an example dynamic control 322. The example dynamic control 322 allows the user to dynamically change access permissions to the

document section and to specify conditional access permissions. In this example, the dynamic control 322 is a pull-down list box. When expanded, the example dynamic control displays an example list of users 324 that have access permissions for the example document section 306. When one of the example users 324 is selected, the access permission for that user is shown. For example, if example user Sara White 326 is selected, the dynamic control 322 is further expanded to shown example access permission list 328. In example access permission list 328, example access permission 330 (No Access) is shaded, indicating that Sara White currently has no access to this document section. For this example, if access permission 330 is clicked, the dynamic control 322 is further expanded to provide a means to dynamically change access permissions. A list of Until options 332 is displayed, providing the option of maintaining the current access permission until a specific action occurs. For example, the user may select the Section Shared option 334 to specify that the current No Access permission for Sara White is to be maintained until the document section is designated for sharing by the user. When the example Section Shared option 334 is clicked, the dynamic control 332 is further expanded to provide an example list of Then options 336, indicating access permissions that can be set once the Section Shared action occurs. In the example, the Comment Only option 338 is selected, indicating that the access permission for user Sara White will dynamically change from No Access to Comment Only when the document section is designated for sharing.

[0045] Referring now to Figure 4, in an example embodiment, changes may be displayed above the document section so the user may see them before making any additional edits, as shown in the example document 300. In the example document 300, the user, via action control 316, makes a request to receive updates to document section 306 from Tom Anderson. The updates 406 are displayed above document section 306. The user may observe that Tom Anderson changed the last sentence in document section 306 and may make additional changes to the document section as a result.

[0046] Other example embodiments for the selection and display of coauthoring changes are possible. For example, the coauthoring changes may be displayed adjacent to the current section, below the current section or simply incorporated into the current section.

In example embodiments, deletions and additions may be shown by strikethroughs and underlining.

5 [0047] In example embodiments, the user can select the one or more other users for which changes are to be displayed. The user may also globally select changes from all other users. In example embodiments, the changes can be received on a per section basis or for the entire document.

10 [0048] Figure 5 shows the example document server 104 in more detail. The example document server 104 includes one or more documents 502, a document permissions module 504, a document update processing module 506, and a document rendering module 508. An example document 502 is rendered to a user when a request is received from an application program on a client to open the document.

15 [0049] The example document permissions module 504 stores the access permissions for each section of each document for each user. In some embodiments, the access permissions are stored within each document. In other embodiments, the access permissions are stored separately from each document (for example on a server or in a database) and are linked to the document. As noted above, different user access
20 permissions can include full control, read/write, review only, comment only, read only and no access. Other user access permissions are possible.

[0050] The example document permissions module 504 also enforces access permissions without network connectivity. The document permissions module 504 achieves this
25 enforcement by caching the access permissions on the client. The access permissions are cached for the user and for all other users who have accessed the document. The document permissions module 504 updates the client cache dynamically when the access permissions change. When the user goes offline, the client cache is checked to determine the extent to which the user can edit sections of the document.

30 [0051] The example document update processing module 506 keeps track of all changes saved to a document by users. The document update processing module 506 also keeps track of which of these changes are designated by a user to be shared with other users. Typically, a user saves changes made to a document by clicking a button on the user

interface representing saving. However, these saved changes are not made available to other users until a user designates the changes to be shared. In example embodiments, a user can make such a designation by highlighting one or more sections of a document and clicking a button on the user interface representing sharing. In other example

5 embodiments, the user may designate that a document section is to be shared via an action control button adjacent to the document section. The user may also designate that the entire document is to be shared. The use of buttons representing saving and sharing are examples only. Other implementations are possible.

10 **[0052]** The example document update processing module 506 also processes requests from a user to obtain changes made to the document from other users. The user requests may be made for each document section via an action control or they may be made for the entire document. The example document update processing module 506 determines which sections of the document can be updated and provides the updated changes to the example

15 document rendering module 508. The user requests are manually generated so that the user can be in control of when the document is updated. This prevents the situation where a document section is updated while a user is editing it, possibly overriding changes the user made.

20 **[0053]** The example document rendering module 508 renders the document for display to a user on a client. The document rendering module may use standard user interface controls such as text boxes, list boxes and pull-down list boxes to display user access permissions for each section of the document and to display the names of users accessing sections of the document. In alternate embodiments custom designed controls may be

25 used. User interface controls may also be used to define rules for each section of the document that are used to dynamically change access permissions depending on the user operation being performed.

[0054] The example document rendering module 508 also incorporates any shared

30 updates from users into the document. These are updates made by users that were saved at the document server 104 and designated to be shared with other users. The updates may include edited changes to sections of the document, tracked review changes or comments. The example document rendering module 508 typically renders text edits above the section of the document in which the edits were made so that the current user can easily

see them. Comments are typically rendered adjacent to sections of the document. However, in example embodiments, the updates may be positioned differently.

5 [0055] Figure 6 shows an example flowchart for a method 600 for coauthoring a document. At operation 602, a user opens a document on a client. The document, obtained from a document server, is organized into sections. Access permissions for the user are displayed on one or more sections of the document. In addition, the names of other users are displayed on the document, typically adjacent to the sections of the document they are accessing.

10

[0056] At operation 604, the user performs operations consistent with the access permissions for a section. For example, if the user has full control for a section, the user can make full edits to a section of a document, including changing formatting for the section. By contrast, if a the user has comment only access, the user can only insert
15 comments for a section of the document but can not edit any text in the section.

[0057] When the user has completed the operation appropriate to the access permission for a section, the user may wish to share the changes made to one or more sections of the document with other users. At operation 606, the user identifies the updates to the
20 document that can be shared. For example, the user may highlight the sections that can be shared. In another example, the user can choose to share all updates.

[0058] At operation 608, the user notifies the document server that the identified updates are available for sharing. This can be done, for example, by clicking a button on the user
25 interface representing sharing. As another example, the user may click a button indicating that all changes made to the document are to be shared. Other ways to designate sections to be shared and to notify the document server are possible.

[0059] As the user is editing the document, the names of other users who are also editing
30 the document are displayed for each section of the document. If the user wishes to view the edits from one or more other users, the user identifies the one or more other users at operation 610. For example, the user may highlight the name of another user or double click on the name of another user. Other implementation methods are possible.

[0060] At operation 612, the updates from the identified other users are obtained and displayed on the document. The updates are typically displayed above the section the user is editing along with the name of the other user. Other implementations are possible.

5 [0061] Figure 7 shows an example flowchart for a method 700 for coordinating the coauthoring of a document at a document server. At operation 702, the user access permissions for each section of a document that are stored in the document server. At operation 704, the names of users currently coauthoring the document are stored at the document server.

10

[0062] At operation 706, the contents of the document, the user access permissions for each section of the document and the names of users coauthoring sections of the document are used to render the document for display to a user on a client. The user access permissions and the names of users coauthoring sections of the document are typically
15 displayed using standard user interface controls such as text boxes, list boxes or pull-down list boxes. Other implementations are possible.

[0063] As users make changes to the document, those changes are stored in the document server at operation 708. However, the changes are not available for sharing until
20 designated as such by a user who made the changes.

[0064] When a user determines that changes to the document are available for sharing, at operation 710 the document server receives a notification from the client that identifies the updates to be shared and to make those updates available to other users who may request
25 them.

[0065] At operation 712, the document server receives a request from a user for updates to the document made by one or more other users. The document is then rendered at operation 714 to incorporate the shared changes requested.

30

[0066] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described

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above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

5 [0067] Throughout this specification and claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

10 [0068] The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that that prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method executable on a computer system for co-authoring a document by a plurality of users, the computer system having at least one data storage device
5 communicatively coupled to at least one processing unit, the method comprising:
 - accessing the document, wherein the document is organized into a plurality of sections;
 - receiving first user access permissions associated with a first section of the plurality of sections of the document, wherein the first user access permissions define an extent to
10 which a first user of the plurality of users can access a first section of the plurality of sections of the document;
 - receiving second user access permissions associated with the first section of the document, wherein the second user access permissions define an extent to which a second user of the plurality of users can access the first section of the document;
 - 15 displaying a dynamic control adjacent to each section of the document, wherein the dynamic control for a given section is selectable for setting one or more customized rules for dynamically changing one or more user access permissions associated with the given section of the document;
 - in response to a selection of the dynamic control adjacent to the first section, setting
20 customized rules for dynamically changing the second user access permissions for the first section upon satisfaction of a condition;
 - receiving first updates to the first section of the document, wherein the first updates are made to the first section according to the first user access permissions;
 - receiving a request from the first user to share the first updates with the second
25 user, wherein the second user is specifically selected from the plurality of users;
 - receiving second updates to the first section of the document, wherein the second updates are made to the first section according to the second user access permissions;
 - receiving a request from the second user to share the second updates with a third user, wherein the third user is specifically selected from the plurality of users;
 - 30 displaying a first user control indicating that the first user is accessing the first section of the document;

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displaying a second user control indicating that the second user is accessing the first section of the document;

determining that the condition has been satisfied; and

in response to the determination, dynamically changing the second user access
5 permissions for the first section in accordance with the one or more customized rules.

2. The method according to claim 1, wherein the first user access permissions and the second user access permissions include a level of access selected from the group consisting of: full control, read/write, review only, comment only, read only, and no
10 access.

3. The method according to claim 1 or 2, further comprising:
receiving a request from the first user to receive the second updates; and
only displaying the second updates when a request to share the second updates with
15 the first user was received.

4. The method according to any one of claims 1 to 3, further comprising:
receiving changes to the first user access permissions associated with the first section of the document, wherein the changed first user access permissions define a
20 different extent to which the first user can access the first section of the document.

5. The method according to any one of claims 1 to 4, wherein after the first updates are received to the first section of the document, the first updates are not available to the second user until the first user sends a request to share the first updates with the
25 second user.

6. The method according to any one of claims 1 to 5, further comprising:
receiving a request from the second user to receive the first updates;
determining that the request to share the first updates with the second user was
30 received; and
displaying the first updates.

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7. The method according to any one of claims 1 to 6, wherein the first user access control dynamically changes from an access level of "no access" to an access level of "review only" after the second user performs an action that satisfies a second condition,
5 wherein the action comprises marking a section of the document as complete.

8. A computer system for co-authoring a document by a plurality of users comprising:

at least one processing unit; and
10 at least one data storage device, communicatively coupled to the at least one processing unit and containing computer-readable instructions that are executed by the at least one processing unit to perform the following steps:

displaying the document, wherein the document is organized into a plurality of sections;

15 receiving first user access permissions, wherein the first user access permissions define an extent to which a first user of the plurality of users can access a first section of the plurality of sections of the document;

displaying a first access control adjacent to a first user control, wherein the first access control identifies the first user access permissions;

20 receiving second user access permissions, wherein the second user access permissions define an extent to which a second user of the plurality of users can access a first section of the plurality of sections of the document;

displaying a second access control adjacent to a second user control, wherein the second access control identifies the second user access permissions, wherein the first user access permissions and the first access control are different
25 from the second user access permissions and the second access control;

displaying a dynamic control adjacent to each section of the document, wherein the dynamic control for a given section is selectable for setting one or more customized rules for dynamically changing one or more user access permissions associated with the given section of the document;
30

in response to a selection of the dynamic control adjacent to the first

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section, setting customized rules for dynamically changing the second user access permissions for the first section upon satisfaction of a condition;

receiving first updates to the first section of the document, wherein the first updates are made to the first section according to the first user access permissions;

5 receiving a request from the first user to share the first updates with the second user, wherein the second user is specifically selected from the plurality of users;

10 receiving second updates to the first section of the document, wherein the second updates are made to the first section according to the second user access permissions;

receiving a request from the second user to share the second updates with a third user, wherein the third user is specifically selected from the plurality of users;

displaying the first user control indicating that the first user is accessing the first section of the document;

15 displaying the second user control indicating that the second user is accessing the first section of the document;

determining that the condition has been satisfied; and

20 in response to the determination, dynamically changing the second user access permissions for the first section in accordance with the one or more customized rules.

9. The computer system according to claim 8, wherein the first user access permissions and the second user access permissions include a level of access selected from the group consisting of: full control, read/write, review only, comment only, read only, and
25 no access.

10. The computer system according to claim 8 or 9, wherein the first user access permissions include a level of access that dynamically changes to another level of access when a condition is satisfied.

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11. The computer system according to claim 10, wherein the condition is completion of a task.

12. The computer system according to any one of claims 8 or 11, wherein the first user control is the name of the first user and the second user control is the name of the second user.

13. The computer system according to any one of claims 8 to 12, wherein the first access control and the second access control are represented as icons, and wherein different access permissions are represented by one of: different colored icons, different shaded icons, and different shaped icons.

14. The computer system according to any one of claims 8 to 13, further comprising:
receiving a request from the second user to receive the first updates;
determining that the request to share the first updates with the second user was received; and
displaying the first updates.

15. A computer storage medium, not consisting of a modulated data signal, and encoding computer executable instructions that when executed by a processing unit perform a method for co-authoring a document by a plurality of users, the method comprising:

accessing the document, wherein the document is organized into a plurality of sections;

receiving first user access permissions associated with a first section of the plurality of sections of the document, wherein the first user access permissions define an extent to which a first user of the plurality of users can access the first section of the document;

receiving second user access permissions associated with the first section of the document, wherein the second user access permissions define an extent to which a second user of the plurality of users can access the first section of the document, and wherein the

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second user access permissions are different from the first user access permissions;

displaying a dynamic control adjacent to each section of the document, wherein the dynamic control for a given section is selectable for setting one or more customized rules for dynamically changing one or more user access permissions associated with the given section of the document;

in response to a selection of the dynamic control adjacent to the first section, setting customized rules for dynamically changing the second user access permissions for the first section upon satisfaction of a condition;

receiving first updates to the first section of the document, wherein the first updates are made to the first section according to the first user access permissions;

receiving a request from the first user to share the first updates with the second user, wherein the second user is specifically selected from the plurality of users;

receiving second updates to the first section of the document, wherein the second updates are made to the first section according to the second user access permissions;

receiving a request from the second user to share the second updates with the third user, wherein the third user is specifically selected from the plurality of users;

displaying a first user control indicating that the first user is accessing the first section of the document;

displaying a first user access control indicating the first user access permissions adjacent to the first user control;

displaying a second user control indicating that the second user is accessing the first section of the document; displaying a second user access control indicating the second user access permissions adjacent to the second user control;

determining that the condition is satisfied; and

in response to the determination, dynamically changing the second user access permissions for the first section in accordance with the one or more customized rules.

16. The computer storage medium according to claim 15, wherein the first user access permissions and the second user access permissions include a level of access selected from the group consisting of: full control, read/write, review only, comment only, read only, and no access.

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17. The computer storage medium according to claim 15 or 16, further comprising:
storing fourth user access permissions associated with the first section of the
document, wherein the fourth user access permissions define an extent to which a fourth
5 user can access the first section of the document, and wherein the fourth user access
permissions include a level of no access; and

redacting the first section of the document from viewing by the fourth user.

18. The computer storage medium according to any one of claims 15 to 17, further
10 comprising:

receiving a request to change the first user access permissions associated with the
first section of the document, wherein the changed first user access permissions define a
different extent to which the first user can access the first section of the document.

15 19. The computer storage medium according to any one of claims 15 to 18, wherein
after the first updates are received to the first section of the document, the first updates are
not available to the second user until the first user sends a request to share the first updates
with the second user.

20 20. The computer storage medium according to any one of claims 15 to 19, further
comprising:

receiving a request from the second user to receive the first updates;

determining that the request to share the first updates with the second user was
received; and

25 displaying the first updates adjacent to the first section of the document.

21. A method, system, or computer storage medium of any one of claims 1 to 20,
substantially as hereinbefore described with reference to the accompanying drawings.

100 ↘

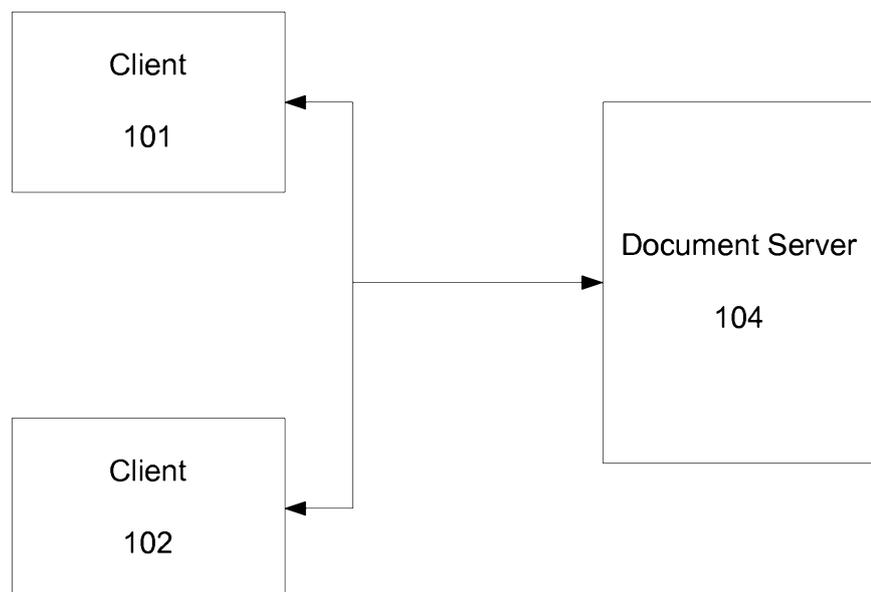


FIG. 1

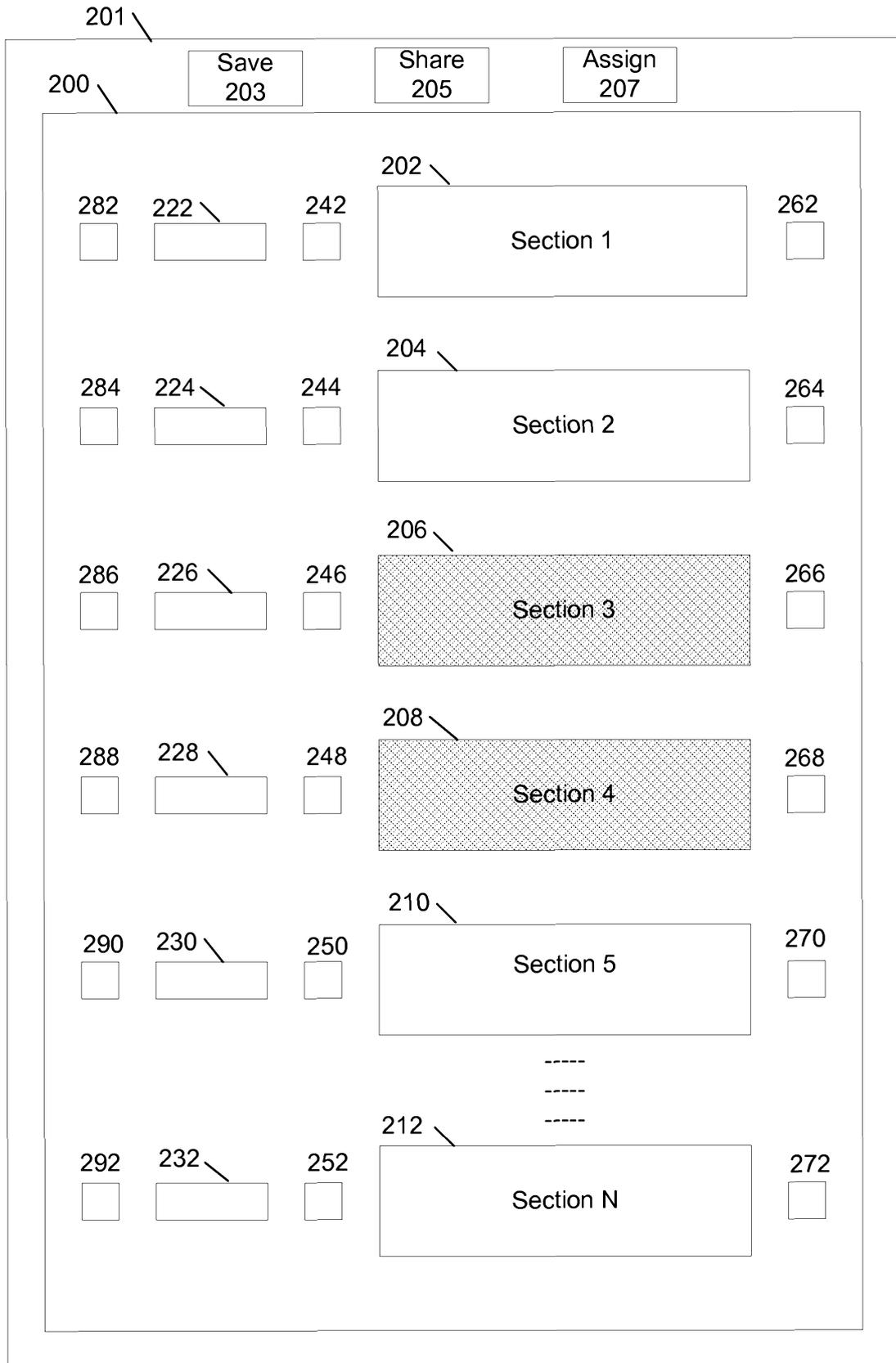


FIG. 2

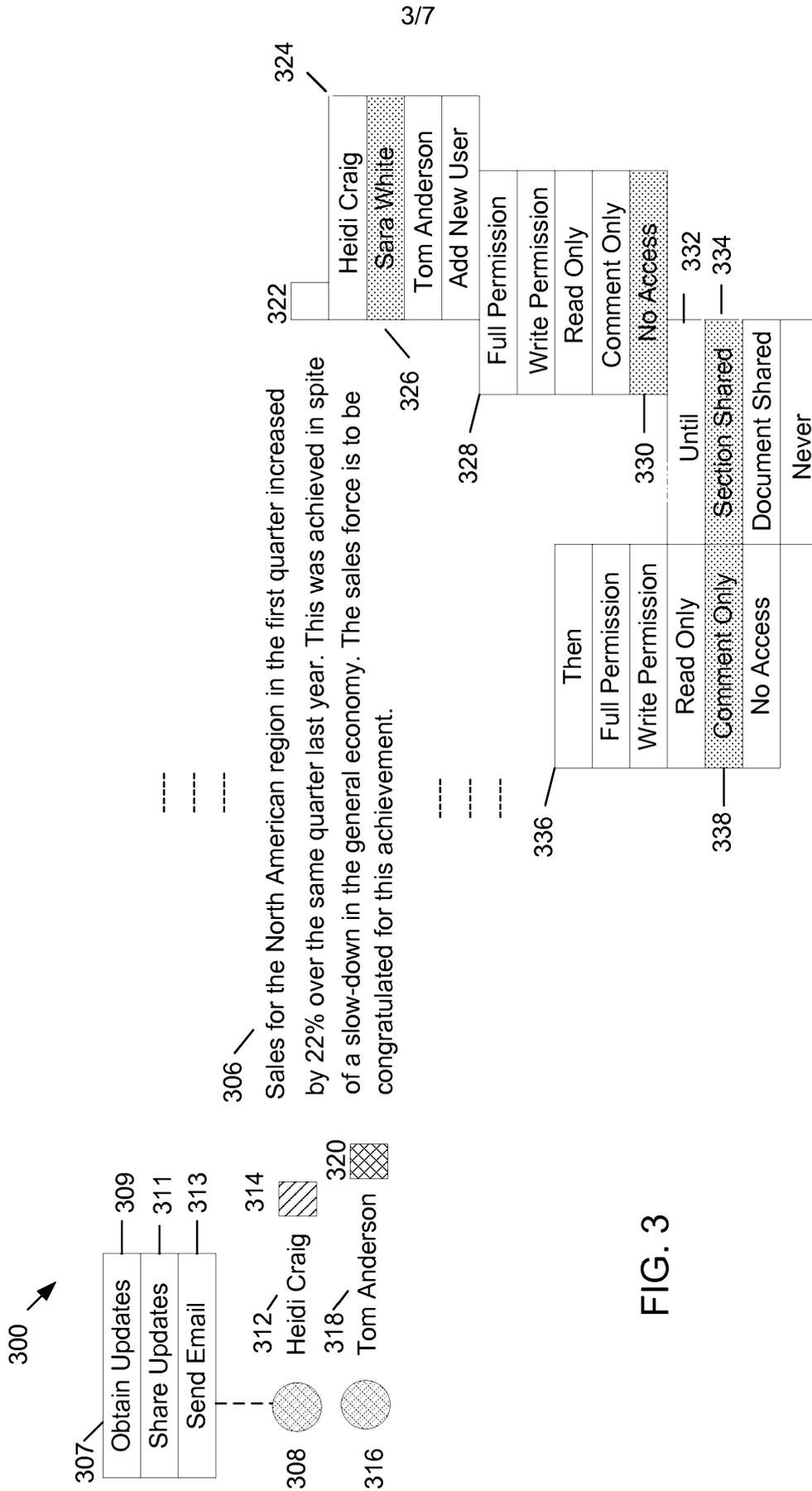


FIG. 3

300 →

406 \

Sales for the North American region in the first quarter increased by 22% over the same quarter last year. This was achieved in spite of a slow-down in the general economy. Great job! Keep up the fantastic effort.

404 \ Tom Anderson

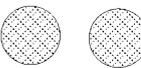
306 \

Sales for the North American region in the first quarter increased by 22% over the same quarter last year. This was achieved in spite of a slow-down in the general economy. The sales force is to be congratulated for this achievement.

320 [cross-hatch pattern]

312 \ Heidi Craig [diagonal lines]

314 \ Tom Anderson [diagonal lines]



308
316

322 [empty box]

FIG. 4

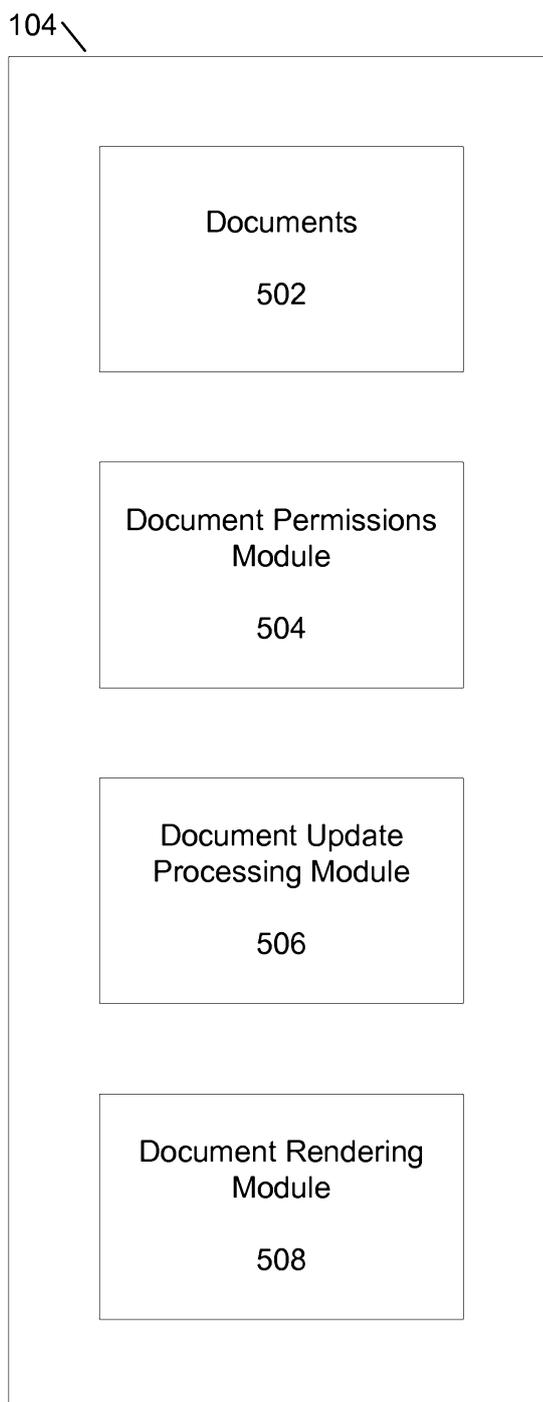


FIG. 5

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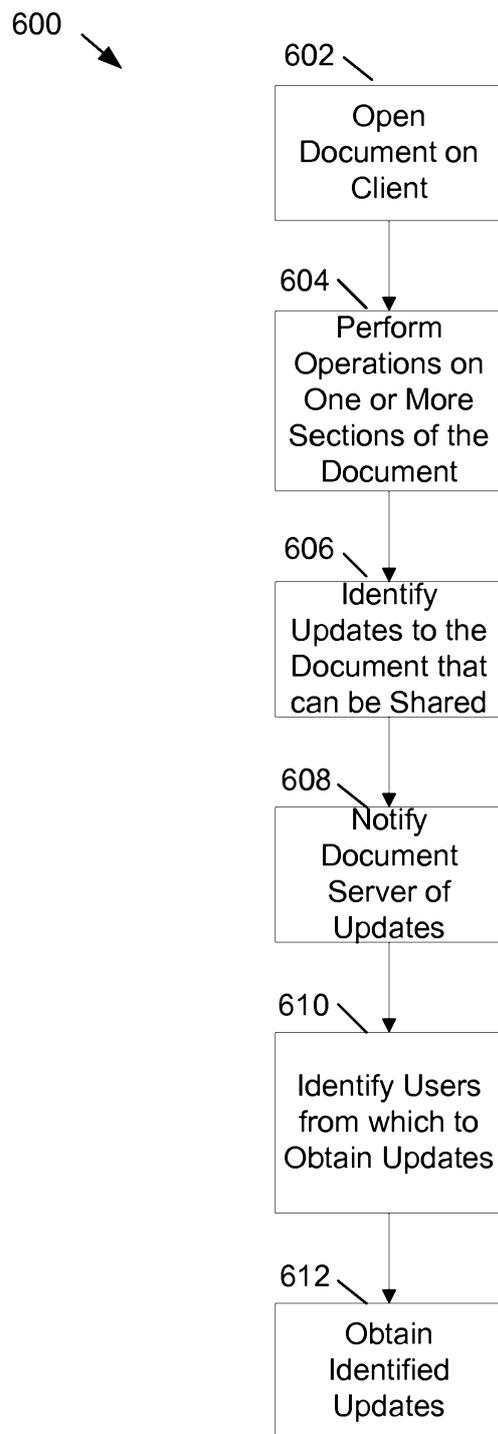


FIG. 6

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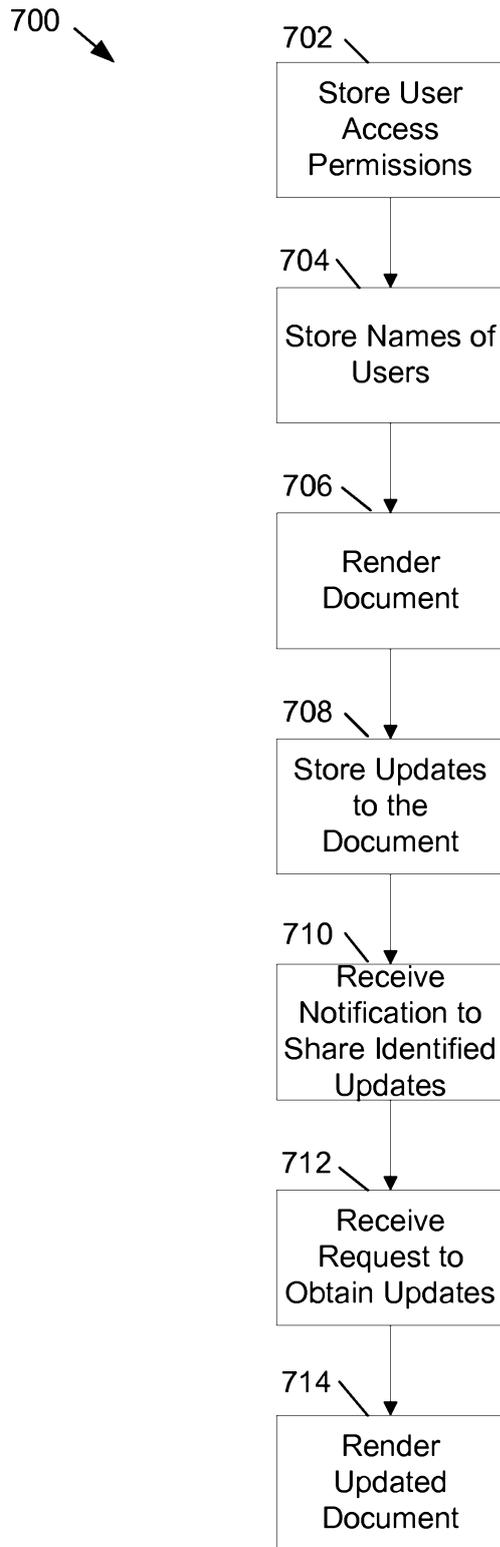


FIG. 7