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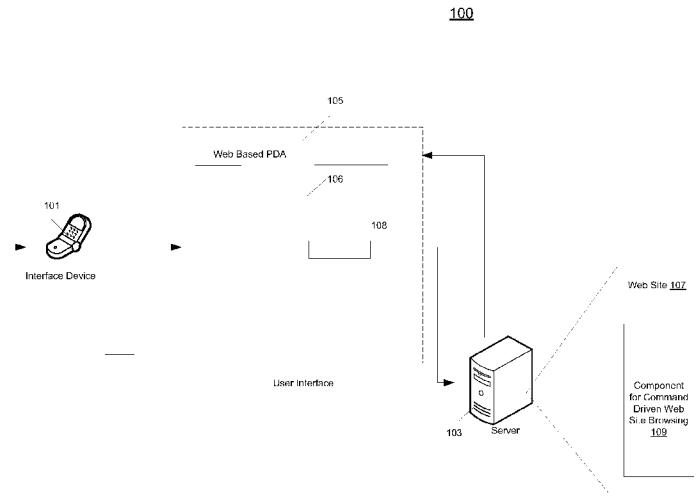


Figure 1A

(57) **Abstract:** Command driven web site browsing with web page command interpretation. As a part of web page command interpretation a web page (105) is displayed having a field (106) for accepting user input text. It is determined whether the user input text is a command. A specific application (140) is selected from a plurality of applications that corresponds to the command. The specific application (144, 146) is executed in accordance with the command.

COMMAND DRIVEN WEB SITE BROWSING

BACKGROUND

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[0001] A web browser is a software application that enables a user to display and interact with text, images, videos, music and other information that may be located on a Web page at a website that is accessible via the Internet or local area network. A web page can contain hyperlinks to other web pages that may be located at the same or different website. Web browsers allow a user to move easily between web pages by utilizing these links.

[0002] Conventional Web browsers that are currently available for personal computers include Internet Explorer TM, Mozilla Firefox TM, Safari TM, Opera TM, Flock TM and AOL Explorer TM. Web browsers are the most commonly used type of HTTP user agent. Although browsers are typically used to access the Internet, they can also be used to access information provided by servers that support private networks or content in file systems.

[0003] Mobile devices that have the capacity to access the Internet employ the use of browsers. Mobile web browsers are designed to operate with mobile devices and are intended to provide users of mobile device with much of the functionality that is provided by ordinary browsers.

[0004] However, in many cases, browsing a web page using a mobile web browser on a mobile phone results in a very poor user experience. There are numerous challenges that contribute to poor user experience. In particular, mobile web sites typically are designed such that users have to click through many pages to get to the information they're looking for. Moreover, in many countries cellular networks are characterized by slow speeds, and consequently users end up spending excessive amounts of time navigating around a site. The aforementioned shortcomings of current mobile web browsing systems result in user dissatisfaction, especially for more advanced users, and an overall low adoption rate of mobile browsing usage.

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SUMMARY

[0005] 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 5 claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

[0006] Web browsers enable a user to display and interact with text, images, videos, music and other information that may be located on a web page 10 at a website. Web sites are designed such that users may have to click through many pages to get to the information for which they're looking. This combined with the slow speeds that characterize cellular networks can contribute to a poor user experience. Command driven web site browsing that enables the direct retrieval of desired web page content is disclosed. As a part of the disclosed command driven 15 web site browsing methodology, a user supplied command is received that is submitted from a text input box in a web page of a browser and based on the submitted command a web site is identified and rendered on a display. The web site is automatically navigated to directly locate a predetermined place and/or perform a predetermined function in the web site. The predetermined place which 20 is directly located and/or the predetermined function which is directly performed, otherwise require one or more user actions beyond the submission of a command, or the selection of a link to locate.

[0007] BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The accompanying drawings, which are incorporated in and form a part of this specification, illustrate embodiments and, together with the description, 5 serve to explain the principles of the embodiments:

[0009] Figure 1A shows an exemplary setting of a component for command driven web site browsing according to one embodiment.

10 [0010] Figure 1B illustrates the efficiency of command driven web site browsing according to one embodiment.

15 [0011] Figure 1C illustrates the inefficiency of link driven web site browsing as contrasted with the methodology illustrated in Figure 1B according to one embodiment.

[0012] Figure 1D illustrates the efficiency of command driven web site browsing according to one embodiment.

20 [0013] Figure 1E illustrates the inefficiency of link driven web site browsing as contrasted with the methodology illustrated in Figure 1D according to one embodiment.

25 [0014] Figure 2 illustrates operations performed in a command driven web site navigation process according to one embodiment.

[0015] Figure 3 shows subcomponents of a component for command driven web site browsing according to one embodiment.

5 [0016] Figure 4 shows a flowchart of the steps performed in a method for command driven web site browsing according to one embodiment.

[0017] Figure 5 shows an exemplary computing device according to one embodiment.

10

[00018] The drawings referred to in this description should not be understood as being drawn to scale except if specifically noted.

DETAILED DESCRIPTION

[0019] Reference will now be made in detail to various embodiments of the invention, examples of which are illustrated in the accompanying drawings. While 5 the invention will be described in conjunction with these embodiments, it will be understood that they are not intended to limit the invention to these embodiments. On the contrary, the invention is intended to cover alternatives, modifications and equivalents, which may be included within the spirit and scope of the invention as defined by the appended claims. Furthermore, in the following description, 10 numerous specific details are set forth in order to provide a thorough understanding of embodiments. In other instances, well-known methods, procedures, components, and circuits have not been described in detail as not to unnecessarily obscure aspects of embodiments.

15 EXEMPLARY NETWORK SETTING OF COMPONENT FOR COMMAND
DRIVEN WEB SITE BROWSING ACCORDING TO EMBODIMENTS

[0020] Figure 1A shows an exemplary operational setting 100 of a component 109 for command driven web site browsing according to one 20 embodiment. Web sites are designed such that users may have to click through many pages to get to the information for which they're looking. This combined with the slow speeds that characterize cellular networks can contribute to a poor user experience. Component 109 for command driven web site browsing enables the direct accessing of desired web page content that eliminates the necessity of 25 clicking through several links in order to access desired content. Figure 1A shows

interface device 101, server 103, user interface 105, text input box 106, web site 107 and component 109.

[0021] Referring to Figure 1A, interface device 101 is a computer system
5 that enables a user to access web site 107 (e.g., web based service etc.) via a user interface 105. In one embodiment, interface device 101 is a mobile device (e.g., cell phone, PDA etc.). In other embodiments, interface device 101 can include but is not limited to laptop and desktop computer systems,

10 [0022] User interface 105 is a graphically constituted web page that is presented to a user of interface device 101 and accommodates the input of information or the selection of links that control web site navigation. In one embodiment, user interface 105 accommodates the input of commands via text input box 106 and provides graphical button 108 for submitting the commands to a
15 web site.

[0023] Server 103 is a computer system that hosts a web site 107. In one embodiment, web site 107 can include but is not limited to services such as a web based email service, a web based address book, a web based calendaring
20 service etc. More specifically, web site 107 can include any web based service that can operate in conjunction with embodiments of the command driven browsing component 109 (shown in Figure 3 below) that are described herein. In one embodiment, web site 107 can encompass component 109 for command driven web site browsing. In other embodiments, web site 107 can be separate

from component 109 for command driven web site browsing but can operate cooperatively therewith. In one embodiment, web site 107 is a mobile web site.

[0024] Component 109 for command driven web site browsing is an executable program that automatically navigates a web site to arrive at a predetermined point of navigation in response to a command submitted by a visitor to web site 107 via text input box 106. In one embodiment, as a part of component 109 operation a user supplied command can be placed into text input box 106 of user interface 105 and submitted by selecting graphical button 108. In one embodiment, based on the user supplied command a web page associated with a particular web site is identified and accessed. Moreover, based on the user supplied command the web site is automatically navigated without additional input from the user to arrive at a predetermined point of navigation. In one embodiment, the predetermined point of navigation is a point of navigation that would otherwise require user action such as selecting links and/or entering information into a text input box. Component 109 can be provided in hardware, software or a combination of both.

[0025] Figures 1B-1E illustrate the efficiency of command driven web site browsing. Referring to Figure 1B and Figure 1E, consider cases where a mobile phone user types “add Brian 123-456-7890” (Figure 1B) or “view today” (Figure 1D) into text input box 106 of user interface 105, where the former is a command associated with a web based address book service and the latter is a command associated with a web based calendaring service. As it regards the submission of the former command, in one embodiment, a browse page can be automatically

returned showing the information “Brian 123-456-7890” already entered in the user’s address records 121. As it regards the submission of the latter command, in one embodiment, a browse page can be automatically returned where the user’s calendar of events for the day are displayed for the user to review 123

5 (e.g., 10:30 meeting). It should be appreciated that in this example, other points on the navigational path to the user’s address records and calendar of events respectively using conventional web site navigational methodologies are skipped as shown in Figures 1C and 1E.

10 [0026] Referring to Figure 1C user actions required to make a new entry into the address book such as illustrated in Figure 1B using conventional methodologies include but are not limited to: the selection of a link 130, the entry

of a user name and password 132, the selection of a link that opens a place for a new entry to be made 134 and the manual entry of the new address into address

15 book records 136. Referring to Figure 1E user actions required to cause the display of the day’s calendar events such as illustrated in Figure 1C using conventional methodologies include but are not limited to: the selection of a link 140 (e.g., calendaring), the entry of a user name and password 142 and the selection of a link that opens a place for a new entry to be made 144 (today’s

20 events) which may then be reviewed 146. Contrasting the user actions required by the command driven browsing of exemplary embodiments illustrated in Figures 1B and 1D and the conventional link driven browsing of Figures 1C and 1E underscores the efficiency of command driven browsing that relieves a user from

the necessity of performing many user actions. Consequently, the user’s browsing

experience is improved as a user can access a desired place in a service directly by typing a single command.

OPERATION

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[0027] Figure 2 illustrates operations A-D performed in a command driven web site navigation process according to one embodiment. These operations including the order in which they are presented are only exemplary. In other embodiments, other operations in other orders can be included.

10

[0028] At A, a web site (e.g., mobile web site) visitor enters a command into the text input box of a user interface (see Figure 1A) and submits the command. In one embodiment, the command that is entered into the text input box of the user interface is a command that is recognized by component 109.

15

[0029] At B, a browse page under a particular web site (e.g., mobile web site etc.) is accessed (e.g., 120 in Figures 1B and 1D).

20

[0030] At C, the browse page is automatically navigated to directly reach a predetermined point of navigation. This is illustrated in Figure 2 where the presentation of the day's calendar events is reached. In this manner, the necessity to perform several actions for the purpose of reaching the predetermined navigational point is eliminated.

[0031] At D, the desired web based service destination is presented to the web site visitor.

EXEMPLARY IMPLEMENTATION DETAILS

5

[0032] Search user interfaces are a common feature of many mobile web sites. In one embodiment, search boxes (e.g., 106 in Figure 1A) of such web sites are leveraged to allow users to enter text commands into the search boxes and, instead of returning search results, take them to a page or form under a particular 10 web site based on the entered command (e.g., 105 in Figure 1A). In one embodiment, this command-driven browse UI, allows users to quickly access services or perform tasks (such as in a mobile browser environment as shown in Figures 1A-1E and 2).

15

[0033] Most conventional browse-based web user interfaces (UIs) rely on hyperlinks for navigation. A user typically starts from a well-known web site, such as a portal, and traverses web pages or forms by following links within each page. Exemplary embodiments depart from this sequential pattern by allowing the user to directly locate the content he/she is looking for using commands (see Figures 20 1B and 1D). In this manner the user can access desired content without having to click through many pages. Accordingly, exemplary embodiments offer an alternative navigation model to the conventional browse paradigm.

25

[0034] Embodiments have utility because they provide users the ability to find relevant information in a single step (see Figure 2). This is particularly

important in the wireless environment since mobile users generally find it difficult to browse through many pages in order to get to the data they're interested in. It should be appreciated that increasing numbers of mobile web sites now feature a search UI (e.g., 105 in Figure 1A), which consists of a text input box for inputting keywords and a search button for submitting them to a web site. The conventional systems allow users to type in keywords and then click on the search button and see one or more web pages containing the results that the site has found. The focus of such searches is on data, whether it's personal to a user or public on the internet.

10

[0035] In exemplary embodiments the UIs that are provided (e.g., 105 in Figure 1A) are leveraged explicitly for navigation and tasks. It should be appreciated that the prevalence of search UIs and their inclusion on many web pages provides support for exemplary embodiments.

15

[0036] In one embodiment, text input boxes of such search UIs (e.g., 105 in Figure 1A) can be overloaded for commands instead of keywords. Based on these commands a user can enter a command rather than a set of keywords and a web site can execute the command and provide the appropriate response. A user can 20 invoke the commands from anywhere there is a search UI (e.g., 105 in Figure 1A) that supports this command function. In addition, if the search UI (e.g., 105 in Figure 1A) implements word-wheeling, the site can embed all the available commands into a candidate list. As the user enters letters, a dropdown list can be directed to appear to show all possible commands that match what has been 25 typed in. In one embodiment, word-wheeling can be more accurate and useful

since a site may have a finite number of commands that it can support. In fact, word-wheeling can help minimize any learning curve associated with new users trying to figure out and remember what commands are available from a mobile site.

5

[0037] In one embodiment, the command driven search methodology described herein can function in tandem with traditional point and click UIs to complement their navigational models. For example, in one embodiment, if users enter an incomplete command into the text box (e.g., 106 in Figure 1A), for 10 instance “email Joe@joe.com” where an email body and subject are normally required to send an email message, no error will be produced as component 109 will recognize what is intended, and can respond by for example, providing the email compose form with the “sender” already filled out. In one embodiment, a user can freely mix using the command box as well as the traditional uses of the 15 UI as they see fit.

SUBCOMPONENTS OF COMPONENT FOR COMMAND DRIVEN WEB SITE BROWSING ACCORDING TO EMBODIMENTS

20 [0038] Figure 3 shows subcomponents of a component 109 for command driven web site browsing according to one embodiment. In one embodiment, component 109 implements an algorithm for command driven web site browsing. In the Figure 3 embodiment, component 109 subcomponents include command accessor 301, web site accessor 303, web site navigator 305 and drop down 25 display director 307.

[0039] It should be appreciated that the aforementioned subcomponents of component 109 can be implemented in hardware or software or in a combination of both. In one embodiment, components and operations of component 109 can be encompassed by components and operations of one or more computer programs (e.g. computer programs associated with a web site). In another embodiment, components and operations of component 109 can be separate from the aforementioned one or more computer programs but can operate cooperatively with components and operations thereof.

10

[0040] Referring to Figure 3, command accessor 301 accesses a user supplied command that is submitted from a text box of a user interface. In one embodiment, the user supplied command identifies a specific place or task that is to be respectively navigated to or performed.

15

[0041] Web site accessor 303 identifies and accesses a web site based on the user supplied command. In one embodiment, the accessed web site supports command driven web site browsing. In one embodiment, the web site can include but is not limited to email web site, address book web site and calendaring web site.

20

[0042] Web site navigator 305 automatically navigates a web site to directly locate a predetermined place, or to automatically perform a predetermined task therein which otherwise requires one or more user actions beyond the submission of a keyword or the selection of a link to locate. In one embodiment, based on the

25

user supplied command the web site is automatically navigated without additional input from the user to arrive at a predetermined point of navigation or to perform a predetermined task.

5 [0043] Drop down display director 307 directs the dropping down of a display that shows possible text box entries. For example, in one embodiment, in response to an incomplete command placed in the text box, drop down display director can direct the display of all possible entries known to the component 109 in a drop down display.

10

EXEMPLARY OPERATIONS OF METHOD FOR COMMAND DRIVEN WEB SITE BROWSING ACCORDING TO EMBODIMENTS

15 [0044] Figure 4 shows a flowchart 400 of the steps performed in a method for command driven web site browsing according to one embodiment. The flowchart includes processes that, in one embodiment can be carried out by processors and electrical components under the control of computer-readable and computer-executable instructions. Although specific steps are disclosed in the flowcharts, such steps are exemplary. That is the present invention is well suited
20 to performing various other steps or variations of the steps recited in the flowcharts. Within various embodiments, it should be appreciated that the steps of the flowcharts can be performed by software, by hardware or by a combination of both.

[0045] Referring to Figure 4, at step 401 a command is placed into a text box of a user interface.

[0046] At step 403, the command placed into the text box of the user
5 interface is submitted.

[0047] At step 405, the user supplied command that is submitted from a text box of a user interface is accessed. In one embodiment, the user supplied command identifies a specific place or task that is to be respectively navigated to
10 or performed.

[0048] At step 407, a web site is identified and accessed based on the user supplied command. In one embodiment, the accessed web site supports command driven web site browsing. In one embodiment, the web site can include
15 but is not limited to an email web site, address book web site and calendaring web site.

[0049] At step 409, the web site is automatically navigated to directly locate a predetermined place within the web site. In one embodiment, in addition to
20 locating the predetermined place, a predetermined task is automatically performed therein (e.g., making an address entry, filling in sender for email message). In one embodiment locating the predetermined place otherwise requires one or more user actions beyond the submission of a command to locate. In one embodiment, based on the user supplied command the web site is automatically navigated

without additional input from the user to arrive at a predetermined point of navigation.

5 EXEMPLARY HARDWARE OPERATING ENVIRONMENT OF COMPONENT
FOR COMMAND DRIVEN WEB SITE BROWSING ACCORDING TO ONE
EMBODIMENT

[0050] Figure 5 shows computing device 103 and components thereof according to one embodiment. Referring to Figure 5, computing device 103 can 10 be included as a part of a server as shown in Figure 1A in accordance with one embodiment. Computing device 103 typically includes at least some form of computer readable media. Computer readable media can be any available media that can be accessed by computing device 103 and can include but is not limited to computer storage media.

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[0050] In its most basic configuration, computing device 500 typically includes processing unit 501 and system memory 503. Depending on the exact configuration and type of computing device 500 that is used, system memory 503 can include volatile (such as RAM) and non-volatile (such as ROM, flash memory, 20 etc.) elements or some combination of the two. In one embodiment, as shown in Figure 5, component 109 for command driven navigation of a web site (see description of component 109 made with reference to Figure 1A) can reside in system memory 503. In one embodiment, component 109 can be encompassed by web site 107. In another embodiment, component 109 can be separate from 25 web site 107 but can operate cooperatively therewith. In one embodiment, component 109 can be implemented in software, in hardware or in a combination of both.

[0051] Additionally, computing device 500, especially the version that can be a part of server 103 in Figure 1A, can include mass storage systems (removable 505 and/or non-removable 507) such as magnetic or optical disks or 5 tape. Similarly, computing device 500 can include input devices 511 and/or output devices 509 (e.g., such as a display). Additionally, computing device 500 can include network connections 513 to other devices, computers, networks, servers, etc. using either wired or wireless media. As all of these devices are well known in the art, they need not be discussed in detail.

10

[0052] With reference to exemplary embodiments thereof command driven web site browsing (mobile, wired etc.) is disclosed. As a part of command driven web site browsing a user supplied command is accessed that is submitted from a text input box of a browser and based on the user supplied command a web site is 15 identified and accessed. The web site is automatically navigated to directly locate a predetermined place therein which otherwise requires one or more user actions beyond the submission of a keyword or selection of a link to locate.

[0053] The foregoing descriptions of specific embodiments have been 20 presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the 25 art to best utilize the invention and various embodiments with various

modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the Claims appended hereto and their equivalents.

CLAIMS

What is claimed is:

1. A method for web page command interpretation, comprising:
5 displaying a web page (105) having a field (106) for accepting user input text;
 determining whether the user input text is a command;
 selecting a specific application (140) from a plurality of applications that
corresponds to the command; and
 executing the specific application (144, 146) in accordance with the command.

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2. The method of claim 1, wherein the command is for invoking an online
calendar application and calendar data is changed in accordance with the command.

15

3. The method of claim 1, wherein the command is for invoking an online contact
manager application and contact data is changed in accordance with the command.

4. The method of claim 1, wherein the command is for invoking an online
calendar application and displaying calendar information.

20

5. The method of claim 1, further comprising:
 interpreting the user input text as key words when the user input text is determined
not to be a command; and
 executing a search in accordance with the key words.

25

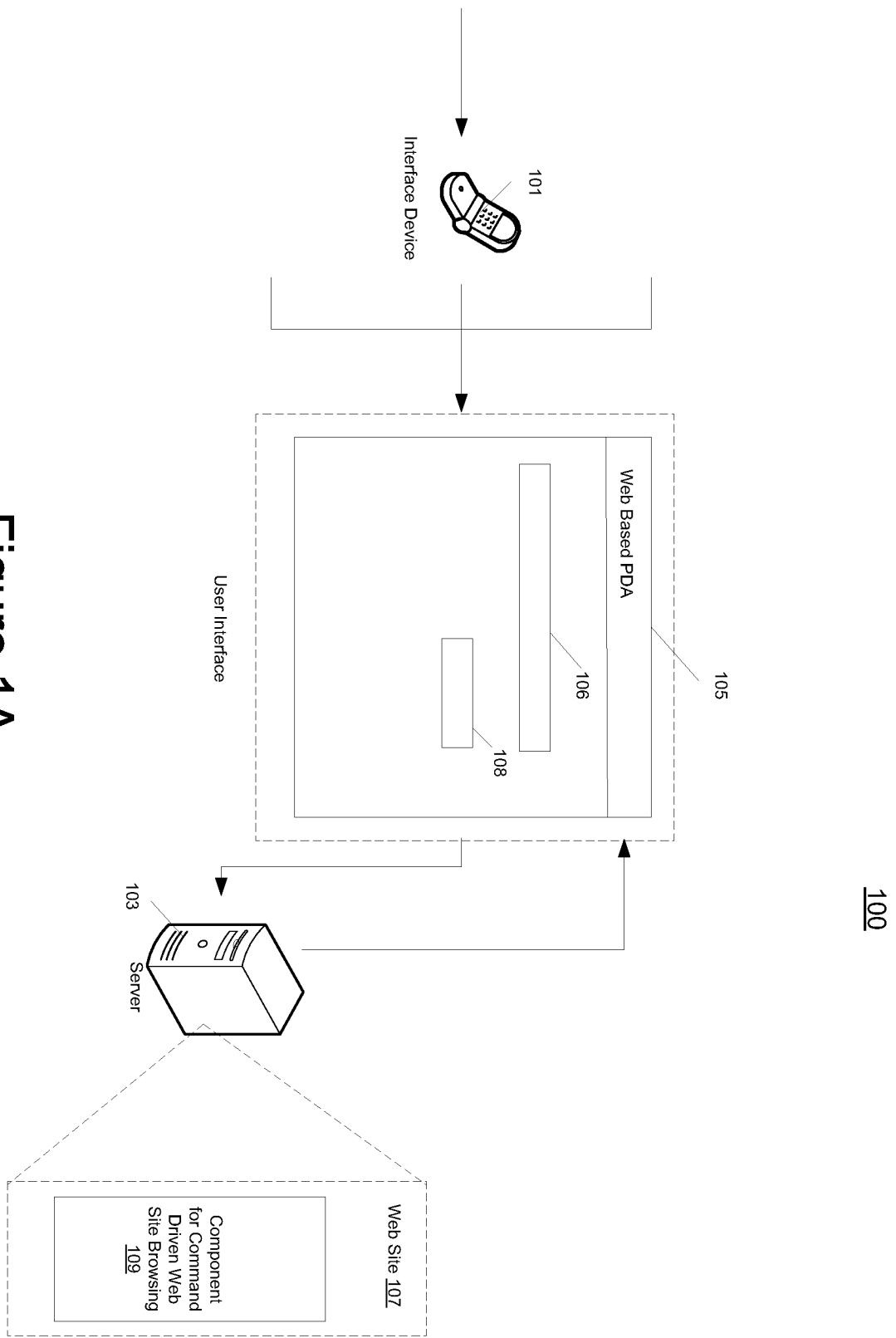
6. The method of claim 1, further comprising:
displaying a menu of possible commands that match a user input text entry,
wherein the possible commands are updated as successive text characters of the entry are
received.

5

7. The method of claim 1, wherein the web page comprises a search user interface
web page and the user input text entered into the field can be interpreted as search
keywords or the command for executing the specific application.

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Figure 1A

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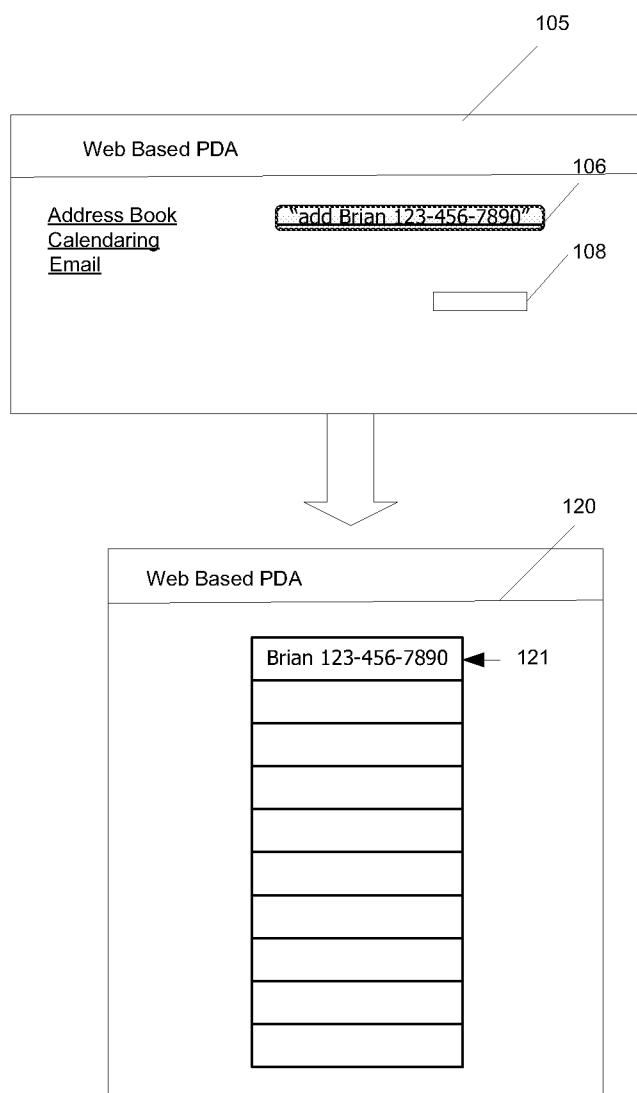


Figure 1B

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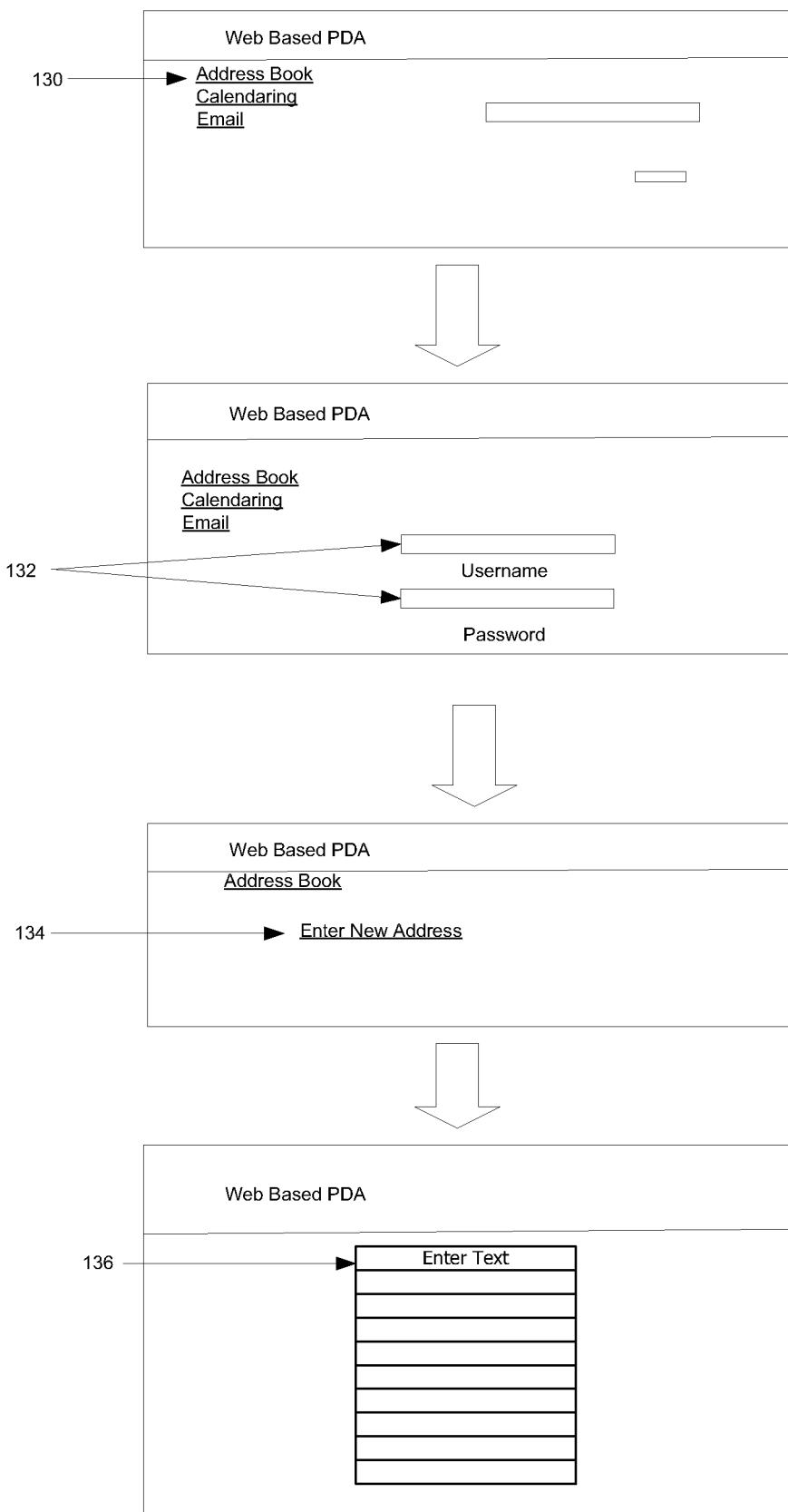


Figure 1C

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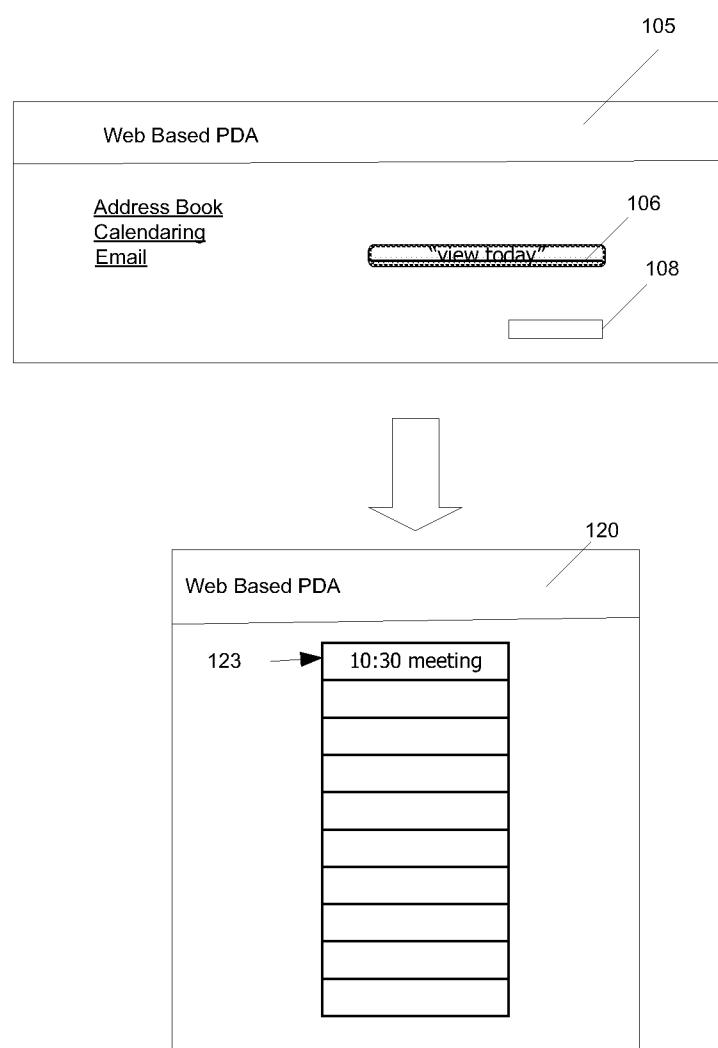


Figure 1D

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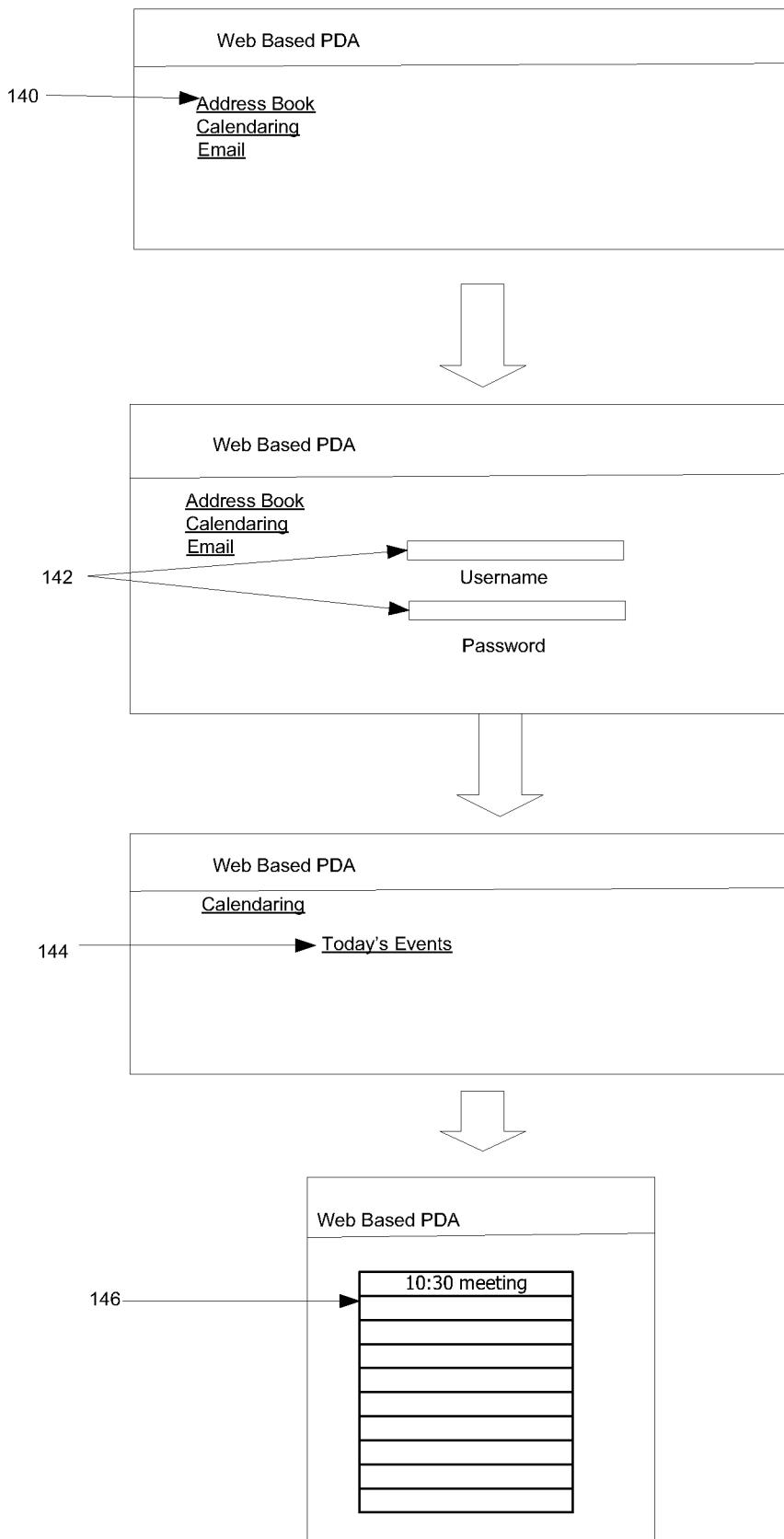


Figure 1E

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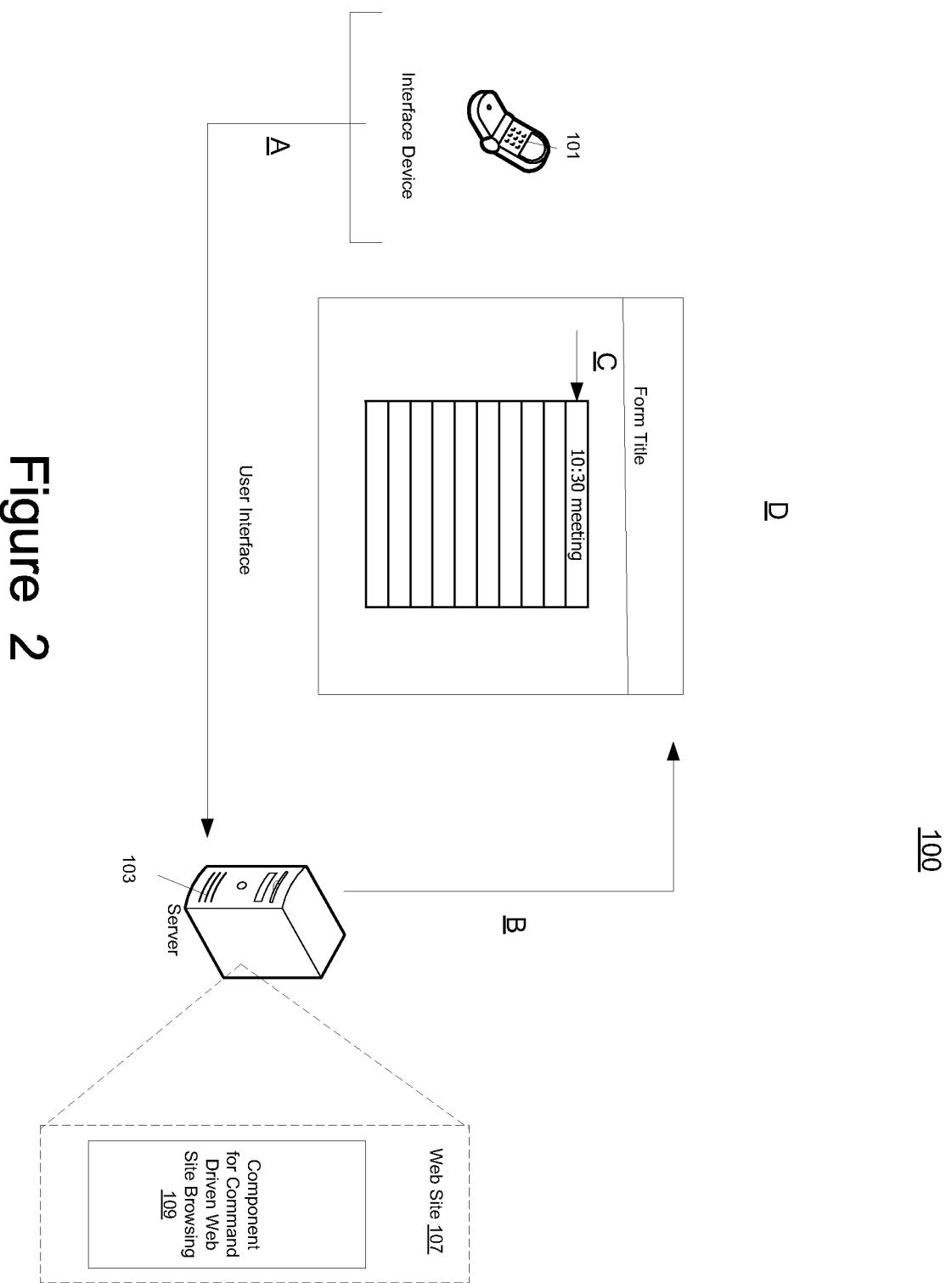
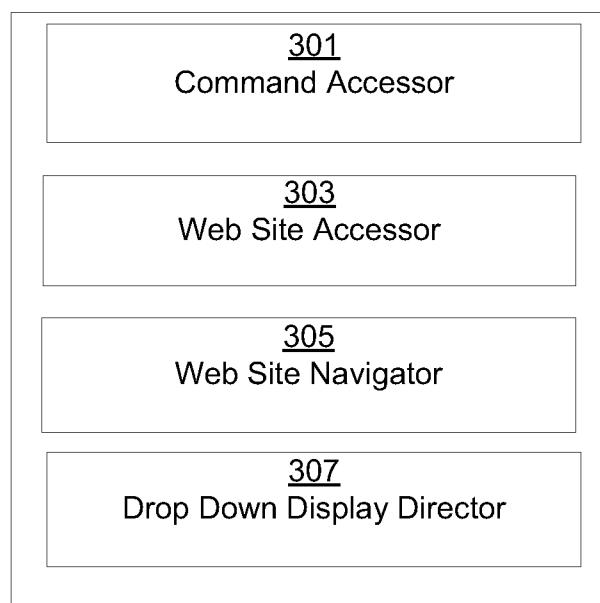


Figure 2

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109**Figure 3**

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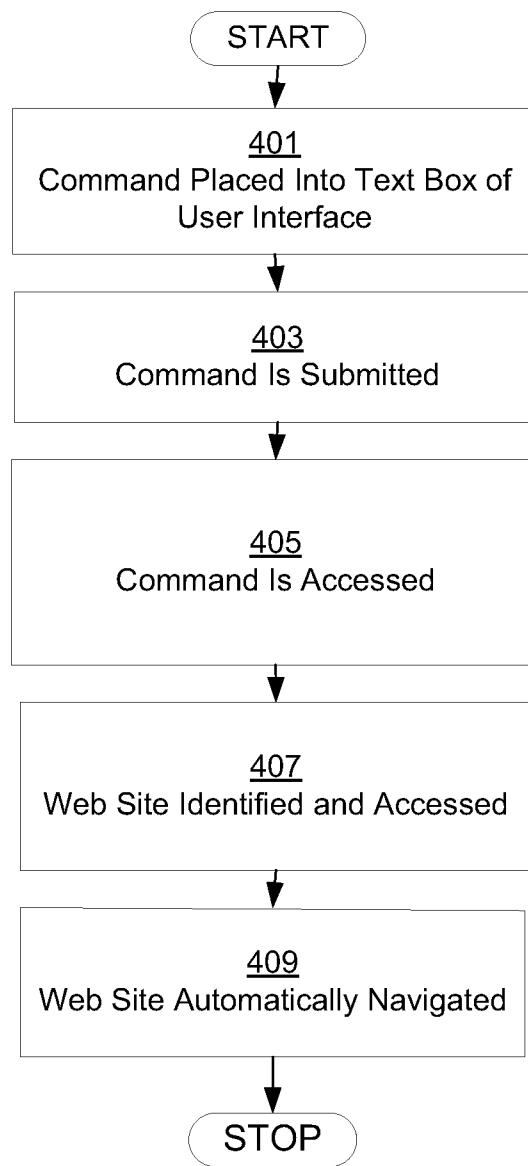
400

Figure 4

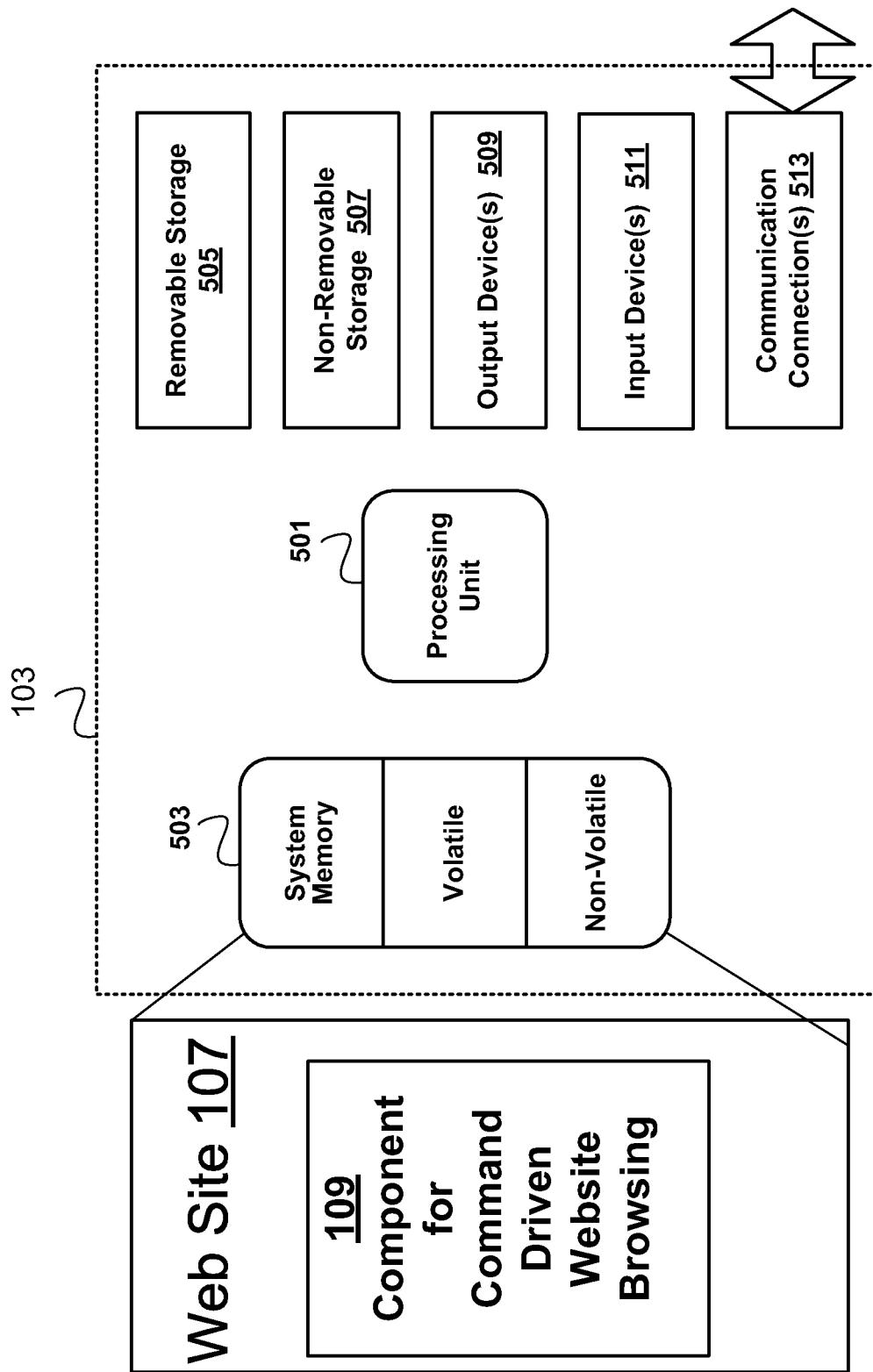


Figure 5