

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 April 2006 (20.04.2006)

PCT

(10) International Publication Number
WO 2006/040245 A1

(51) International Patent Classification:
G06F 9/44 (2006.01)

(21) International Application Number:
PCT/EP2005/054697

(22) International Filing Date:
20 September 2005 (20.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/965,624 14 October 2004 (14.10.2004) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

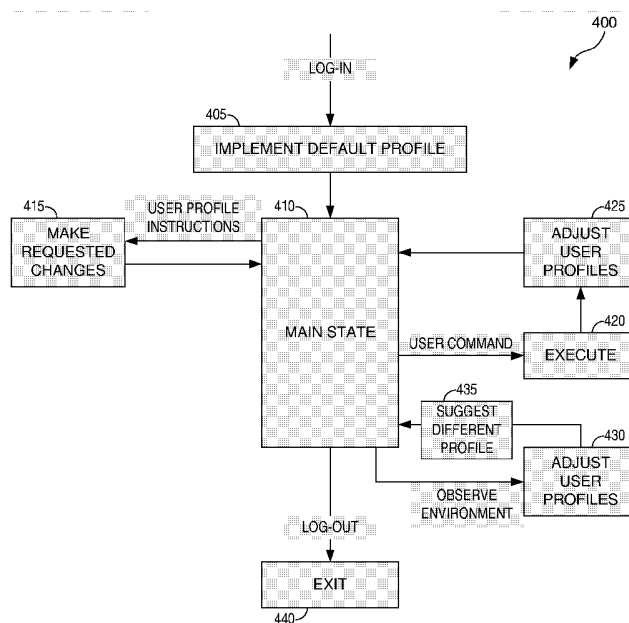
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: UNIFORM USER INTERFACE FOR SOFTWARE APPLICATIONS



(57) Abstract: The present invention is a user interface for varying accessibility parameters to match comprehension needs. The present invention consists of a uniform, easy to use, interface to applications. Rather than dealing directly with the user interface parameters of a particular application, the user interacts with this uniform interface, or UI aggregator. The UI aggregator can then transform the information presented by the particular application or combination of applications as desired by the user. The UI aggregator can be accessed through a variety of modes - keyboard, speech, touch, and gestures. Through interaction with the UI aggregator, the user can create and select user profiles that control multiple software applications.

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UNIFORM USER INTERFACE FOR SOFTWARE APPLICATIONSTechnical Field

The present invention relates generally to user interfaces and, more particularly, to a uniform user interface for multiple software applications.

Background

Users interface with a multitude of software applications in a multitude of computing devices in a multitude of settings. On a standard desktop computer or laptop, a user may use a word processor, web browser, e-mail program, spreadsheet, or other applications. With a cell phone or other pervasive computing device, he may use e-mail or an address book. The user may interact with the computing device in a car, on an airplane, in an office by himself or with other people, or even on the beach. A user can be in a noisy or quiet environment, one with adequate light or dim light, one offering privacy and one in a public place.

Applications differ in their adaptability to the presentation of information. Some applications, like a word processor or web browser, can change the format of text - the fonts and the layout of paragraphs. Applications can have a wide variety of control settings. Several of these applications may be combined to achieve the desired presentation of information.

The characteristics and situations of users vary. A user can be in a rush, needing a summary of important information, or with time for an intensive examination of materials. Users differ in cognitive abilities. Some may have severe cognitive disabilities. With each application on each device, in each setting, and with each set of user characteristics, a different interface might be desirable.

Currently, setting the user interface in a single application requires considerable knowledge and effort. The user must deal with the configuration tool of the application, and understand the parameters involved, and how they are controlled. For instance, to change the font display in a word processor, it may be necessary to highlight the text; go to the font selection menu; select a font type, size and style; confirm the choice; and check the display. If the display is not what was

desired, the user must try again. Setting the interfaces for a series applications is a daunting task. Setting the proper user interfaces for applications that work in combination is even more complex.

Because of the difficulty involved, the selection of a user interface tends to be static. A setting, once selected, tends to remain in force. Nevertheless, because of changing environments and changing user situations, it may be desirable to make frequent changes to the user interfaces.

Therefore, there is a need for an interface to software applications that is uniform across computing devices and software applications, and is simple and easy to use. It would allow the user to easily change settings to suit different environments or different circumstances, and would eliminate the need to learn settings for each application.

SUMMARY OF THE INVENTION

The present invention consists of a uniform, easy to use, interface to software applications. Rather than dealing directly with the user interface parameters of a particular application, the user interfaces with this uniform interface, or UI aggregator. The UI aggregator can then transform the information presented by the particular application or combination of applications as desired by the user.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, in which:

FIGURE 1 shows a block diagram of a computer system;

FIGURE 2A shows a current user interface;

FIGURE 2B illustrates a UI aggregator according to an embodiment of the invention;

FIGURE 3 depicts a flow chart showing the inputs a user provides to the UI aggregator according to an embodiment of the invention; and

FIGURE 4 depicts a flow chart of the operation of the UI aggregator according to an embodiment of the invention.

DETAILED DESCRIPTION

In the following discussion, numerous specific details are set forth to provide a thorough understanding of the present invention. However, it will be apparent to those skilled in the art that the present invention may be practiced without such specific details. In other instances, well-known elements have been illustrated in schematic or block diagram form in order not to obscure the present invention in unnecessary detail.

It is further noted that, unless indicated otherwise, all functions described herein may be performed in either hardware or software, or some combination thereof. In a preferred embodiment, however, the functions are performed by a processor such as a computer or an electronic data processor in accordance with code such as computer program code, software, and/or integrated circuits that are coded to perform such functions, unless indicated otherwise.

FIGURE 1 shows a block diagram of a computer system 100. The computer system 100 is comprised of a computer 105 with a processor 110, one or more input devices 130 and one or more output devices 140. The input devices can include a keyboard, a mouse, a touch pad, a roll ball, a speech recognition system, a touch-sensitive device, a gesture recognition system, or a device providing remote access to the computer 105 such as a cell phone or other pervasive computing device. The output devices can include one or more of a video monitor, a printer, a speech generator, and a sound generator. Installed on the computer 105 is a user interface aggregator (UI aggregator) 120. This is a uniform, easy-to-use interface to software applications.

FIGURE 2A shows a current user interface 200. To modify the presentation of information by a series of applications, the user must interact separately with the configuration files of each application. Thus, the user must understand the parameters involved for configuring each particular application, and how they are controlled.

FIGURE 2B illustrates the UI aggregator. The UI aggregator 250 provides a uniform, easy to use, interface to software applications. The UI aggregator 250 is comprised of a user interface 275, an interface to

applications 265, and three components, AG1 (global) 255; AG2 (medium) 260; and AG3 (environmental) 270. The user issues user interface commands and user profile instructions to the user interface 275, and the interface to applications 265 communicates with the configuration tools of applications to adjust the presentation of information by the applications.

The user interacts with the user interface 275 through a series of user interface commands and user profile instructions to change the presentation of information of applications, rather than dealing directly with the user interface parameters of a particular application. Thus, the user needs to learn one interface, the user interface 275, rather than a series of different user interfaces. Further, the user interface 275 of the UI aggregator 250 is designed to be easy to use. In an embodiment with voice interface, the user can change the font size by simply saying, "increase font size," or, more simply, "larger." To change the type of font, the user can say "change font." The user interface 275 of the UI aggregator 250 can ask the user for a particular font, or display a list of fonts for the selection of the user. In an embodiment, the user interface 275 can be accessed through a variety of modes - keyboard, speech, touch, and gestures. The speech interface includes command and control speech recognition. Touch includes an uncomplicated touch array.

Through the interface to applications 265, the UI aggregator 250 transforms the information presented by a particular application or combination of applications as desired by the user. In an embodiment of the invention, the UI aggregator 250 adjusts the user interface parameters of the particular applications. In another embodiment of the invention, the UI aggregator 250 transforms the content of the applications into its own format, and modifies its own display settings as desired. In another embodiment of the invention, the UI aggregator 250 uses a combination of the two above methods.

Interaction with the UI aggregator 250 can enable a user to enhance his comprehension by adjusting parameter settings for individual modes of presentation as well as for combinations of modes. A major enhancement mode is for the reading of text. Other enhancements can include modifications of the pitch, rate, and spacing between words in spoken information. Important words can be spoken more slowly and with greater emphasis whereas less salient words can be spoken at a normal level. When

speech and text are presented concurrently, synchrony between the speech and text can be adjusted for maximum comprehension.

Three components of UI aggregator 250 are AG1 (global) 255; AG2 (medium) 260; and AG3 (environmental) 270. The AG1 global component 255 applies across all applications and computing devices, handling aspect of interface such as font size, font type, and color. Text format commands could include "larger", "smaller", "banner text", "high contrast", and "normal contrast." Speech format commands could include "louder", "softer", "faster", "slower", "wait", and "resume" or "continue". The AG2 260 medium component controls the styling of information. Styling commands could include "key words", "summarize", "elaborate", and "condense". These commands permit the user to select a terser or more discursive presentation of information.

The AG3 environmental component 270 controls the modification of interfaces according to different computing environments. For example, a user can select different means for interface in a car, in a low light environment, in a private office, and in a public setting. By interacting with the user interface 275 of the UI aggregator 250, the user can select, modify, and create user profiles containing desired settings for different computing environments. For example, the user may create one profile for the use of a laptop in an office, and another for use in a car. In a car, the main display mode can be speech, with a variety of controls. In an office, the user can select text display. These profiles can each control the settings of multiple software applications. Commands can also switch between modes of presentation; for example, "speech" or "text", or between languages.

The AG3 environmental component 270 provides the user with default profiles. The user can modify those settings to create his own profiles, or create his own from scratch. The user selects a profile with the desired settings for each particular situation. In this way, it is easy to change user interface settings as circumstances change. Further, in an embodiment of the invention, the AG3 environmental component 270 can learn which settings apply in which circumstances, saving the user the trouble of switching.

FIGURE 3 depicts a flow chart showing the method 300 by which a user provides inputs to the UI aggregator 250. In step 305, the user logs in to begin the process. Then, the user issues a series of user interface

commands and user profile instructions. The user can issue either user interface commands or user profiles at any time between login at step 305 and logout at step 320.

In step 310, the user issues user interface commands. The user interface commands control the display and the information styling of the information being presented. In step 315, the user issues user profile instructions. These instructions allow the user to select a user profile, modify a user profile, or create a new user profile. In step 320, the user logs out.

FIGURE 4 depicts a flow chart of the method 400 by which the UI aggregator 250 operates. At login, in step 405 the UI aggregator 250 selects the current default user profile. It can be a default provided by the UI aggregator 250 or a user profile selected by the user. In step 410, the UI aggregator 250 then proceeds to the main state, where the UI aggregator 250 executes a series of interface commands and user profile instructions from the user. In step 415, in response to a user profile instruction, the UI aggregator 250 makes requested changes in a user profile. In step 420, the UI aggregator 250 executes a user command. It then optionally goes to step 425, adjusting a user profile, before returning to the main state. In step 440, after the user logs out, the UI aggregator 250 exits.

In an embodiment with a learning module, the UI aggregator 250 also studies the interaction between the user and the computing environment. In step 430, it can then create or modify profiles for the user. Once it has learned which profile a user prefers in a particular environment, in step 435 it can recommend that profile when the user enters into the environment. The UI aggregator 250 can even switch to that user profile automatically.

Having thus described the present invention by reference to certain of its preferred embodiments, it is noted that the embodiments disclosed are illustrative rather than limiting in nature and that a wide range of variations, modifications, changes, and substitutions are contemplated in the foregoing disclosure and, in some instances, some features of the present invention may be employed without a corresponding use of the other features. Many such variations and modifications may be considered desirable by those skilled in the art based upon a review of the foregoing description of preferred embodiments. Accordingly, it is appropriate that

the appended claims be construed broadly and in a manner consistent with the scope of the invention.

For the avoidance of doubt, the term "comprising", as used herein throughout the description and claims is not to be construed as meaning "consisting only of".

CLAIMS

1. A computer system comprising:

a processor;

a user interface aggregator (UI aggregator);

one or more input devices; and

one or more output devices;

wherein a user interacts with the UI aggregator through the one or more input devices and the one or more output devices; and wherein the computer system is configured for the interaction to control the presentation of the output from one or more software applications installed on the computer system.

2. The computer system of Claim 1, wherein the computer system is further configured for the interaction to modify accessibility parameters to match the comprehension needs of the user.

3. The computer system of Claim 1 or 2, wherein one of the one or more input devices recognizes gestures.

4. The computer system of Claim 1, 2 or 3, wherein one of the one or more input devices recognizes touch.

5. The computer system of Claim 1, 2, 3 or 4, wherein one of the one or more input devices consists of speech recognition.

6. The computer system of any of Claims 1 to 5, wherein one of the one or more input devices consists of a pervasive computing device.

7. The computer system of any of Claims 1 to 6, wherein one of the one or more output devices consists of speech.

8. A method to control the interface between the user and one or more software applications, comprising the steps of:

interacting between a user and a UI aggregator to specify the interface for the one or more software applications; and

interacting between the UI aggregator and the one or more software applications to implement the desired interface for the user.

9. The method of Claim 8, wherein the presentation of the output from the one or more software applications is controlled.

10. The method of Claim 8 or 9, wherein the user interacts with the UI aggregator using one or two word spoken phrases to control the font size and font type.

11. The method of Claim 8, 9 or 10, wherein the user interacts with the UI aggregator to control the styling of information output by the one or more software applications.

12. The method of any of Claims 8 to 11, wherein accessibility parameters are varied to match the comprehension needs of the user.

13. The method of any of Claims 8 to 12, wherein one or more user interface profiles are created.

14. The method of Claim 13, wherein at least one of the one or more user interface profiles contains desired settings for different computing environments.

15. The method of any of Claims 8 to 14, wherein one or more user interface profiles are modified.

16. The method of any of Claims 8 to 15, further comprising the step of:

translating a file from the format of one of the one or more software applications to the format of the UI aggregator.

17. A computer program product for controlling the interface between the user and one or more software applications, the computer program product having a medium with a computer program embodied thereon, the computer program comprising:

computer code for interacting between a user and a UI aggregator to specify the interface for the one or more software applications; and

computer code for interacting between the UI aggregator and the one or more software applications to implement the desired interface for the user.

18. The computer program product of Claim 17, wherein the presentation of the output from the one or more software applications is controlled.

19. The computer program product of Claim 17 or 18, wherein the user interacts with the UI aggregator using one or two word spoken phrases to control the font size and font type.

20. The computer program product of Claim 17, 18 or 19 wherein the user interacts with the UI aggregator to control the styling of information output by the one or more software applications.

21. The computer program product of any of Claims 17 to 20, wherein accessibility parameters are varied to match the comprehension needs of the user.

22. The computer program product of any of Claims 17 to 21, wherein one or more user interface profiles are created.

23. The computer program product of Claim 22, wherein at least one of the one or more user interface profiles contains desired settings for different computing environments.

24. The computer program product of any of Claims 17 to 23, wherein one or more user interface profiles are modified.

25. The computer program product of any of Claims 17 to 24, further comprising:

computer code for translating a file from the format of one of the one or more software applications to the format of the UI aggregator.

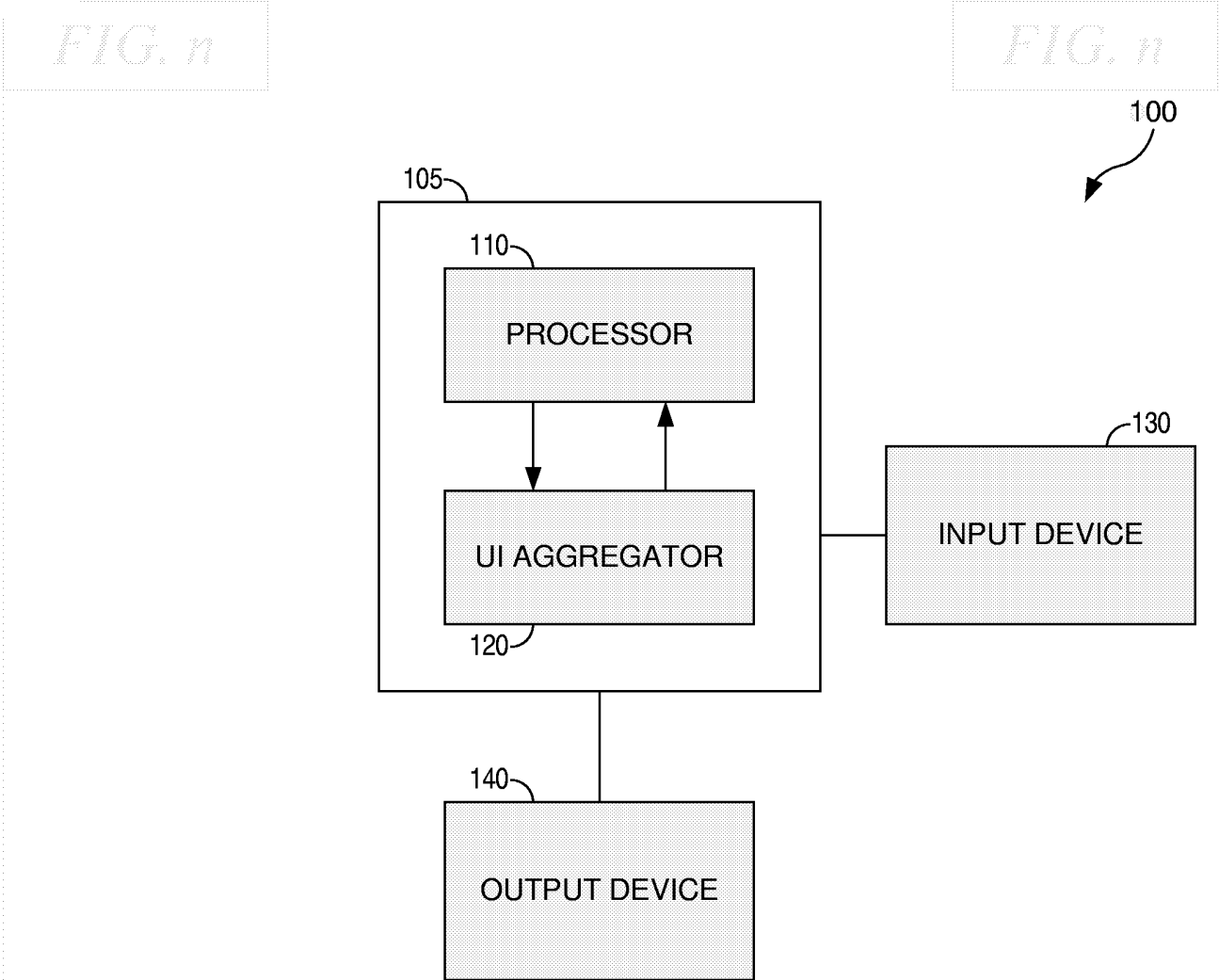
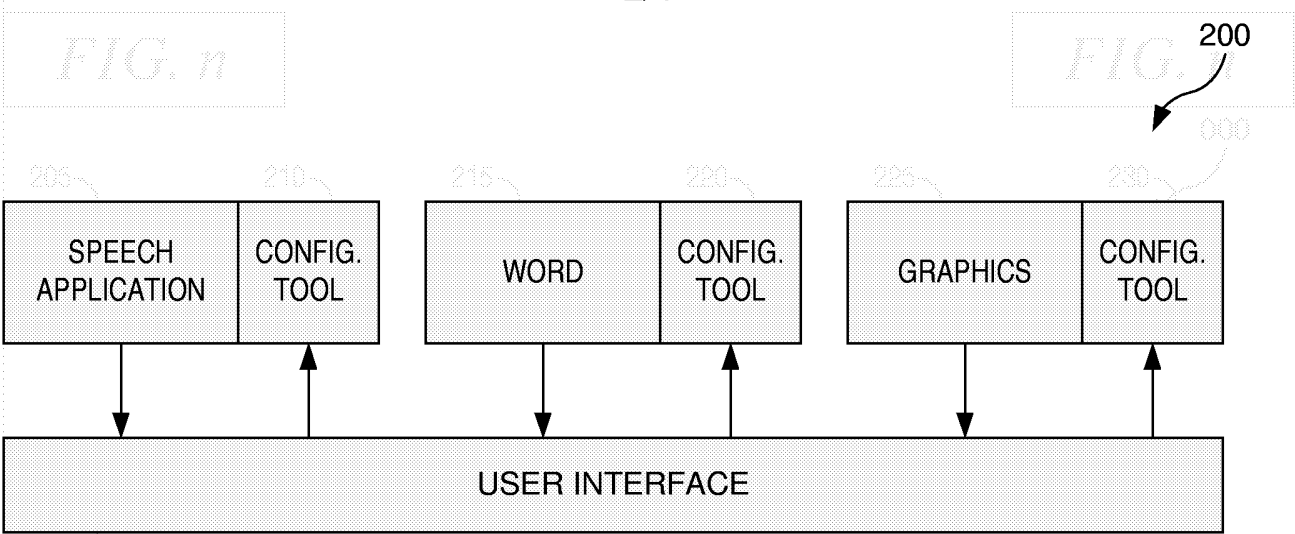


FIG. 1



PRIOR ART

FIG. 2A

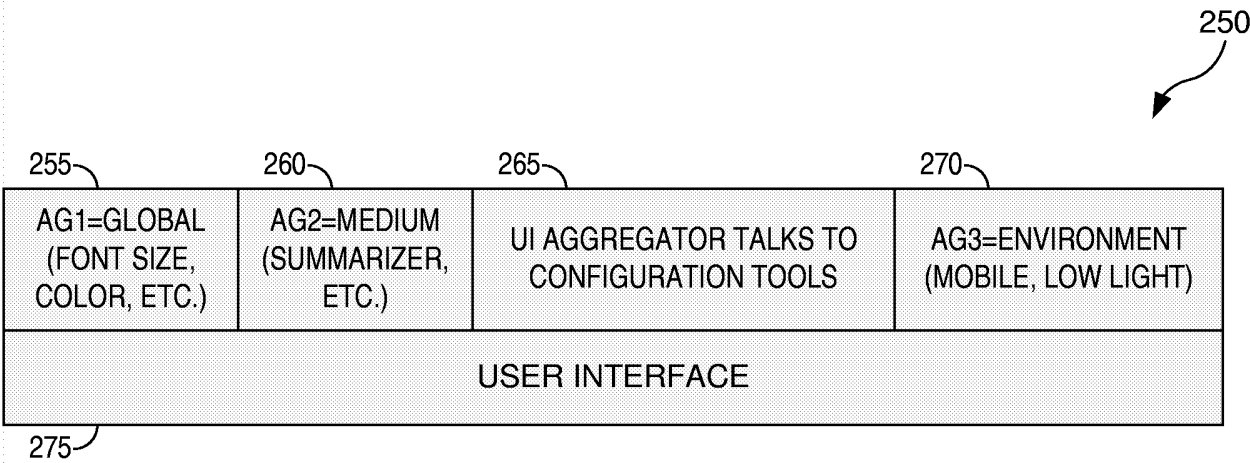


FIG. 2B

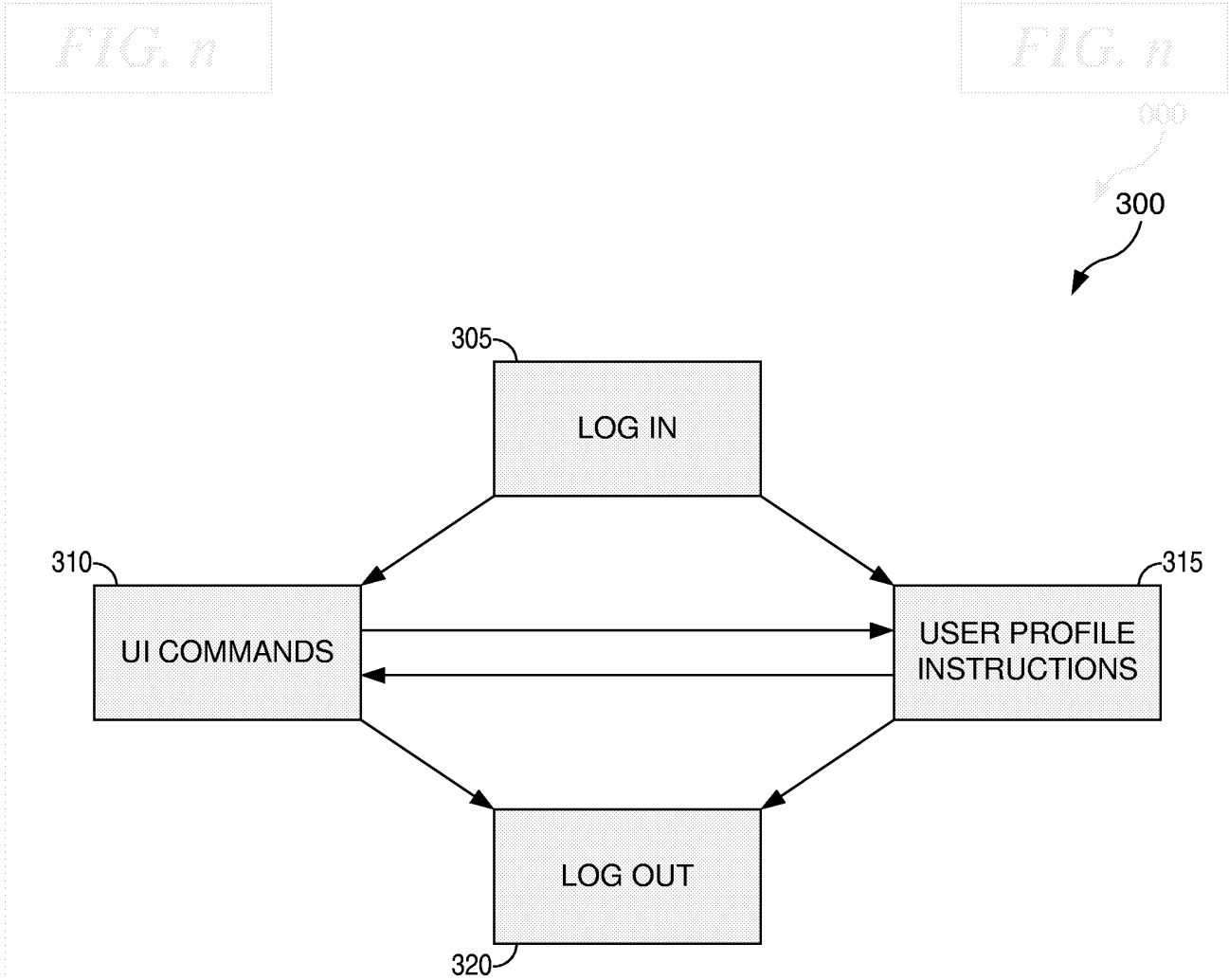
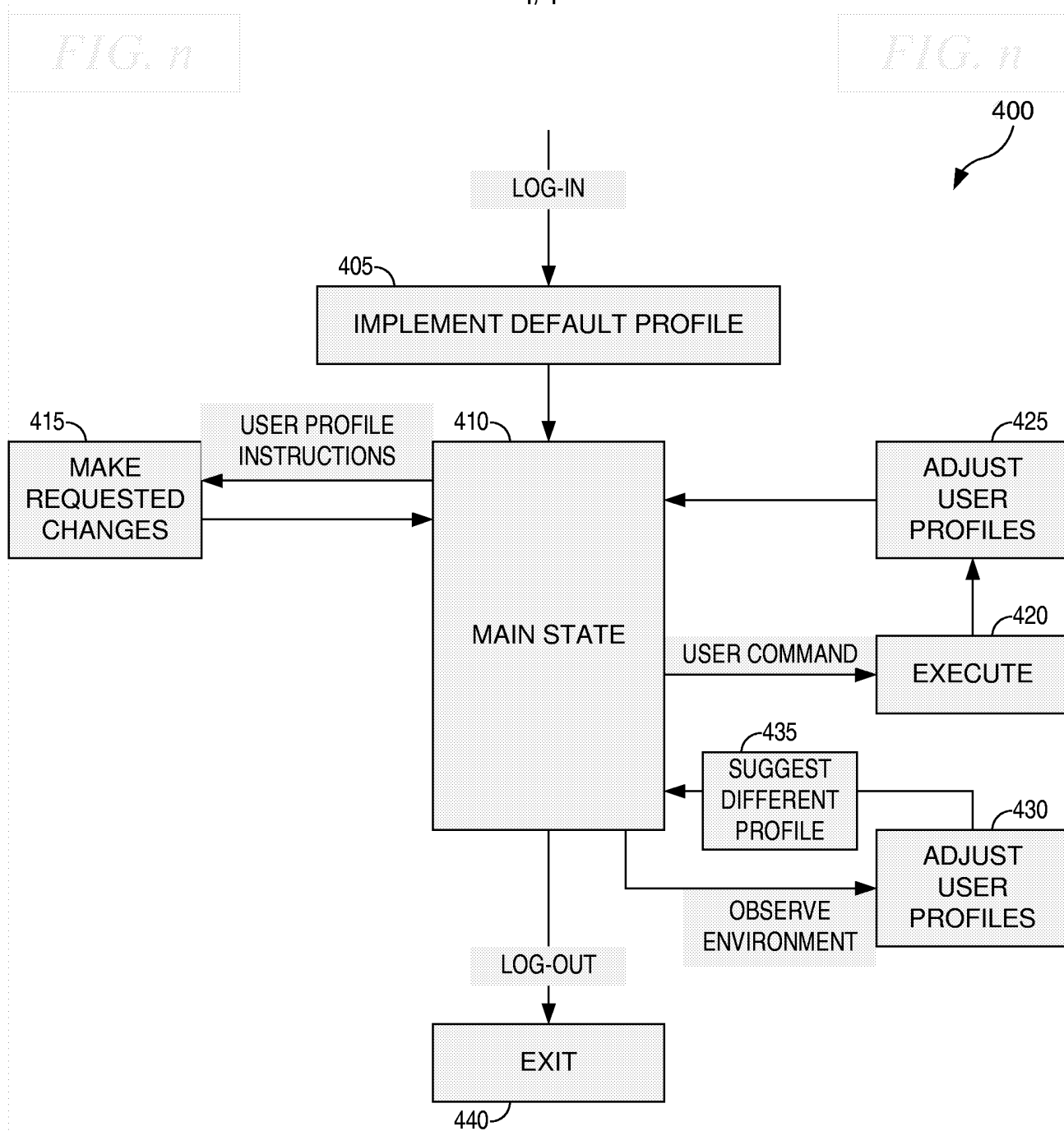


FIG. 3

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*FIG. 4*

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP2005/054697

A. CLASSIFICATION OF SUBJECT MATTER G06F9/44				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) G06F				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, COMPENDEX				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	DIAZ L ET AL: "Web Services for Remote Portals (WSRP)" IBM DEVELOPERWORKS, 21 January 2002 (2002-01-21), XP002274610 page 1 - page 26	1-25		
A	MICROSOFT CORP.: "How To Use Speech Recognition in Windows XP" MICROSOFT KNOWLEDGE BASE ARTICLE KB306901, 'Online! 15 July 2004 (2004-07-15), pages 1-3, XP002356347 Retrieved from the Internet: URL: http://support.microsoft.com/default.aspx?scid=kb;en-us;306901&sd=tech 'retrieved on 2005-11-28! page 1 - page 2	1-25		
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☒ Further documents are listed in the continuation of box C. ☐ Patent family members are listed in annex.				
* Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; border: none;"> "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; vertical-align: top; border: none;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family			
Date of the actual completion of the international search 2 December 2005		Date of mailing of the international search report 16/12/2005		
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2005/054697

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WILL R ET AL: "WebSphere Portal: Unified user access to content, applications and services" WEBSHERE APPLICATION SERVER, 'Online! vol. 43, no. 2, 26 April 2004 (2004-04-26), pages 420-429, XP002356355 Retrieved from the Internet: URL:www.research.ibm.com/journal/sj/432/wi 11.pdf> 'retrieved on 2005-11-28! page 420 - page 429 -----	1-25
A	GRAMA H ET AL: "IBM Workplace Client Technology (Rich Client Edition) Technical Overview" IBM REDBOOKS PAPER, 'Online! 16 August 2004 (2004-08-16), pages 1-30, XP002356359 Retrieved from the Internet: URL:http://www.redbooks.ibm.com/redpapers/ pdfs/redp3884.pdf> 'retrieved on 2005-11-28! page 1 - page 30 -----	1-25