



(51) International Patent Classification:

H04W 8/20 (2009.01) H04W 8/18 (2009.01)  
H04W 60/00 (2009.01) H04W 4/02 (2009.01)

(21) International Application Number:

PCT/FI2013/050535

(22) International Filing Date:

16 May 2013 (16.05.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

20125526 16 May 2012 (16.05.2012) FI  
61/647,525 16 May 2012 (16.05.2012) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: A METHOD AND SYSTEM FOR ALLOWING A MOBILE TERMINAL TO CONNECT TO INTERNET SERVICES AND OPTIMIZING USE OF NETWORK RESOURCES

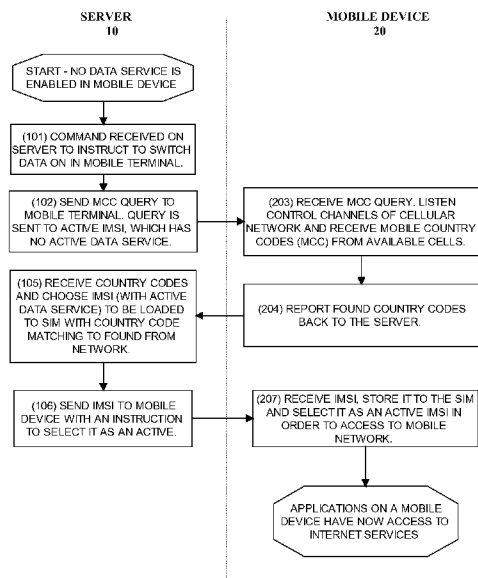


FIG. 3 SWITCH DATA ON

(57) Abstract: The invention relates to a method and system for allowing a mobile terminal (20) with a SIM to connect to internet services and optimizing use of network resources by enabling a data connection. The invention is based on receiving by a server (10) a command to enable (101) data connection in a mobile terminal (20), which has an active IMSI which does not have data service enabled in the mobile network, sending (102) a SMS-type mobile country code (MCC) query to the last known mobile station network number (MSISDN) of the mobile terminal (20), after the query is received (203) in a mobile terminal (20), which listens available country (MCC) and network (MNC) codes of available networks, the server (10) receives a report (204) via an SMS-type of message or through any other available connection/network, receiving (105) by the server (10) country (MCC) and network (MNC) codes and selecting a new IMSI which has activated data service and matches to the reported networks to be sent (106) to the mobile terminal (20), sending (207) to the mobile terminal (20) the new IMSI and to be stored to a memory and/or SIM module together with related network authentication keys, whereby the mobile terminal (20) is able to set the newly received IMSI active on the SIM and connect with that IMSI and related network credentials to the mobile network (50), whereby the new IMSI has data service enabled on the mobile network side, the applications of the mobile terminal have access to internet services.

WO 2013/171380 A1

**A method and system for allowing a mobile terminal to connect to internet services and optimizing use of network resources**

FIELD OF THE INVENTION

5 This invention relates to allowing a mobile terminal to use internet services and optimizing use of network resources according to the preamble of claim 1.

More particularly, the present invention is directed to the methods, apparatus, and systems which enable a mobile data service provider to offer mobile data services for end customers using local mobile subscription identities (IMSI) in multiple mobile  
10 networks in several countries, without an opportunity to control in mobile networks whether the data transfer is allowed or not for each mobile subscription identities.

The mobile data services purchased by end customers can be any type, pre- or post-paid with continuous or non-continuous contracts for short or long periods, the commonality being that the service provider offering mobile data services can control  
15 whether the service is enabled or disabled in a specific end customer's mobile terminal, more particularly in a subscriber identity module (SIM), which has been provided by the service provider to the end customer as a part of the contract and which is attached to the end customer's mobile terminal.

DESCRIPTION OF THE PRIOR ART

20 In the prior art mobile data services are controlled per each mobile subscription identity (IMSI) on the mobile network side. In the prior art also one subscriber module (SIM) can carry several mobile subscription identities.

The prior art becomes clumsy when there is a pool of subscription identities (IMSI) from several different mobile operators, which are remotely distributed (IMSI are loaded and unloaded based on need) by the service provider between subscription  
25 identity modules (SIM) of end customers. More practical solution is to enable/disable data service per each subscription identity module (SIM), meaning a single subscription identity module (SIM) carry so called control subscription (IMSI) with no data service as well as data subscriptions (several IMSI) with data services  
30 enabled. By doing this way the service provider does not have to switch data on and

off through mobile operators' network services from whom the mobile subscription identities (IMSI) have been obtained.

#### DESCRIPTION OF THE RELATED ART

5 L. Isotalo discloses in the European Patent Specification Publication No. 00936923.2 date of filing 12.06.2000, a method in an information service for a mobile phone. In the invention, the information server sends to a mobile terminal an SMS-type of short message, which contains a data connection set-up command instructing the mobile terminal to automatically establish a data connection to the information server. However, in L. Isotalo's invention it is assumed the data connection has been already  
10 enabled on the network side for a mobile subscription identity (IMSI), where the SMS-type short message is sent.

#### BACKGROUND OF THE INVENTION

The invention is directed to consumers who wish to benefit of using a single subscription identity module (SIM) in multiple countries and benefit of a local pricing  
15 of mobile data. The invention is also directed to mobile virtual network operators (MVNO) who would like to expand their service networks cost efficiently to several countries.

The invention was made because need for low cost mobile data services is expanding rapidly and more and more people would like to afford to use internet services by  
20 their mobile devices frequently also abroad.

#### SUMMARY OF THE INVENTION

An object of the present invention is to provide methods, apparatus and systems that enable service provider providing mobile data services in multiple countries to have cost efficient way to control (enable and disable) its' end customers' mobile data  
25 services.

More specifically, the method according to the invention is characterized by what is stated in the characterizing part of claim 1.

Furthermore, system according to the invention is characterized by what is stated in the characterizing part of claim 12.

5 The methods, apparatus and systems of the present invention provide the following key advantages. First, the end customers will benefit of lower pricing of mobile data and related services, because service providers offering the services are able to purchase mobile data capacity direct from local mobile operators without middle men. The second, the presented system herein simplifies expanding the service network to new countries and new mobile networks, because no integration is needed between the service provider and a new mobile operator for enabling and disabling of mobile data service in the end customers' devices.

10 In the invention presented in this application, mobile data connection can be established automatically from a mobile terminal to an information server by sending an SMS-type of command to mobile terminal, in more detailed to a subscription identity module (SIM) of the mobile terminal. The SMS-type command instructs an application on the subscription identity module (SIM) to switch to another mobile subscription identity (IMSI), which has data service enabled. By combining this  
15 feature with a separate mobile application which automatically connects to an information server immediately when a data connection is available, similar end result is achieved than in L. Isotalo's invention.

With the solution of the invention there is no need to make adjustments to the mobile network which the end user is visiting.

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#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows an example of a configuration of a system according to an embodiment of the present invention and an arrangement of mobile device, server and related database in the system.

25 FIG. 2a and 2b shows different kind of arrangements of mobile device (e.g. connected consumer electronics device, mobile phone or laptop PC) in accordance with one embodiment of the invention.

FIG. 3 shows a flow chart of steps executed over a network, e.g. a mobile communication network, between a mobile device and server for enabling mobile  
30 data connection in a mobile device.

FIG. 4 shows a flow chart of steps executed over a network, e.g. a mobile communication network, between a mobile device and server for disabling mobile data connection in a mobile device.

5 FIG. 5 and 6 show flow charts of steps executed over a network, e.g. a mobile communication network, between a mobile device and server in case a mobile device is reporting the currently active IMSI to server when more than one mobile device initiated IMSI switch has been made prior the reporting.

## 10 DESCRIPTION OF PREFERRED EMBODIMENTS

FIG. 1 shows an example of a configuration of mobile data service according to one embodiment of the present invention, and an arrangement of a mobile device 20 forming part of the system. In FIG. 1, the user device 20 is connected via a mobile communications network or other network (e.g. Wi-Fi network) 50 to a service information server 60 of a mobile data service provider 10. A service information server 60, accounting server 70 and database server 80 are connected to each other via a network e.g. IP network. Service information server 60, accounting server 70 and database server 80 can be integrated into one server around mobile data service provider 10 or some or all of them may reside as separate units. Service provider 10 may be thought of as the mainframe linking all servers. By number 30 is referred to the home operator network of the mobile device 20.

25 FIG. 2a and 2b shows two different arrangements of a mobile device 20. The mobile device 20 includes always a processor 25, a memory device 24, a subscription identity module (SIM) 27, a battery 28 and a network interface 26 including a transceiver to communicate with mobile data service provider 10 over mobile communications network 50. A mobile device may also include a user interface 21 including a display and an input device (e.g. keyboard).

30 The subscription identity module (SIM) is used to store mobile subscription identities (IMSI) and their related keys. Mobile subscription identities (IMSI) can be remotely loaded (and unloaded) by mobile data service provider 10 to subscription identity modules.

FIG.3 shows an exemplary flow chart of the program executed by the mobile data service provider 10 and mobile device 20, through the communication network 50 for enabling data connection in the mobile device 20.

5 At step 101 shown in FIG. 3, the server receives a command to enable data connection in a mobile device 20. The command received by the server may have been initiated from several sources e.g. from the mobile device itself e.g. via a SMS-type of message or through a WiFi network/internet. The data connection is enabled by remotely loading an IMSI, which has data service already enabled in the mobile network, to SIM of a mobile device and force the mobile device to choose that IMSI  
10 as a new active IMSI. The IMSI being as an active IMSI on the SIM of the mobile device before new IMSI is loaded does not have data service enabled in the mobile network.

At step 102, the mobile data service (server) 10 sends a mobile country code (MCC) query to mobile device 20. The query is sent by SMS-type of message to the last  
15 known mobile station network number (MSISDN). At step 203, the query is received in a mobile device, which listens available country (MCC) and network (MNC) codes of available networks and reports them back to the server at step 204 via an SMS-type of message or through any other available connection/network. At step 105, the server receives the codes (MCC and MNC) and selects IMSI which matches to the reported  
20 networks to be sent at step 106 to the mobile device 20. At step 207, the mobile device 20 receives the IMSI and stores it to the memory and/or SIM module together with related network authentication keys which were sent as a part of the message at step 106. At step 207, the mobile device sets the newly received IMSI active on the SIM and connects with that IMSI and related network credentials to the mobile  
25 network 50. As the new IMSI has data service enabled on the mobile network side, the applications of the mobile device have access to internet services.

FIG. 4 shows an exemplary flow chart of the program executed by the mobile data service provider 10 and mobile device 20, through the communication network 50 for disabling data connection in the mobile device 20.

30 At step 101 shown in FIG. 4, the server receives a command to disable data connection in a mobile device 20. The command received by the server may have been initiated from several sources e.g. from the mobile device itself e.g. via a SMS-type of message or through a WiFi network/internet. The data connection is disabled

by sending a command to mobile device 20, which instructs the mobile device to select another IMSI as active IMSI, which does not have data service enabled on the mobile network side. That IMSI may have been already stored in the SIM of the mobile device.

5 At step 102, the server sends a data service deactivation message to the last known mobile station network number (MSISDN). The process for reporting an active mobile station network number (MSISDN) being linked to an active IMSI has been described in detailed in FIG 5. As a single SIM may store several different IMSIs, which may be selected automatically by the internal logic of SIM based on mobile  
10 network conditions, a reporting process is needed. By having a reporting process in place, number of needed SMS-type of messages can be optimized, when the data service is switched off.

At step 203, the mobile device receives data service switch off command from the server, which instructs mobile device 20 to choose so called control IMSI, which does  
15 not have data service enabled on the network side, as a new active IMSI and sign with that IMSI and related credentials to a mobile network 50. The mobile device received the data switch off command if the number (MSISDN), where server 10 sent the command was correct. If the number (MSISDN) wasn't correct the mobile device 20 is not able to receive message from the server 10, switch to another IMSI as  
20 instructed by the server in the message and to report succeeded status back to the server at step 104.

If the server 10, does not receive succeeded receipt back within a predefined time which usually matches to the alive period of an SMS-type of message it calls again step 102 at step 103.

25 At step 105, the succeeded receipt is received at the server and the process to disable the data connection in a mobile terminal is finished.

FIG. 5 shows an exemplary flow chart of the program executed by the mobile data service provider 10 and mobile device 20, through the communication network 50 for reporting the active IMSI to the server 10 by the mobile device 20 which was selected  
30 automatically by a SIM of the mobile device according to its internal logic.

At step 201, shown in FIG. 5, a mobile device 10, listens control channels of a cellular network and receives mobile country codes (MCC) and network codes

(MNC) of adjacent cells. At step 202, mobile device 20 compares received country and network codes to IMSIs it is storing and recognizes whether new country (and network) codes were found from the network which are not matching to country (and network) codes of stored IMSIs. If a new country code was found from the network, at step 203, the mobile device 20 requests a new IMSI with that country code from the server 10. At step 104, the server 10 receives the request from mobile station 20 and at step 105 tries to find free IMSIs from its' database with matching country (and network) codes to the request. If a free IMSI, which hasn't been allocated to any other mobile device was found, it is sent to the mobile device 20 together with related network keys. At step 206, mobile device 20 receives the IMSI and stores it to the SIM. At step 207, if the mobile network for the currently active IMSI (MCC and MNC codes matching to the network) is lost, the mobile device 20 selects at step 208 a new IMSI already stored on SIM with MCC (and MNC) matching to the new network found. At step 208, the mobile device 20 starts the countdown timer for reporting newly selected IMSI and related MSISDN back to the server at step 211. If the network is lost before the timer has expired, at step 210, the timer is set to count from begin at step 208. At step 211, the mobile device 20 reports the active IMSI back to the server 10, which updates its' database at step 212. The purpose of using timer before reporting automatically selected IMSI by the mobile device 10 to the server 20, is to optimize / minimize the number of sent control messages in a close border situations the service still being functioning perfectly.

FIG. 6 shows a process similar to steps 201 – 208 if GPS coordinates are used instead of receiving parameters from a mobile network. If GPS coordinates are used, the location of a mobile device is reported to the server. The server 10 defines which mobile networks are available in a reported location based on coverage maps of mobile networks.

In accordance with one preferred embodiment of the invention a new optimum IMSI is selected from several available IMSIs where the optimum means price, coverage and available mobile services, but not necessarily the same MCC and MNC parameters compared to the response received from the mobile terminal 10.

## Claims

1. A method for allowing a mobile terminal (20) with a SIM to connect to internet services and optimizing use of network resources by enabling a data connection **characterized** by

- 5           - receiving by a server (10) a command to enable (101) data connection in a mobile terminal (20), which has an active IMSI which does not have data service enabled in the mobile network,
- 10           - if mobile country code (MCC) has not been received earlier by the server (10) from the mobile terminal (20), sending (102) a SMS-type mobile country code (MCC) query to the last known mobile station network number (MSISDN) of the mobile terminal (20), after the query is received (203) in a mobile terminal (20), which listens available country (MCC) and network (MNC) codes of available networks, the server (10) receives a report (204) via an SMS-type of message or through any other available connection/network, receiving (105) by the server (10) country (MCC) and network (MNC) codes and selecting a new IMSI which has activated data service,
- 15           - sending (207) to the mobile terminal (20) the new IMSI and to be stored to a memory and/or SIM module together with related network authentication keys, whereby the mobile terminal (20) is able to set the newly received IMSI active on the SIM and connect with that IMSI and related network credentials to the mobile network (50), whereby the new IMSI has data service enabled on the mobile network side, the applications of the mobile terminal have access to internet services.
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2. A method in accordance with claim 1, **characterized** in selecting a new optimum IMSI from several available IMSIs where the optimum means price, coverage and available mobile services, but not necessarily the same MCC and MNC parameters compared to the response received from the mobile terminal (10) in claim 1..

3. A method in accordance with claim 1 or 2, **characterized** in that IMSI matches to the reported networks to be sent (106) to the mobile terminal (20).

4. A method in accordance with any previous claim, **characterized** in that the command received by the server (10) has been initiated from several sources e.g. from another server or

from the mobile terminal itself e.g. via a SMS-type of message or through a WiFi network/internet.

5. A method for disabling internet services of a mobile terminal (20) by the mobile data service provider (10) through a communication network (50) **characterized** in that

- 5           - receiving (101) by the server (10) a command to disable data connection in a mobile terminal (20),
- disabling (102) the data connection by sending a command to mobile terminal (20) to the last known mobile station (20) network number (MSISDN), which instructs the mobile terminal (20) to select another IMSI as active IMSI, which does not have data service enabled on the mobile network side, which IMSI may have been already stored in the SIM of the mobile terminal (20),
- 10           - sending (203) to the mobile terminal (20) a data service switch off command from the server (10), which instructing the mobile terminal (20) to choose so called control IMSI, which does not have data service enabled on the network side, as a new active IMSI and sign with that IMSI and related credentials to a mobile network (50),
- 15           - receiving (104) succeed receipt from the mobile terminal (10) or from the mobile network (30 or 50) e.g. from SMS gateway, and
- if the server (10), does not receive succeeded receipt back within a predefined time which usually matches to the alive period of an SMS-type of message it repeats sending disabling command (102).
- 20

6. A method in accordance with claim 5, **characterized** in that the disabling command received by the server may have been created and initiated by several sources e.g. by the server itself e.g. using a timer function, or the command may have been received from another server or from the mobile device.

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7. A method in accordance with claim 5 or 6, **characterized** in that the mobile terminal (10), listens control channels of a cellular network and receives mobile country codes (MCC) and network codes (MNC) of adjacent cells, mobile terminal (20) compares (202) received country and network codes to IMSIs it is storing and recognizes whether new country (and network) codes were found from the network which are not matching to country (and network) codes of stored IMSIs, if a new country code was found from the network, the

30

mobile terminal (20) requests (203) a new IMSI with that country code from the server (10), the server (10) receives (104) the request from mobile station (20) and tries (105) to find free IMSIs from its' database with matching country (and network) codes to the request, if a free IMSI, which hasn't been allocated to any other mobile terminal was found, it is sent to the  
5 mobile terminal (20) together with related network keys, mobile terminal (20) receives (206) the IMSI and stores it to the SIM, if the mobile network for the currently active IMSI (MCC and MNC codes matching to the network) is lost (207), the mobile terminal (20) selects (208) a new IMSI already stored on SIM with MCC (and MNC) matching to the new network found, the mobile terminal (20) starts (208) the countdown timer for reporting (211) newly  
10 selected IMSI and related MSISDN back to the server (10), if the network is lost before the timer has expired, the timer is set (210) to count from begin (208), the mobile terminal (20) reports (211) the active IMSI back to the server (10), which updates (212) its' database for optimizing/minimizing the number of sent control messages in a close border situations the service still being functioning perfectly.

15 8. A system for allowing a mobile terminal (20) with a SIM to connect to internet services and optimizing use of network resources by enabling a data connection **characterized** by means for

- 20 - receiving by a server (10) a command to enable (101) data connection in a mobile terminal (20), which has an active IMSI which does not have data service enabled in the mobile network,
- 25 - if mobile country code (MCC) has not been received earlier by the server (10) from the mobile terminal (20) sending (102) a SMS-type mobile country code (MCC) query to the last known mobile station network number (MSISDN) of the mobile terminal (20) after the query is received (203) in a mobile terminal (20), which listens available country (MCC) and network (MNC) codes of available networks, the server (10) receives a report (204) via an SMS-type of message or through any other available connection/network, receiving (105) by the server (10) country (MCC) and network (MNC) codes and selecting a new IMSI which has activated data service,
- 30 - sending (207) to the mobile terminal (20) the new IMSI and to be stored to a memory and/or SIM module together with related network authentication keys, whereby the mobile terminal (20) is able to set the newly received IMSI active on the SIM and connect with that IMSI and related network credentials to the mobile

network (50), whereby the new IMSI has data service enabled on the mobile network side, the applications of the mobile terminal have access to internet services.

9. A method in accordance with claim 8, **characterized** by means for in selecting a new optimum IMSI from several available IMSIs where the optimum means price, coverage and available mobile services, but not necessarily the same MCC and MNC parameters compared to the response received from the mobile terminal (10) in claim 8.
10. A system in accordance with claim 8 or 9, **characterized** in that IMSI matches to the reported networks to be sent (106) to the mobile terminal (20).
11. A system in accordance with claim 8, 9 or 10, **characterized** in that the command received by the server (10) has been initiated from several sources e.g. from another server or from the mobile terminal itself e.g. via a SMS-type of message or through a WiFi network/internet.
12. A system for disabling internet services of a mobile terminal (20) by the mobile data service provider (10) through a communication network (50) **characterized** in that it includes means for
- receiving (101) by the server (10) a command to disable data connection in a mobile terminal (20),
  - disabling (102) the data connection by sending a command to mobile terminal (20) to the last known mobile station (20) network number (MSISDN), which instructs the mobile terminal (20) to select another IMSI as active IMSI, which does not have data service enabled on the mobile network side, which IMSI may have been already stored in the SIM of the mobile terminal (20),
  - sending (203) to the mobile terminal (20) a data service switch off command from the server (10), which instructing the mobile terminal (20) to choose so called control IMSI, which does not have data service enabled on the network side, as a new active IMSI and sign with that IMSI and related credentials to a mobile network (50),
  - receiving (104) succeed receipt from the mobile terminal (10), and

- if the server (10), does not receive succeeded receipt back within a predefined time which usually matches to the alive period of an SMS-type of message it repeats sending disabling command (102).

13. A system in accordance with claim 12, characterized in that the disabling command  
5 received by the server may have been created and initiated by several sources e.g. by the server itself e.g. using a timer function, or the command may have been received from another server or from the mobile device.

14. A system in accordance with claim 13, characterized in that the mobile terminal (10),  
listens control channels of a cellular network and receives mobile country codes (MCC) and  
10 network codes (MNC) of adjacent cells, mobile terminal (20) compares (202) received country and network codes to IMSIs it is storing and recognizes whether new country (and network) codes were found from the network which are not matching to country (and network) codes of stored IMSIs, if a new country code was found from the network, the mobile terminal (20) requests (203) a new IMSI with that country code from the server (10),  
15 the server (10) receives (104) the request from mobile station (20) and tries (105) to find free IMSIs from its' database with matching country (and network) codes to the request, if a free IMSI, which hasn't been allocated to any other mobile terminal was found, it is sent to the mobile terminal (20) together with related network keys, mobile terminal (20) receives (206) the IMSI and stores it to the SIM, if the mobile network for the currently active IMSI (MCC and MNC codes matching to the network) is lost (207), the mobile terminal (20) selects (208)  
20 a new IMSI already stored on SIM with MCC (and MNC) matching to the new network found, the mobile terminal (20) starts (208) the countdown timer for reporting (211) newly selected IMSI and related MSISDN back to the server (10), if the network is lost before the timer has expired, the timer is set (210) to count from begin (208), the mobile terminal (20) reports (211) the active IMSI back to the server (10), which updates (212) its' database for optimizing/minimizing the number of sent control messages in a close border situations the service still being functioning perfectly.  
25

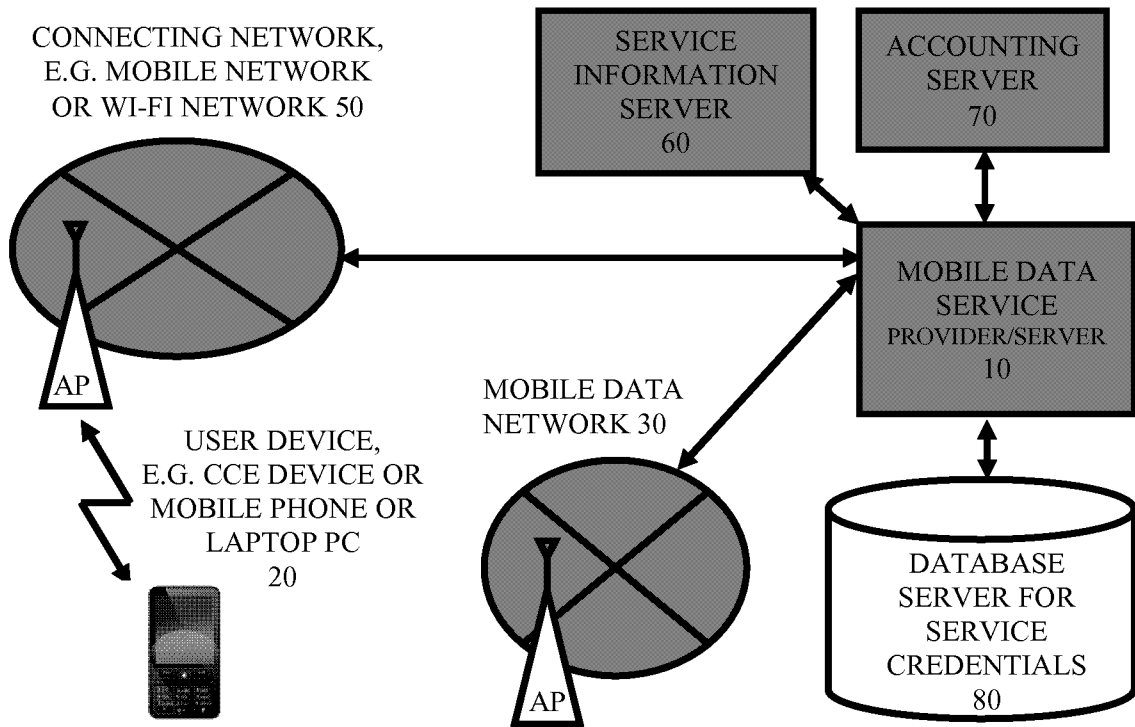


FIG. 1

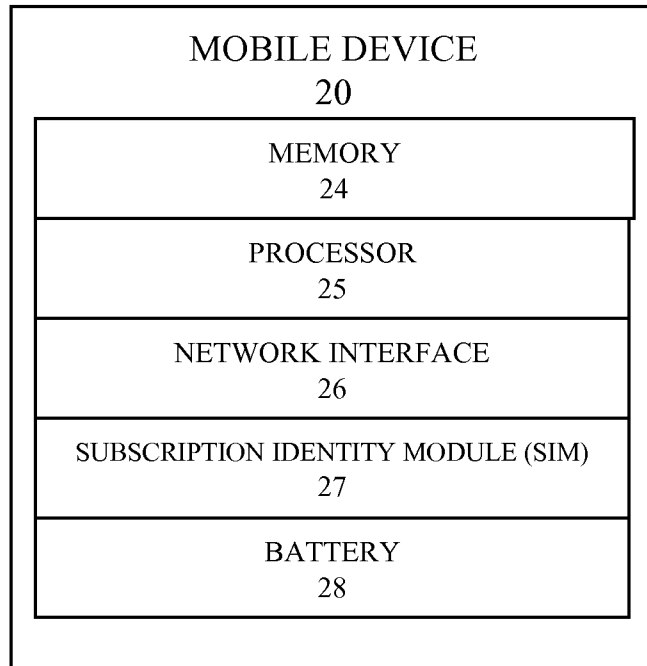
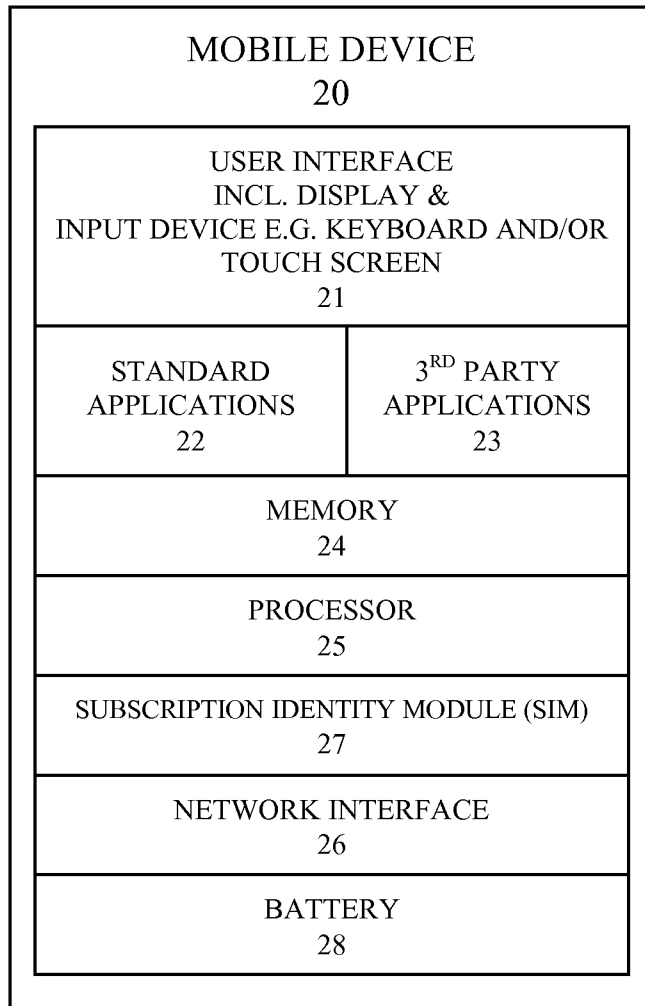


FIG. 2a



**FIG. 2b**

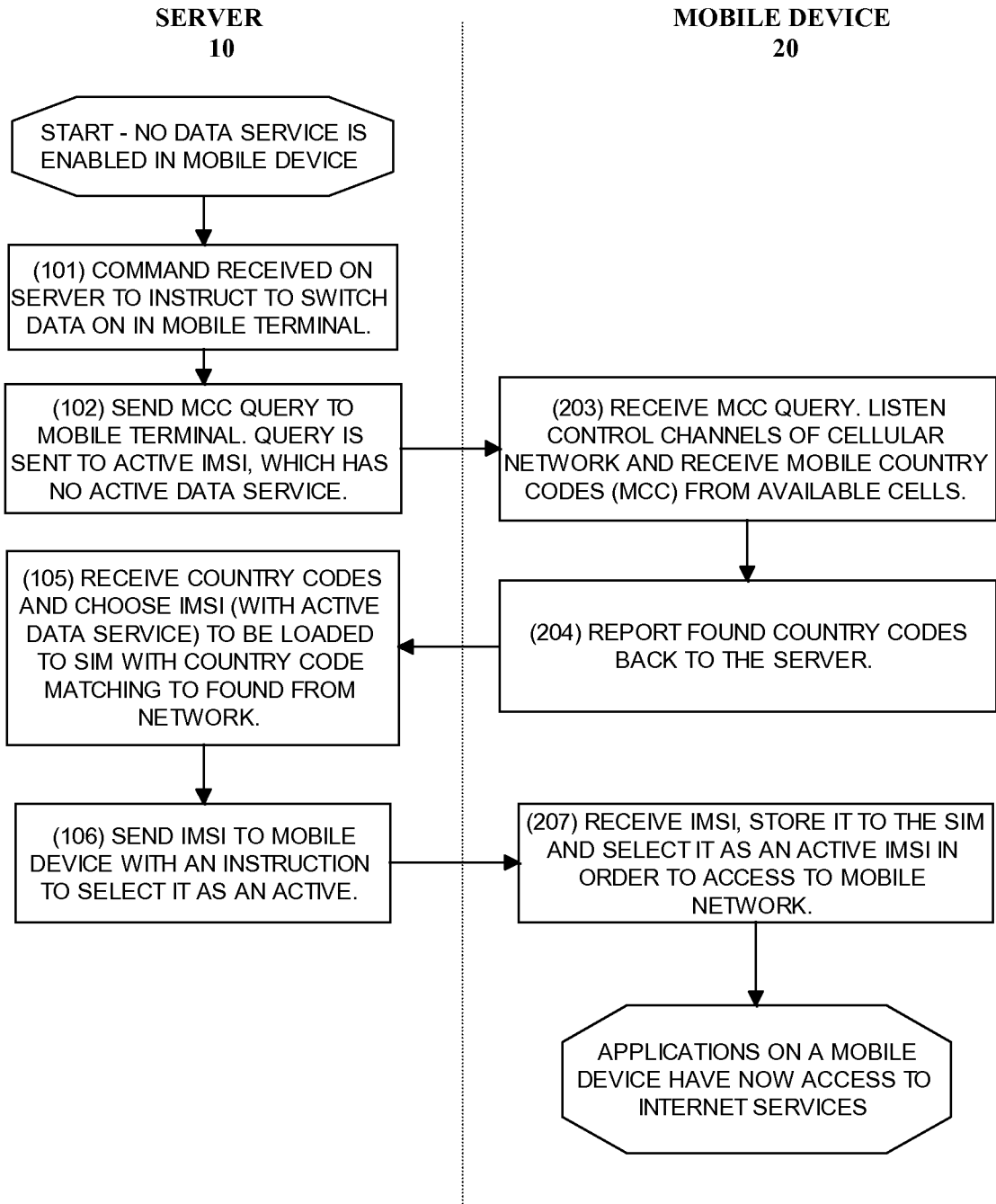


FIG. 3 SWITCH DATA ON

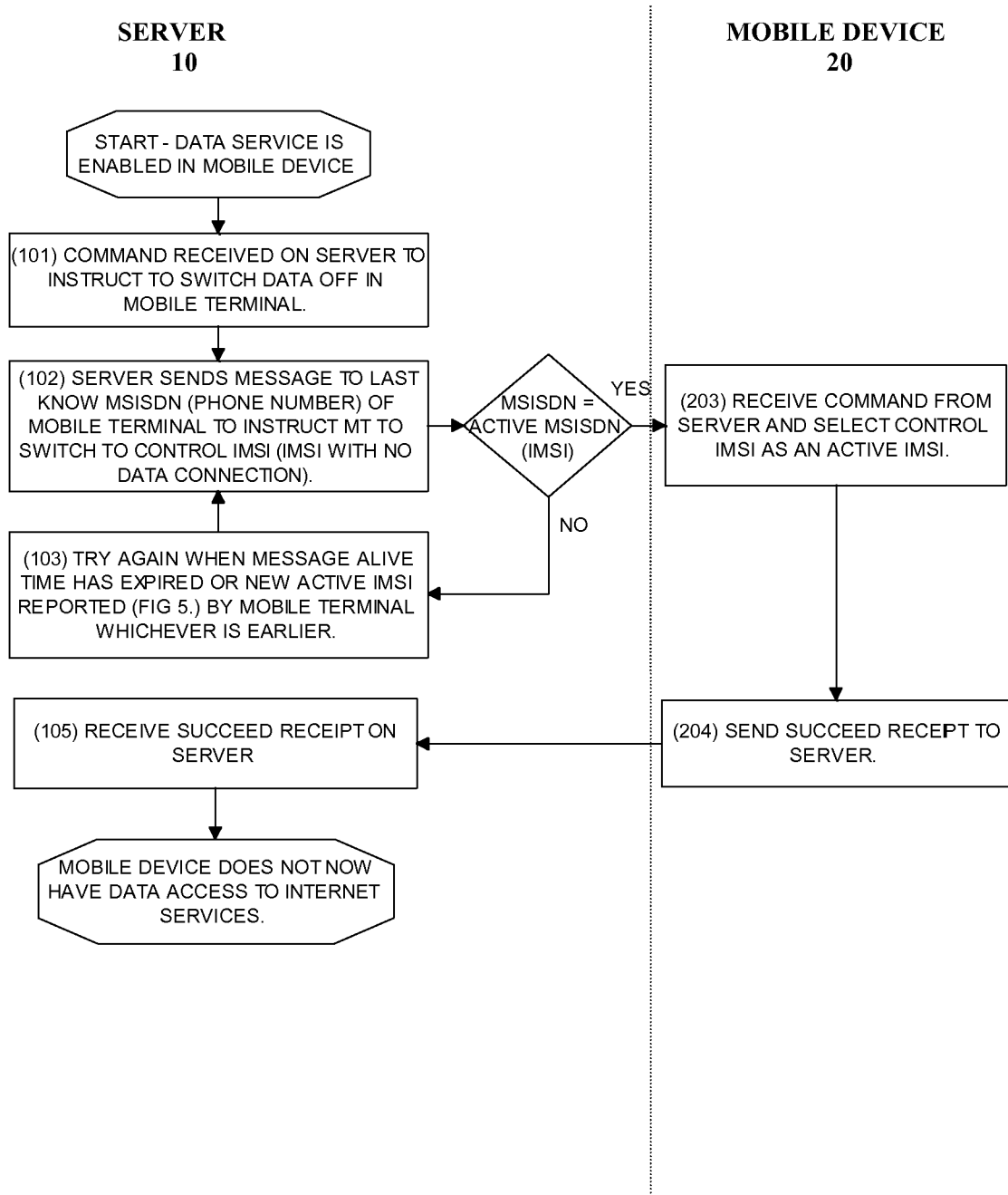


FIG. 4 SWITCH DATA OFF

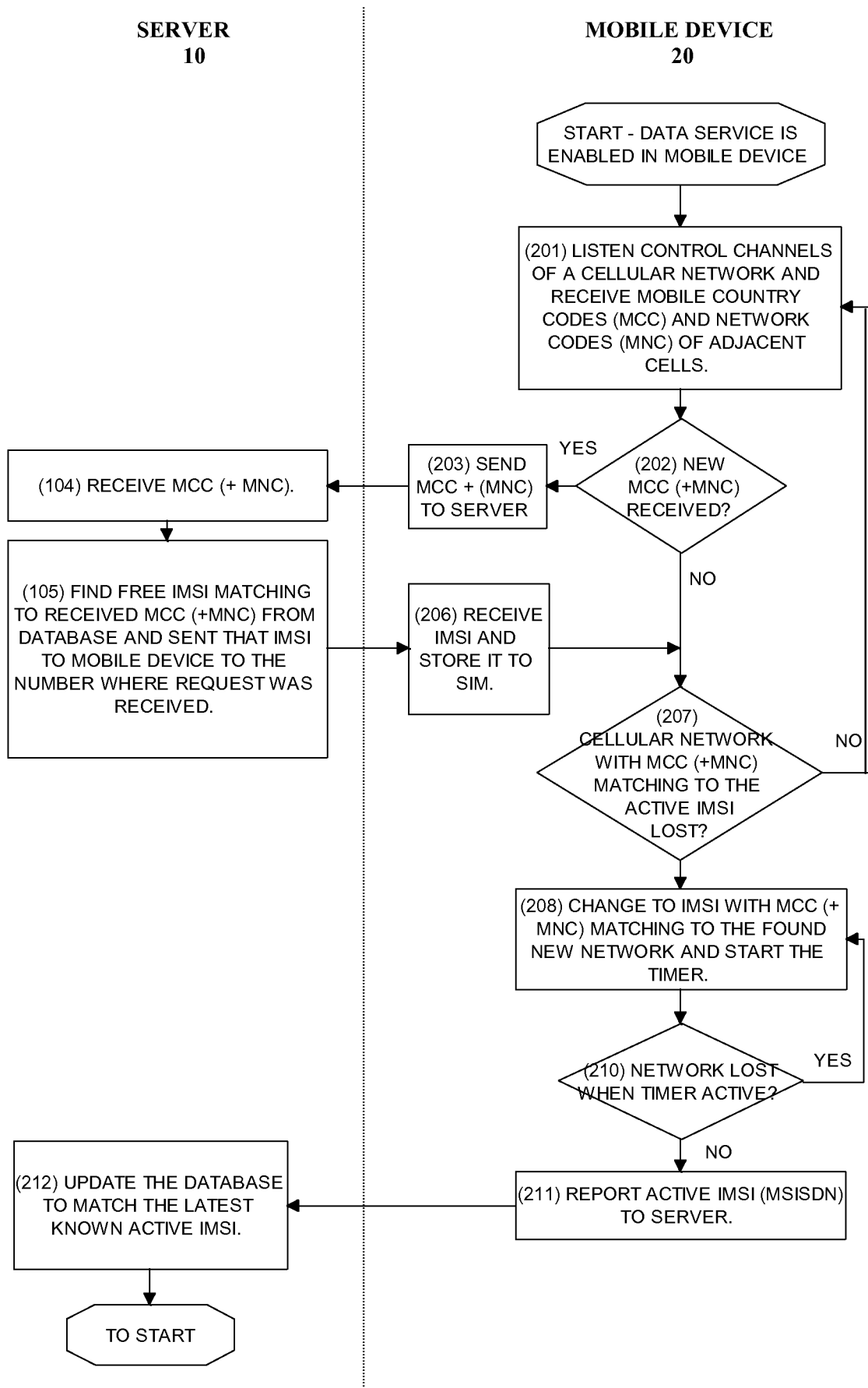
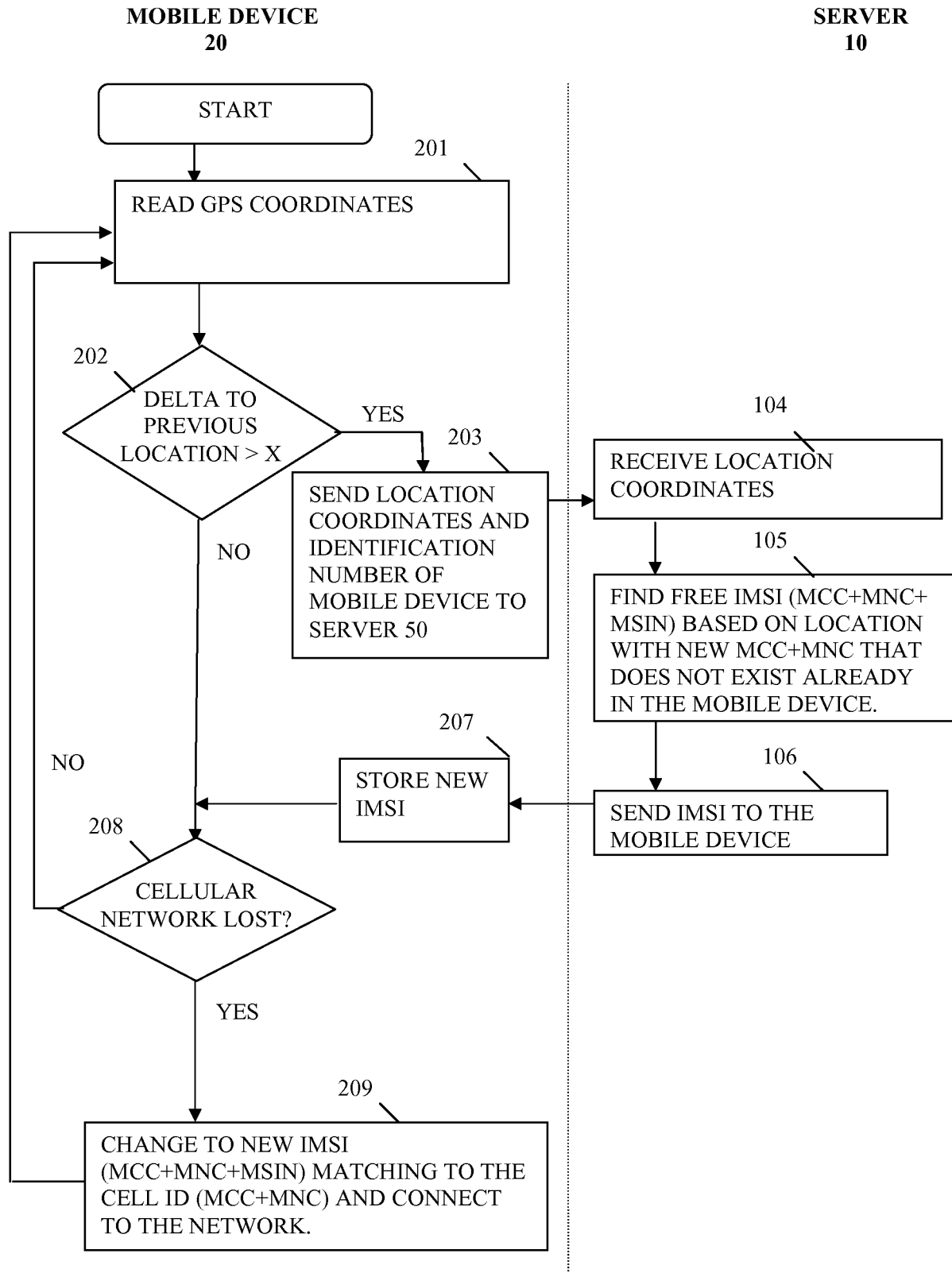


FIG. 5 REPORTING AUTOMATICALLY SELECTED IMSI TO SERVER



**FIG. 6 USING GPS COORDINATES AS AN INPUT INFORMATION WHERE / WHEN REQUEST NEW IMSI**

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2013/050535

## A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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: H04W, H04L, G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
FI, SE, NO, DK

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI, XPESP, XPESP2, XPRD, XPIOP, XPOAC, XPIETF, XPIEE, XPIPCOM, XPETSI, XP3GPP, IEEEXplore

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011057668 A1 (ERICSSON TELEFON AB L M [SE]) 19 May 2011 (19.05.2011) Figure 1; page 5, lines 32-35; page 10, line 28 to page 11, line 6; and page 11, lines 19-23.	1-14
A	EP 1703760 A2 (NEWSTEP NETWORKS INC [CA]) 20 September 2006 (20.09.2006) The whole document.	1-14
A	US 2008280605 A1 (OPHIR SHAI [IL] et al.) 13 November 2008 (13.11.2008) The whole document.	1-14
A	US 2007149213 A1 (LAMBA GAURAV [US] et al.) 28 June 2007 (28.06.2007) The whole document.	1-14

 Further documents are listed in the continuation of Box C.

 See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

14 August 2013 (14.08.2013)

Date of mailing of the international search report

16 August 2013 (16.08.2013)

Name and mailing address of the ISA/FI  
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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2013/050535

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002197991 A1 (ANVEKAR DINESH KASHINATH [US] et al.) 26 December 2002 (26.12.2002) The whole document.	1-14
A	WO 2008027660 A2 (CINGULAR WIRELESS II LLC [US]) 06 March 2008 (06.03.2008) The whole document.	1-14

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Invention I: Claims 1-4 and 8-11 are directed to allowing a mobile terminal with a SIM to connect to internet services.

Invention II: Claims 5-7 and 12-14 are directed to disabling internet services of a mobile terminal by the mobile data service provider.

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

CLASSIFICATION OF SUBJECT MATTER

Int.Cl.

**H04W 8/20** (2009.01)

H04W 60/00 (2009.01)

H04W 8/18 (2009.01)

H04W 4/02 (2009.01)

**INTERNATIONAL SEARCH REPORT**  
**Information on patent family members**

International application No.  
PCT/FI2013/050535

Patent document cited in search report	Publication date	Patent family members(s)	Publication date
WO 2011057668 A1	19/05/2011	CN 102598732 A EP 2499853 A1 US 2012252445 A1	18/07/2012 19/09/2012 04/10/2012
EP 1703760 A2	20/09/2006	CA 2539527 A1 CA 2539527 C US 2006205434 A1 US 7289805 B2	14/09/2006 17/05/2011 14/09/2006 30/10/2007
US 2008280605 A1	13/11/2008	None	
US 2007149213 A1	28/06/2007	BR PI0619178 A2 CA 2627957 A1 CN 101317485 A CN 102547569 A CN 103179507 A EP 1955571 A2 EP 2453679 A2 EP 2453680 A2 JP 2009518895 A JP 2012090298 A JP 2012135010 A JP 2012135011 A KR 20080078024 A KR 20110002882 A KR 20120034779 A KR 20120050445 A RU 2008126220 A RU 2409010 C2 US 8185128 B2 US 2012149369 A1 US 8504064 B2 US 2012142344 A1 WO 2007100401 A2	13/09/2011 07/09/2007 03/12/2008 04/07/2012 26/06/2013 13/08/2008 16/05/2012 16/05/2012 07/05/2009 10/05/2012 12/07/2012 12/07/2012 26/08/2008 10/01/2011 12/04/2012 18/05/2012 10/01/2010 10/01/2011 22/05/2012 14/06/2012 06/08/2013 07/06/2012 07/09/2007
US 2002197991 A1	26/12/2002	US 6603968 B2	05/08/2003
WO 2008027660 A2	06/03/2008	US 2010291924 A1	18/11/2010