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(54) **WEB WIDGET FOR ENABLING SCREEN READER ACCESSIBILITY FOR A WEB APPLICATION**

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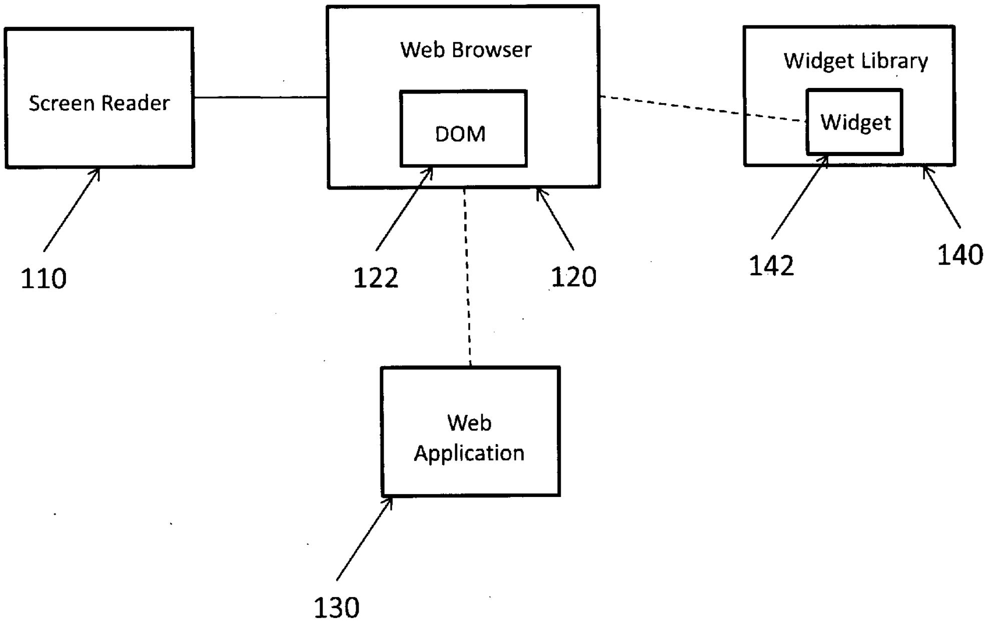
(57) **ABSTRACT**

An embodiment of the invention provides a system for increasing accessibility of a web application to a screen reader. The system includes a screen reader connected to a web browser, wherein the web browser has a document object model (DOM). At least one web application is accessible by the web browser. At least one accessibility widget, from a widget library, is provided to modify the DOM of the web browser. The system further includes user profile information stored in the web application indicating special accessibility needs for controlling activation of the accessibility widget. A cookie is also provided for controlling activation of the accessibility widget. The accessibility widget is operable with all server platforms allowing access with a web browser.



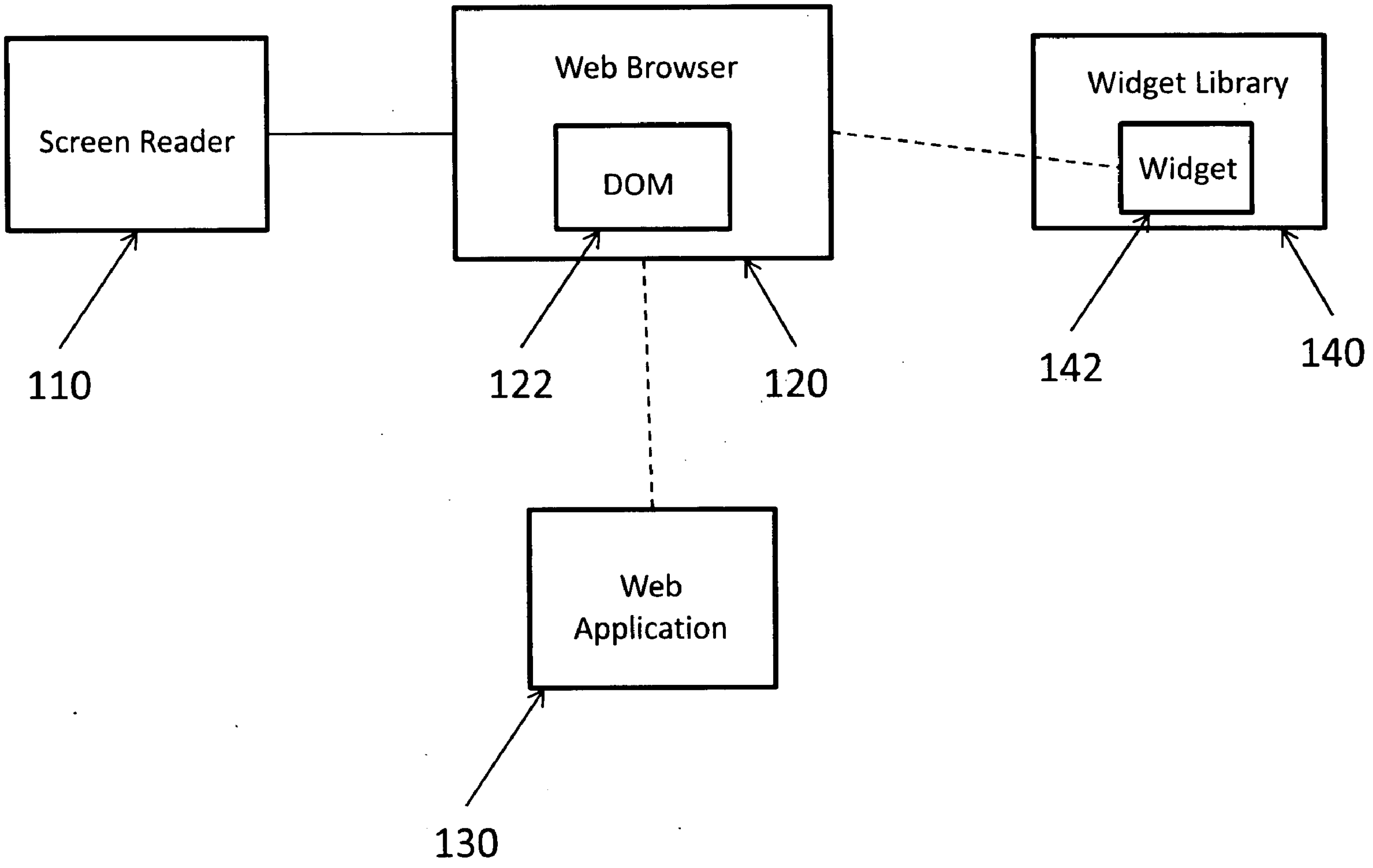

Screen Reader
Web Browser
DOM
Widget Library
Widget
Web
Application
110
122
120
142
140
130

FIG. 1

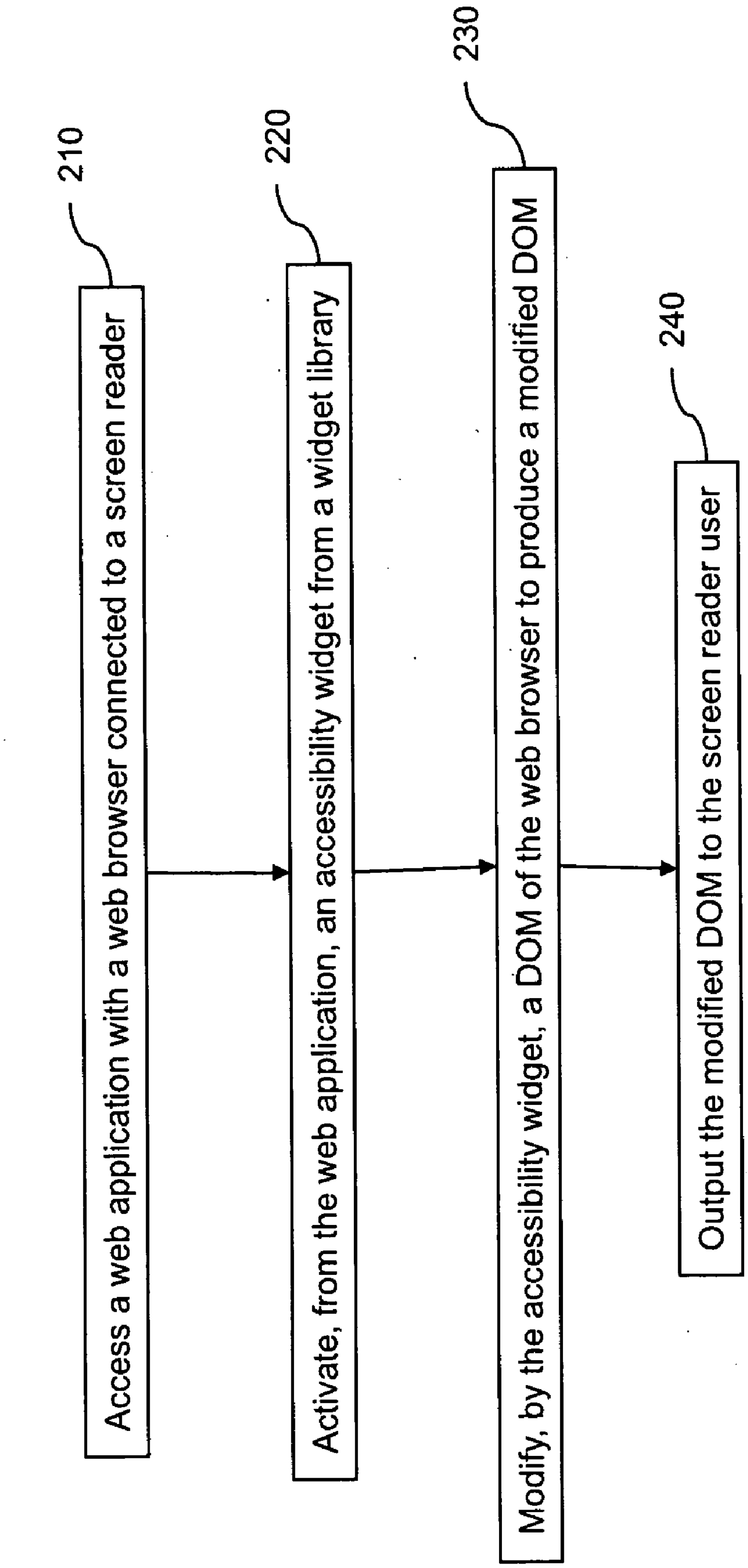

Access a web application with a web browser connected to a screen reader
210
Activate, from the web application, an accessibility widget from a widget library
220
Modify, by the accessibility widget, a DOM of the web browser to produce a modified DOM
230
Output the modified DOM to the screen reader user
240

FIG. 2

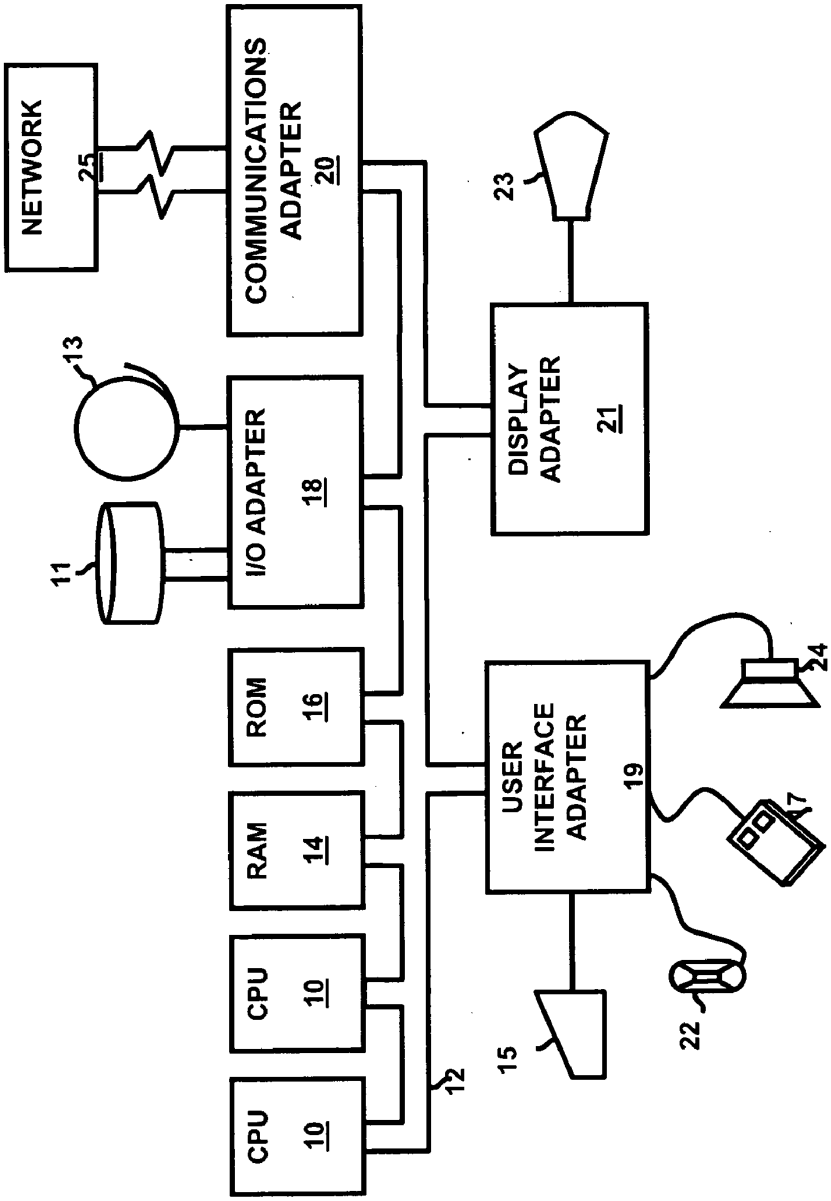

NETWORK
25
COMMUNICATIONS ADAPTER
20
13
11
I/O ADAPTER
18
ROM
16
RAM
14
CPU
10
CPU
10
12
DISPLAY ADAPTER
21
23
USER INTERFACE ADAPTER
19
24
17
22
15

FIG. 3

WEB WIDGET FOR ENABLING SCREEN READER ACCESSIBILITY FOR A WEB APPLICATION

I. FIELD OF THE INVENTION

[0001] The present invention is in the field of methods, computer program products, and apparatuses for a web widget for enabling accessibility for a web application (e.g., for use with a screen reader, or other accessibility applications).

II. BACKGROUND OF THE INVENTION

[0002] Many common web applications do not properly adhere to accessibility guidelines or accepted coding practices that are required for a web application to be used with a screen reader (e.g., JAWS). Some common examples include missing "ALT" tags for images, inadequate use of the "Label" tag for screen elements (such as dropdown menus), and the lack of devices to skip over static page elements (such as a masthead or navigational tabs) and directly interact with the main content area of the web page. This is particularly problematic with many vendor applications, for which the developers may have limited or no ability to alter the inaccessible code which the vended application generates. In the best of cases, a blind or other visually impaired user may need to configure their screen reader in a special way for a particular web application in order to use it. Even after such configuration, it may nevertheless take several times longer to complete an end user task than sighted user (i.e., a user with little or no visual impairments). In other cases, the blind user will be unable to complete the task at all without external help or through alternative means.

[0003] Many large vendor provided web applications, such as SAP ENTERPRISE PORTAL, may not be easily used with a screen reader. Short of rewriting a web application to use accepted screen reader accessible coding practices (an extremely expensive proposition should the vendor be willing to comply) there is no known solution to remedy the problem short of developing "separate but equal" solutions. That is, deploying completely alternative means of completing the task (such as calling the Help Desk, or using a VRU). Failure to make the web application work properly with a screen reader has the potential to disenfranchise millions of blind or low vision end users.

III. SUMMARY OF THE INVENTION

[0004] At least one embodiment of the invention provides a system for increasing accessibility of a web application to a screen reader. The system includes a screen reader connected to a web browser, wherein the web browser has a document object model (DOM). At least one web application is accessible by the web browser. At least one accessibility widget, from a widget library, is provided to modify the DOM of the web browser.

[0005] The system further includes user profile information stored in the web application indicating special accessibility needs for controlling activation of the accessibility widget. A cookie is also provided for controlling activation of the accessibility widget. The accessibility widget is operable with all server platforms allowing access with a web browser.

[0006] At least one embodiment of the invention provides a method for increasing accessibility of a web application to an accessibility application (e.g., screen reader). More specifically, the method accesses at least one web application with a web browser connected to a screen reader. The method activates, from the web application, at least one accessibility widget from a widget library. For example, the activation of the accessibility widget is controlled by a cookie and/or user profile information stored in the web application indicating special accessibility needs. In another example, the accessibility widget is activated in response to manual selection of a link, by the screen reader user, that is only viewable using the screen reader.

[0007] The method modifies, by the accessibility widget, a document object model (DOM) of the web browser to produce a modified DOM. Modifying the DOM includes, for example, adding objects to the DOM, removing objects in the DOM, and/or modifying properties of objects in the DOM. The objects in the DOM include standard and non-standard objects identified in hypertext markup language (HTML) or extensible markup language (XML) specifications. The standard and non-standard objects include a link, anchor, image, table, caption, button, input, span, division tag, label, head, body, meta, title, paragraph, unordered lists (ul), ordered lists (ol), list items (li), form, heading, and/or extensible metadata platform (XMP).

[0008] In another example, the modifying of the DOM includes: modifying HTML attributes (e.g., ALT tags of images) within the web application using pre-configured values or values in title tags, assigning null ALT tags to images within the web application that lack the ALT tags, adding titles readable by the screen reader to frames of the web application, and/or labeling form elements of the web application. In yet another example, the modifying of the DOM includes: replacing malfunctioning screen elements with equivalent screen elements that are accessible with or without the screen reader, adding a skip-to-main-content link, adding cascading style sheets (CSS) adapted to improve accessibility of the screen reader, removing visually hidden objects that impede efficacy of the screen reader, adding table summaries and/or captions, and/or adding anchors and pointers to visually-grouped objects that are not comprehensible by the screen reader user. The modification of the DOM removes the requirement of maintaining a separate version of the web application and/or maintaining a separate version of web pages.

[0009] The activating of the accessibility widget renders the web application usable and accessible by the screen reader user while unaffecting users not requiring the screen reader. The modified DOM is output to the screen reader user and/or a rendered web page (for use by the screen reader user). The method also dynamically updates at least a portion of the modified DOM, and in response to the updating, repeats the modifying of the DOM.

IV. BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The present invention is described with reference to the accompanying drawings. In the drawings, like reference numbers indicate identical or functionally similar elements.

[0011] FIG. **1** is a schematic diagram illustrating a system for enabling screen reader accessibility for a web application according to an embodiment of the invention;

[0012] FIG. **2** is a flow diagram illustrating a method for enabling screen reader accessibility for a web application according to an embodiment of the invention; and

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