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(71) **Applicant** (*for all designated States except US*): **THOMSON LICENSING** [FR/FR]; 1-5 rue Jeanne d'Arc, F-92130 Issy-Les-Moulineaux (FR).

(72) **Inventors; and**

(71) **Applicants (for US only): XU, Jun** [CN/CN]; Room 402, Unit 3, Building 20, Wangfu Wenxin Apartment, Beiqijia Town, Changping District, Beijing 102209 (CN). **ZHANG, Zhigang** [CN/CN]; Room 5-1-301, BaoShengLi Community, 10 Lincui Road, Haidian District, Beijing 100192 (CN). **ZHANG, Yanfeng** [CN/CN]; Room 3-302, Building 2, Jia No. 6, Dayangfang, Chaoyang District, Beijing 100192 (CN).

(74) **Agent:** LIU, SHEN & ASSOCIATES; A0601, Huibin Building, No. 8 Beichen Dong Street, Chaoyang District, Beijing 100101 (CN).

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(54) Title: CALL CENTER DIRECT ACCESS

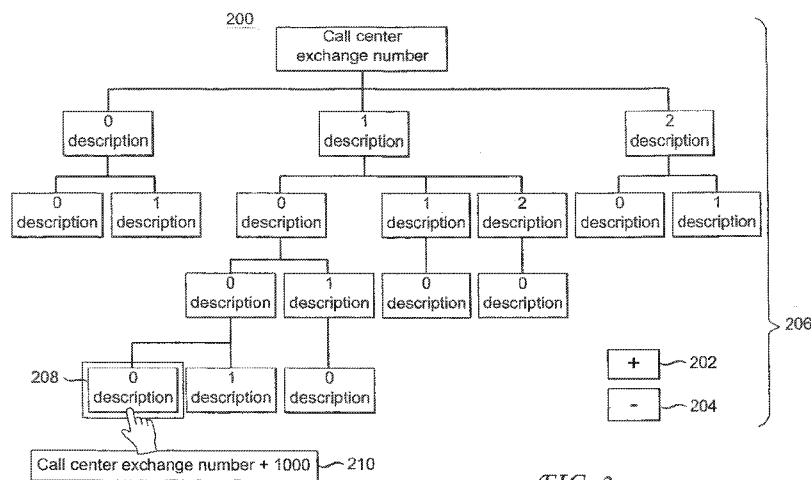


FIG. 2

(57) Abstract: A map processor residing on a mobile device displays a call center hierarchy map based, in part, on a dialed call center number. User interactions with the map are then processed by the map processor to determine a desired call center connection. This information is used by the map processor to establish a direct connection with the desired node of the call center hierarchy map. In other instances, the mobile device interacts with a call center exchange, hierarchy map server, statistical server and a call center direct line to facilitate in providing a call center hierarchy map and a direct connection.

CALL CENTER DIRECT ACCESS

BACKGROUND

[0001] Conventional auto-answer call centers including e-commerce, credit card, etc. have hierarchical instructions requiring a user to input a response to each prompt of the call center. The navigation process to the final target dialing number is time consuming and boring. For those people who travel abroad and their mobile phones use roaming service, this kind of navigation incurs extra expenses and wastes time.

SUMMARY

[0002] A headend of a call center system sends a user a visual hierarchy map upon their first request. A client application residing on a user's device loads the hierarchy map with corresponding instructions on a screen and monitors a user's input. A user browses the hierarchy map and locates a final number sequence they would like to dial, and selects the specific leaf node of the hierarchy tree for that number sequence. The dialing instructions are sent to a backend of the call center system, and a communication circuit is constructed accordingly. Meanwhile, the number is stated on the headend for optimizing the rendering of the hierarchy map. For subsequent operations, the hierarchy map is arranged according to the dialing count, i.e., the more the number is dialed, the higher it will be located in each level of the hierarchy map.

[0003] The above presents a simplified summary of the subject matter in order to provide a basic understanding of some aspects of subject matter embodiments.

This summary is not an extensive overview of the subject matter. It is not intended to identify key/critical elements of the embodiments or to delineate the scope of the subject matter. Its sole purpose is to present some concepts of the subject matter in a simplified form as a prelude to the more detailed description that is presented later.

[0004] To the accomplishment of the foregoing and related ends, certain illustrative aspects of embodiments are described herein in connection with the following description and the annexed drawings. These aspects are indicative, however, of but a few of the various ways in which the principles of the subject

matter can be employed, and the subject matter is intended to include all such aspects and their equivalents. Other advantages and novel features of the subject matter can become apparent from the following detailed description when considered in conjunction with the drawings.

5

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 is an example of a call center system and its subsystems.

[0006] FIG. 2 is an example of a user interface with graphics on a client side application residing on a user's device.

10 **[0007]** FIG. 3 is an example data structure that resides on a statistics server.

[0008] FIG. 4 is an example call center system residing on a mobile device.

DETAILED DESCRIPTION

[0009] The subject matter is now described with reference to the drawings,
15 wherein like reference numerals are used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the subject matter. It can be evident, however, that subject matter embodiments can be practiced without these specific details. In other instances, well-known structures and devices are shown in
20 block diagram form in order to facilitate describing the embodiments.

[0010] A message, including an instruction hierarchy, is sent to a user's device (landline, mobile device, television, monitor, etc.) after the user calls a call center (call centers can be from a service provider and/or directly from a business, etc.). Once the user selects a menu item in a call menu hierarchy, the user's device
25 automatically interacts with the call center at the appropriate point. This technique has many advantages over the traditional call center voice hierarchy. In the traditional call center, a user must listen to menu functions of all the keys one by one in a single step before they can determine which key they should press. This is very time consuming and requires the user to start the menu listing program over if they do not
30 hear the appropriate function the first time. Voice prompting is different from text or picture prompting. The voice prompting can cause errors in dialing, especially in noisy environment. The conventional methods are very tedious and time consuming, costing the user a lot of time and money, especially when they travelling abroad

where phone rates are typically at a premium. With these types of conventional methods, the instruction or menu hierarchy always prompts the user in the same sequence. It cannot modify the sequence unless the sequence is adjusted manually on the headend side – which is very cumbersome.

5 **[0011]** In one instance of a call center system 100 as illustrated in FIG. 1, there are five main subsystems including a mobile device 102, a call center exchange 104, a hierarchy map server 106, a statistics server 108 and a call center direct line 110. Once a user launches a call request 112 to the call center exchange 104, it will request hierarchy map 114 from the hierarchy map server 106. Then the hierarchy
10 map server 106 gets statistical information 116 from the statistics server 108. On the hierarchy map server 106, it generates a hierarchy map 118 according to the statistical information 120, and then returns the hierarchy map 122 to the call center exchange 104, and finally 124 to the mobile device 102. Once the user gets to view the hierarchy map on their mobile device, they can then select a specific leaf node in the
15 hierarchy map 126, and send a call request 128 to the call center direct line 110. Then connection between mobile device 102 and the call center direct line 110 is then constructed 130, and the user can directly communicate with the call center direct line 110 until they end the call 132 and close the connection 134. The call center direct line 110 then updates the statistics information 136 to statistical server 108.

20 **[0012]** FIG. 2 illustrates an example of a user interface 200 with graphics on a client side application residing on a user's device. In one instance, an end user can zoom in 202 and out 204 by selecting a menu item, and/or directly using their fingers on a screen to zoom in and out on a whole hierarchy map 206. Once a user is familiar with the hierarchy map 206, they can also directly move their finger to a specific leaf
25 node, e.g., the lowest layer node 208 in the hierarchy map 206. Hint information 210 pops up prompting a specific usage message relating to a direct line number. The user can then directly select this menu item 208 to get a connection with a call center direct line. In one instance, on each layer, the numbers are arranged according to the Arabic number sequence. In other instances, the numbers on each layer can be placed
30 according to statistics information, which is discussed *infra*.

[0013] An example data structure 300 of one instance that resides on a statistics server is shown in FIG. 3. There are three tables 302-306, which are respectively table "CallCenterExchange" 302, table "Layer" 304, and table

“Number” 306. In this example, a hierarchy map is generated according to the following data structure. The top layer is the call center exchange number from the table “CallCenterExchange” 302, and then the numbers are retrieved from the table “Number” 306 according to their layer_id, e.g., one layer by one layer. On a specific
5 layer, the numbers are lined up according to a descent sequence calculated by a field “count” in table “Number” 306.

[0014] In one example, system 400 illustrated in FIG. 4, a mobile device 402 comprises a mobile device interface 404 and a display 406. In some mobile devices, the interface 404 and the display 406 are the same mechanical structure (e.g., a touch
10 screen, etc.). On other mobile devices, the display 406 is separate from a user input interface 404 such as a keyboard, mouse and the like. A map processor 408 resides on the mobile device 402 and interacts with the mobile device interface 404 and the display 406. In this example, a user enters a call center number 410 into the mobile device interface 404. This can be done by directly entering keystrokes on a keypad,
15 via a touch screen and/or by selecting a number from a contact list to command the mobile device to dial the call center number 410.

[0015] The map processor 408 can receive the dialed call center number 410 at the time of dialing to prepare it for receiving a call center hierarchy map 412. In other instances, the map processor 408 does not receive the call center number 410 at
20 the time of dialing but monitors communication means of the mobile device for incoming hierarchy maps. In either case, when the map processor 408 receives the call center hierarchy map 412, it processes the map information, if necessary, and sends it to the display 406 of the mobile device 402. The user is then presented with the call center hierarchy map 412 and can select which node of the hierarchy they
25 desire to contact. This user interaction with the hierarchy map 414, whether via the mobile device interface 404 and/or via the display 406, is then forwarded to the map processor 408. The map processor 408 then determines a desired call center connection 416 and transmits this information via a communication means of the mobile device 402 to establish a direct connection for the user.

30 **[0016]** What has been described above includes examples of the embodiments. It is, of course, not possible to describe every conceivable combination of components or methodologies for purposes of describing the embodiments, but one of ordinary skill in the art can recognize that many further combinations and permutations of the

embodiments are possible. Accordingly, the subject matter is intended to embrace all such alterations, modifications and variations that fall within scope of the appended claims. Furthermore, to the extent that the term “includes” is used in either the detailed description or the claims, such term is intended to be inclusive in a manner
5 similar to the term “comprising” as “comprising” is interpreted when employed as a transitional word in a claim.

CLAIMS

1. A system that provides call center information, comprising:
a map processor residing in a mobile device that receives a call center
5 hierarchy map, displays the call center hierarchy map on the mobile device and
accepts user input to establish a direct communications link with a call center.
2. The system of claim 1, wherein the map processor receives a dialed
call center number at the time of dialing and subsequently monitors a communication
10 means of the mobile device for a call center hierarchy map.
3. The system of claim 1, wherein the map processor receives a call
center hierarchy map with frequently contacted numbers shown at higher levels as the
dialing frequency of the contacted numbers increases.
15
4. The system of claim 1, wherein the map processor displays a usage
message in proximity of a leaf node of the call center hierarchy map.
5. The system of claim 1, wherein the map processor monitors a
20 communication means of the mobile device for a call center hierarchy map.
6. The system of claim 1, wherein the map processor interacts with at
least one of an interface of the mobile device and a display of the mobile device to
accept user input regarding a selected call center connection.
25
7. The system of claim 6, wherein the map processor receives the call
center hierarchy map from at least one of a call center exchange and a hierarchy map
server.
8. The system of claim 1, wherein the map processor receives a call
30 center hierarchy map from at least one of a Wide Area Network communication
connection of the mobile device and a cellular communication connection of the
mobile device.

9. A method for providing call center information, comprising:
receiving, on a mobile device, a call center hierarchy map associated with a
dialed call center number;
- 5 displaying the call center hierarchy map interactively on the mobile device;
receiving a user selection from the interactive call center hierarchy map; and
transmitting a request for a call center connection associated with the user
selection.
- 10 10. The method of claim 9 further comprising:
receiving the call center hierarchy map over a communication means of the
mobile device.
11. The method of claim 10 wherein the communication means comprising
15 at least one of a Wide Area Network communication connection and a cellular
communication connection.
12. The method of claim 9 further comprising:
displaying a usage message in proximity of a leaf node of the call center
20 hierarchy map.
13. The method of claim 9 further comprising:
generating a call center hierarchy map with frequently contacted numbers
shown at higher levels as the dialing frequency of the contacted numbers increases.
25
14. The method of claim 9 further comprising:
displaying the call center hierarchy map with nodes representing direct
connections that are selectable by a user.
- 30 15. The method of claim 9 further comprising:
transforming the received call center hierarchy map to fit a display associated
with the mobile device.

16. The method of claim 9 further comprising:
communicating between the mobile device and at least one of a call center
exchange, a hierarchy map server, a statistical server and a call center direct line to
5 generate the call center hierarchy map and establish the call center connection
associated with the user selection.

17. A system that establishes call center direct connections, comprising:
means for receiving, on a mobile device, a call center hierarchy map
10 associated with a dialed call center number;
means for displaying the call center hierarchy map interactively on the mobile
device;
means for receiving a user selection from the interactive call center hierarchy
map; and
15 means for transmitting a request for a call center connection associated with
the user selection.

18. The system of claim 17 further comprising:
a means for receiving the call center hierarchy map over at least one type of
20 communication means of the mobile device.

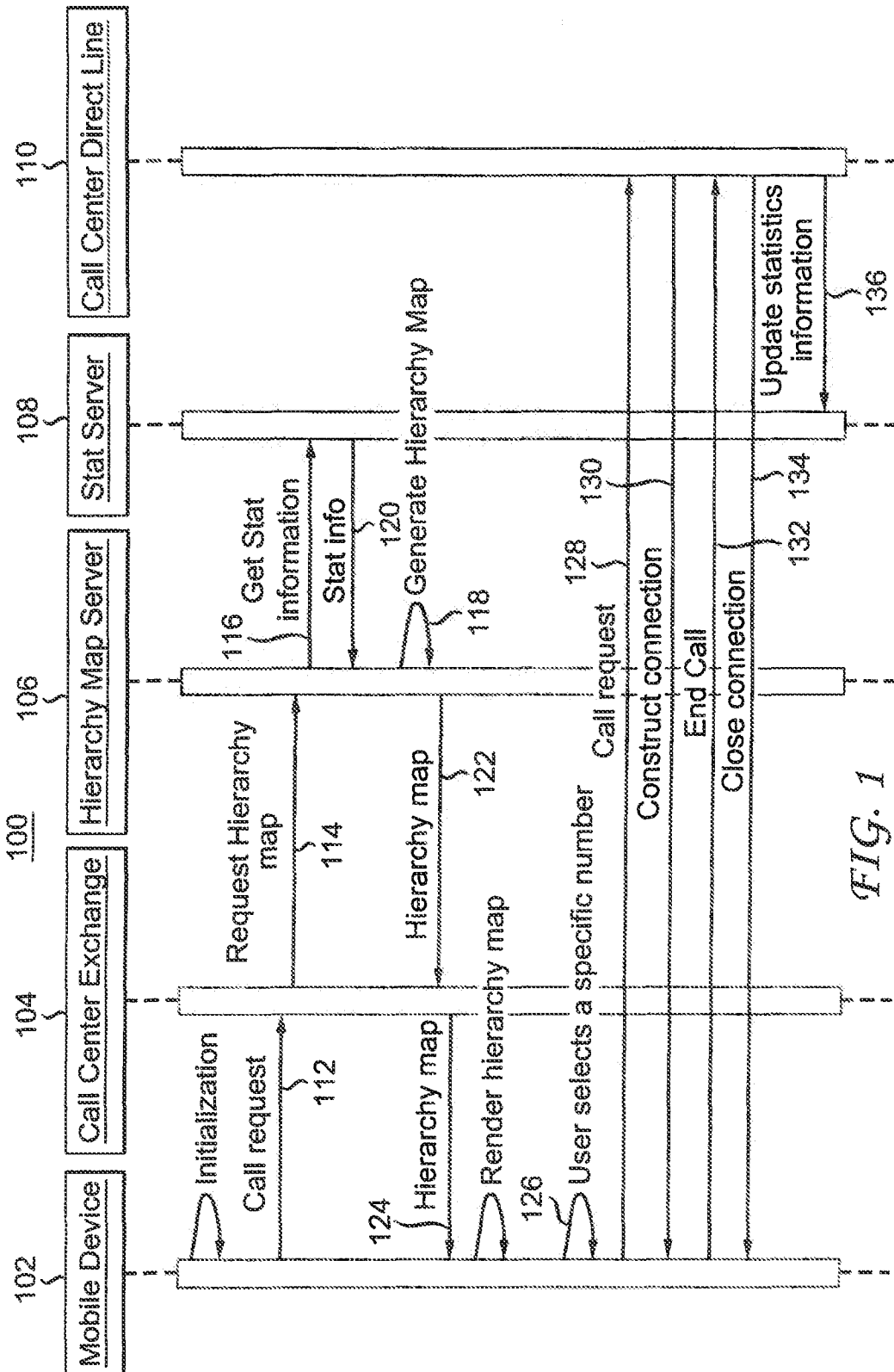


FIG. 1

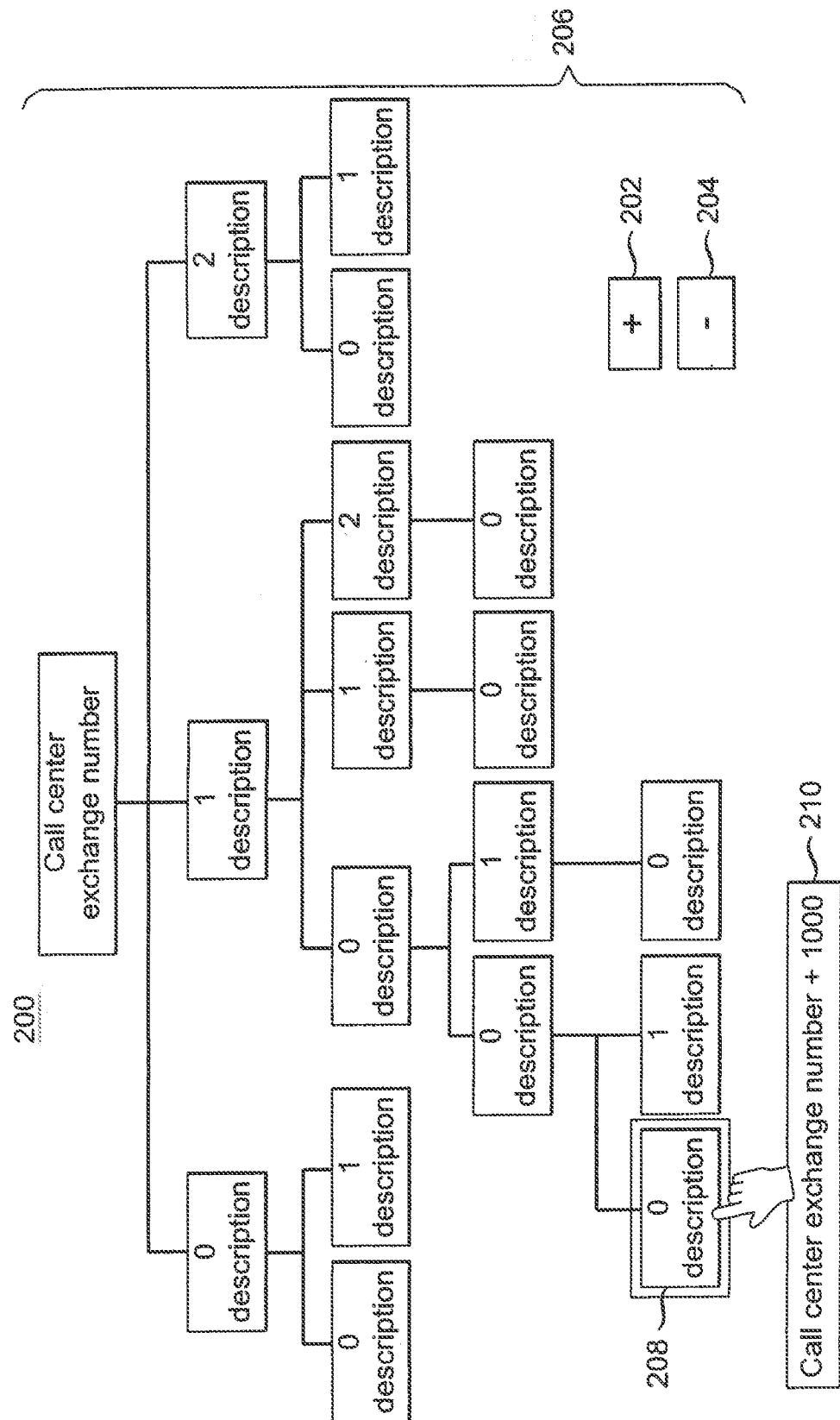


Fig. 2

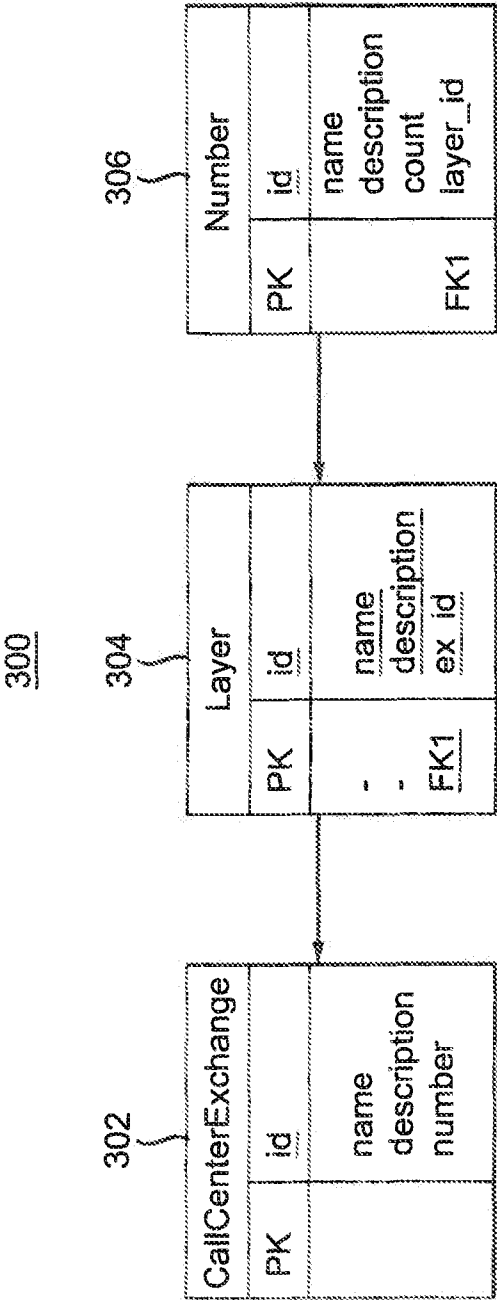


FIG. 3

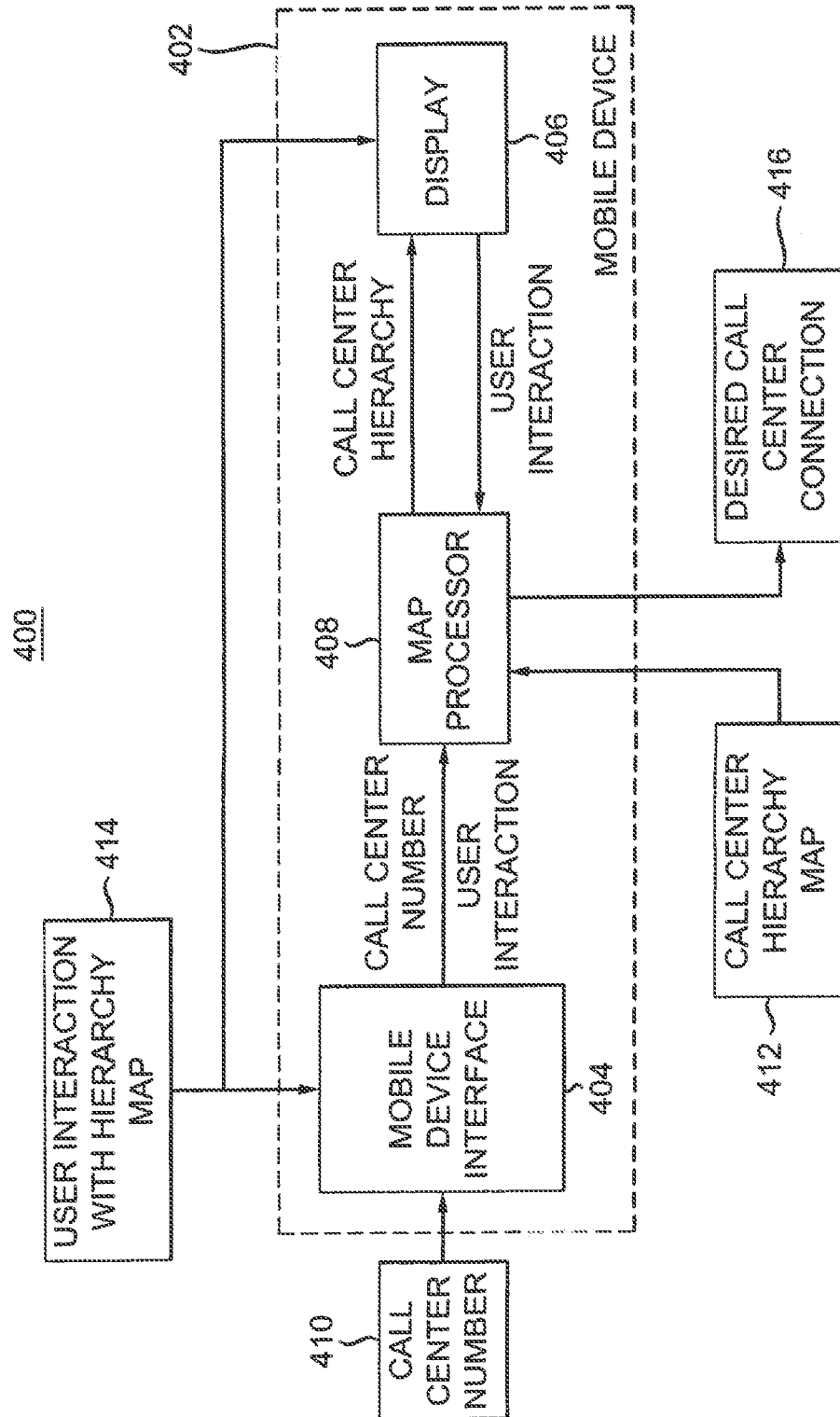


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2012/083371

A. CLASSIFICATION OF SUBJECT MATTER

H04L 29/08 (2006.01) i

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)

IPC: H04L, H04M, 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 practicable, search terms used)

WPI, EPODOC, CNKI, CNPAT, IEEE, GOOGLE: call, caller, center, server, hierarchy, menu, list, map, display, present, visual, telephone, request, direct, link

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/0120483 A1 (J. M. BUZBEE FAMILY LIMITED PARTNERSHIP) 24 June 2004 (24.06.2004) description, paragraphs [0011]-[0038] and figures 1-2	1-18
A	CN 102185982 A (LIAO, Gongpu) 14 September 2011 (14.09.2011) the whole document	1-18

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	“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
“A” document defining the general state of the art which is not considered to be of particular relevance	“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
“E” earlier application or patent but published on or after the international filing date	“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
“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)	“&” document member of the same patent family
“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	

Date of the actual completion of the international search 05 July 2013 (05.07.2013)	Date of mailing of the international search report 01 Aug. 2013 (01.08.2013)
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer HU, Yan Telephone No. (86-10)62413334

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2012/083371

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
US 2004/0120483 A1	24.06.2004	US 2004/0120484 A1	24.06.2004
CN 102185982 A	14.09.2011	WO 2012155302 A1	22.11.2012