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(54) Title: SYSTEM AND METHOD FOR SHARING EVENT-TRIGGERED, LOCATION-RELATED INFORMATION BETWEEN COMMUNICATION DEVICES

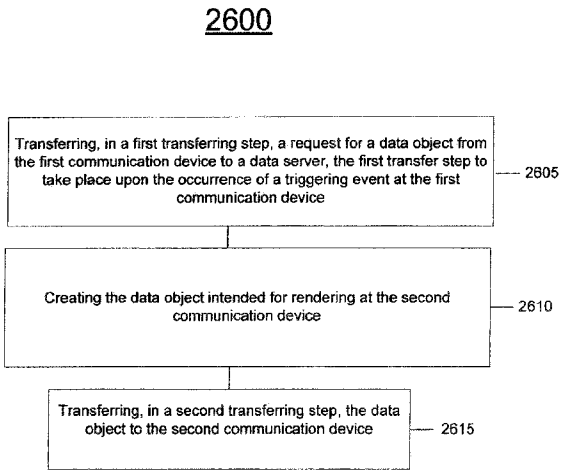

Fig. 16

(57) Abstract: A system and method for supplying a data object to a user of a communication system, is disclosed, the method comprising the steps of: establishing a session between a first and second communication device; transferring, in a first transferring step, a request for a data object from the first communication device to a data object server, the first transfer step to take place upon the occurrence of a triggering event at the first communication device; creating the data object intended for rendering at the second communication devices; and transferring, in a second transferring step, the data object to the second communication device.

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SYSTEM AND METHOD FOR SHARING EVENT-TRIGGERED, LOCATION-RELATED INFORMATION BETWEEN COMMUNICATION DEVICES

BACKGROUND

Field of the Invention

The present invention relates generally to a method and apparatus for providing information to mobile users. More specifically, the invention relates to a system and method for providing information about the location of a user of a communications device to a user of another communications device, when the two users are engaged in a primary communication with each other.

Description of the Related Art

With the convergence of voice and data communication networks, portable communication devices are increasingly likely to support several communication modes, as well as a number of communication-related applications. Single-purpose cellular phones and alphanumeric pagers have given way to complex mobile devices supporting voice communications, e-mail, and instant messaging. A typical device often includes a camera, a music player, and sound recorder, and may include a global positioning system (GPS) receiver. Many of these devices and their supporting wireless networks now enable simultaneous use of multiple communication modes. Thus, a device user today might engage in a voice call and simultaneously send or receive text messages, digital images, video clips, or the like.

Various new user services have been developed to take advantage of this simultaneous availability of multiple communications modes. In particular, several patents and patent application publications describe a so-called Phone Pages system, in which the generation and transfer of multimedia data objects is triggered by various communication-related events. These data objects, or Phone Pages, thus supplement a primary communication session, such as a voice call, an e-mail exchange, or an instant message conversation. The Phone Pages concept is described in the following patents and patent application publications: U.S. Patent No. 6,922,721, titled "Exchange of Information in a Communication System" and issued on July 26, 2005 to Minborg et al.; U.S. Patent Application Publication 2005/0271041 A1, titled "Exchange of Information in a Communication System" and filed on June 1, 2005 by Minborg et al.; U.S. Patent No. 6,996,072, titled "Method and Apparatus for Exchange of Information in a Communication Network" and issued on February 7, 2006 to Minborg; U.S. Patent No. 6,977,909, titled "System and Method for Exchange of Information in a Communication Network" and issued on December 20, 2005 to Minborg; and U.S. Patent Application Publication 2006/0114845, also titled "System and Method for Exchange of Information in a Communication network" and filed on November 14, 2005 by Minborg.

The communication techniques and systems described in the preceding references provide a variety of enhancements to conventional modes of communication, facilitating the convenient exchange of various data objects between users of communications devices. These enhancements may be quite valuable both for promoting personal relationships and for supporting business and enterprise communications. However, current systems and methods do not provide information about the location of the user of a communications device to a user of another communications device, when the two users are engaged in a primary communication with each other.

SUMMARY

The present invention overcomes the above identified deficiencies of providing information about the location of a user of a communications device to a user of another communications device, when the two users are engaged in a primary communication with each other.

In one aspect of the present invention a technique for providing a data object to a B-party that is in communication with an A-party is described. A data object can for example be graphical, text, sound, voice, animations, static or dynamic pictures, or any combination. The providing to a B-party a specific data object, hereafter referred to as a phonepage, will allow the B-party direct access to information about the A-party. In some embodiments, the information may comprise location information, such as a map, for example. The phonepage resides in a memory in a telecommunications network, or in a memory in a data-communications network connected thereto. The phonepage may have a similar appearance to an Internet web page, but may also take other appearances. The displaying of the phonepage may be made dependent upon the capabilities of the B-party user equipment.

According to one embodiment of the systems and methods described herein, a method for supplying a data object to a user of a communication system is disclosed, the method comprising the steps of: establishing a session between a first and second communication device; transferring, in a first transferring step, a request for a data object from the first communication device to a data object server, the first transfer step to take place upon the occurrence of a triggering event at the first communication device; creating the data object intended for rendering at the second communication devices; and transferring, in a second transferring step, the data object to the second communication device.

In another embodiment of the systems and methods described herein, a system for supplying a data object to a user of a communication system is provided, the system comprising: a first communication device, wherein the first communication device includes: (i) logic for determining whether a triggering event has occurred at the first communication device; and (ii) logic for transferring a request for a data object from the first communication device to a data object server, the request for a secondary data object comprising information pertaining to

a user of the first communication device; wherein the first communication device and the second communication device are configured to communicate; and wherein the data object server is coupled to a data network and includes: (i) logic for creating the data object intended for rendering at the second communication device; (ii) a database; (iii) logic for storing the data object in the database; and (iv) logic for transferring the data object to the second communication device.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be more thoroughly described with reference to the accompanying figures, where:

Figure 1 illustrates an overview of a communication infrastructure overview according to one embodiment of the invention;

Figure 2 illustrates a first flow diagram of a subscriber interaction in an A-party UE according to one embodiment of the present invention;

Figure 3 illustrates a first flow diagram of a subscriber interaction in a data server according to one embodiment of the present invention;

Figure 4 illustrates a second flow diagram of a subscriber interaction in an A-party UE according to an embodiment of the present invention;

Figure 5 illustrates a case when event detection has been implemented in a terminal;

Figure 6 illustrates a third flow diagram of a subscriber interaction in an A-party UE according to another embodiment of the present invention;

Figure 7 illustrates a flow diagram of a subscriber interaction in a B-party UE according to an embodiment of the present invention;

Figure 8 illustrates an exemplary block diagram of a UE according to one embodiment of the invention;

Figure 9 illustrates a block diagram of a data object server in a data network according to one embodiment of the invention;

Figure 10 illustrates a flow diagram of B-number indication procedure according to one embodiment of the present invention;

Figure 11 illustrates a flow diagram of A-number indication procedure according to one embodiment of the present invention;

Figure 12 illustrates an exemplary block diagram of a UE where the UE is connected to a fixed network according to one embodiment of the invention;

Figure 13 illustrates an exemplary block diagram of a UE where the UE consists of a PDA and a mobile phone according to one embodiment of the invention;

Figure 14 illustrates a case where a phone page containing information about a first user is provided to a second user;

Figure 15 illustrates a first flow diagram of the case illustrated in Figure 14;

Figure 16 illustrates a second flow diagram of the case illustrated in Figure 15.

DETAILED DESCRIPTION

The present invention will now be described with references to a telecommunications system based on GSM as a circuit switched communication system and GPRS as a packet switched communications system. It should however be noted that the embodiments described are to be considered exemplary and that other packet and circuit switched systems may equally well be considered, both fixed- as well as mobile- and with any access technology, *e.g.*, Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), Frequency Division Multiple Access (FDMA), Orthogonal Frequency Division Multiple Access (OFDMA), Time Division Duplex (TDD), Frequency Division Duplex (FDD) or any combinations thereof. The invention is not restricted to any specific type of communications network or access technology.

Figure 1 illustrates a communication infrastructure overview, 10, where a number of different communication networks are interconnected. Figure 1 includes both nodes included in a Circuit Switched (CS) mobile communication network, *e.g.*, a Mobile Switching Center (MSC), 118, and Base Station Subsystem (BSS), 112, as well as nodes included in a Packet Switched (PS) mobile communication network, *e.g.*, Serving GPRS Support Node (SGSN), 114 and a Gateway GPRS Support Node (GGSN), 116. Typically, the SGSN includes functionality such as re-segmenting data packets according to one protocol into data packets according to protocols used over the air interface. The SGSN also includes control mechanisms for one or several BSS, 112 as well as Quality of Service (QoS) mechanisms. The GGSN includes functionality required to maintain communication between a mobile packet data network and other packet data networks, *e.g.*, data network 120. The CS part of the network connects to a PSTN network, 140, and the PS part of the network connects to a data network, 120. The data network may be both an external or internal network, *i.e.*, with global or limited access possibilities. As shown, the PS and CS parts of the network may also be interconnected by way of an interface between the MSC, 118 and the SGSN, 114. The BSS, 112, may serve both the PS as well as the CS part of the network with packet switched (161) as well as circuit switched (162) communication resources over the air, to provide mobility to both PS and CS service users and their User Equipment (UE), 100. The UE, 100, may for example be a mobile telephone or a mobile telephone connected to any kind of data equipment, *e.g.*, Personal Digital Assistance Devices (PDA) or laptop computer. The PSTN, 140, provide users (user devices) connected to the fixed network with service, *e.g.*, to "plain old telephones" (POTs), facsimile or data modem devices, 150. Other examples of devices connected directly or indirectly to the PSTN, 140, are ISDN terminals and communication devices connected via a Digital Subscriber line (DSL) (*e.g.*, ADSL, HDSL and XDSL).

The data network, 120, typically includes one or several routers (not illustrated) and data bridges such that several nodes may be interconnected and communicate with each other. The

data network used in connection with the present invention includes also a data object server, 130. Typically, pluralities of data object servers are included in a data network, although, for reasons of explanation and clarity, only one data object server, 130, is illustrated in Figure 1. Examples of data networks are Internet and Intranet networks. The UE, 100, may obtain a complete logical connection 171 to an indicated B-party telephone, 150, connected to the PSTN, 140, through the CS communication channel, 162, provided between the UE, 100, and the BSS, 112, and further via the MSC node, 118, over which conversation may be conducted between either party UE 100 and telephone 150. Similarly, the UE, 100, may obtain a complete logical connection 172 to equipment, *e.g.*, data object server, 130, connected to the data network, 120, through the PS communication channel, 161, provided between the UE, 100 and the BSS, 112, and further via the SGSN, 114 and GGSN, 116, node, over which data may be sent between either party UE 100 and data object server 130.

Element 140 can in some embodiments be a PSTN/ISDN, and then element 150 could also be a mobile phone. In other embodiments there can also exist the case of all IP, *i.e.*, UE 100 has real-time voice communication with a packet data device.

According to one aspect of the present invention a data object server, 130, includes graphical information objects, *i.e.*, phonepages, associated to a telephone number. The telephone number is identical to a subscriber number, *i.e.*, an A- or B- number, addressing an originating user equipment or a terminating user equipment, respectively. The A-party, upon dialing a B-number, connects to a data object server, 130, by way of PS communication channel and receives a data object, *i.e.*, a "phonepage" stored in a memory position in the data object server, with a memory address corresponding to the B-number dialed. The phonepage may consist of information about the B-party, or it may simply provide an immediate access to an internal or external data network as maintained by the B-party subscriber. Alternatively, the B-party phonepage may consist of information regarding a B-party user, *e.g.*, phone number, address and other information. After having received the B-party phonepage, one or several procedures may follow. If the B-number is addressing a POT, 150, a circuit switched voice connection may be setup. If the B-number is addressing another device, other events may occur. This is of course also dependent upon the A-party device, UE, 100, used.

In a variant of the present invention, the UE, 100, does not support the use of a PS communication channel, but can retrieve data objects by other means, such as a Short Message Service (SMS) or a temporary CS communication channel. In a variant of the present invention, a PS communication channel, for example having a particular QoS, is used for conveying speech within the communication system 10 whereby the PSTN, 140, and the data network, 120, is interconnected by some means (not shown in Figure 1).

Figure 2 illustrates a flow diagram of a procedure in a UE (like the UE, 100) for communicating a phonepage to an A-party using the UE, according to one embodiment of the present invention. In step 205, the procedure starts by an initiation from the A-party, (*e.g.*, a UE

is switched on). In step 210, a trigger of a phonepage request is indicated, either automatically (*e.g.*, a call is terminated by the other party) or manually by the A-party (*e.g.*, the dialing of a B-number). The triggering event, 210, may be at least one of a number of events, *e.g.*:

- An outgoing call is or is about to be initiated.
- An addressed B-party answers a call.
- An addressed B-party is busy.
- An addressed B-party does not answer.
- An addressed B-party rejects a call.
- An addressed B-party is unavailable (*e.g.*, an addressed mobile phone is out of coverage).
- An incoming call is imminent or has just started.
- A conference call is or is about to be initiated.
- A call is disconnected.
- A call is conducted (under which several triggering events can be generated).
- A subscriber is put on hold.
- A new cell in the Public Land Mobile Network (PLMN) has been selected.
- The location of a subscriber has changed.
- A new PLMN operator is selected.
- A new country of registration is made.
- A UE is about to be switched off.
- A UE has been switched on.
- When a designated button on a UE is pressed.
- In response to a talk spurt received by a UE.
- A voice mail has been left to a subscriber.
- An SMS has been sent to a subscriber.

According to one aspect of the present invention a data object server, 130, includes graphical information objects, *i.e.*, phonepages, associated with an address indication such as a telephone number, or an Internet address such as an IPv6 address. The telephone number is identical to a subscriber number, *i.e.*, an A- or B- number, addressing originating user equipment or a terminating user equipment, respectively. The A-party, upon dialing a B-number, connects to a data object server, 130, by way of PS communication channel and receives a data object, *i.e.*, a "phonepage" stored in a memory position in the data object server, with a memory address corresponding to the B-number dialed. The data object server may comprise the phonepage with information about the B-party directly, or it may simply provide an immediate access to a location in an internal or external data network as maintained by the B-party subscriber, *i.e.*, the object server 130 first functions as a number server providing a translation of the provided B-number to a corresponding URI where the phonepage resides,

which may be at a physically separate phonepage object server. The translation and provision of the actual requested phonepage can be either transparent, *i.e.*, the phonepage number server forwards, or dispatches, the phonepage request to an appropriate phonepage object server, which phonepage object server communicates directly, or indirectly via the name server, to the requester, or the phonepage number server returns the URI of the requested phonepage to the requester after which the requester will be redirected by using the URI to request the desired phonepage.

The B-party phonepage may comprise information regarding a B-party user, *e.g.*, phone number, address and/or other information. The B-party phonepage may also comprise information regarding the addressed B-party's user equipment, which, for example, can be a fax. After having received the B-party phonepage, one or several procedures may follow. If the B-number is addressing a POT, 150, a circuit switched voice connection may be setup. If the B-number is addressing another device, other events, such as when a pay service is used, may occur. This is of course also dependent upon the A-party device, UE, 100, used.

According to another aspect of the present invention a phonepage can be associated with an Internet address such as an IPv6 address, SIP address or an email address. A phonepage is a data object that is linked to a unique identifier such as a telephone number or an internet address such as an IPv6 address, but not located or retrieved from the place that the unique identifier identifies.

Referring once again to Figure 2, the A-party initiates a data object request in step 230, possibly after encryption in step 220, and sends this request via a communication channel to a data object server. The data object request may include at least one of a number of different parameters, *e.g.*:

- A requested protocol to be used for transmission (*e.g.*, WAP, WML, HDML, HTML).
- An identification of a data object server (*e.g.*, a server name or a plain IP address).
- A code denoting what kind of event that triggered the data object request (*e.g.*, outgoing call setup).
- The indicated B-number associated to at least one B-party equipment.
- An A-party identity, *e.g.*, an A-number of a mobile station.
- A network address of the A-party (*e.g.*, IP address) used by the data object server when returning a requested data object.
- A capability code indicating the displaying capabilities of the A-party (*e.g.*, screen resolution, audio, etc.).
- A code indicating an encryption scheme or encryption key used.
- A code indicating in what country the mobile station is registered (country code).
- A code identifying the current PLMN (V-PLMN) operator or the PLMN where the A-party has a subscription (H-PLMN) or both.
- A code indicating the vendor of the mobile station and the type of the mobile station.

- A code indicating an equipment unique identity.
- A validation code (*e.g.*, a checksum) of the parameters.

The data object request in 230 may, according to a variant of the invention, be answered by the data object server in an encrypted format, in which case a decryption in step 250 follows the reception of the response in the user equipment.

In the next step follows a rendering procedure in step 260, where the data objects are displayed according to the capability of the UE, after which the procedure is ended at step 299. Typically after step 299, there will follow one or several procedures according to the capability of the A-party UE or the type of equipment addressed by a B-number. For example, a call may be setup or a call may be disconnected.

Figure 3 illustrates the corresponding procedures in a data object server (like the data object server 130), wherein, in step 305, the procedure starts and in step 310, the data object server receives a request for a data object. The request may typically include at least an indication corresponding to an A- or B- number and what kind of action that triggered the request. If the request is encrypted, decryption will be made in step 320, before interpreting the content. The address indication (*e.g.*, A- or B- number) in the request received in step 310 will be mapped with a memory address in the data object server, or to an address in the data object server's connected memory, and the data object, *i.e.*, phonepage, will be retrieved in step 330. The request in step 310 may also include an indication of a UE display capability, in which case the data object may be adapted in the data object server to a specific rendering capability, step 340, of a receiving UE. If the request was encrypted, or if requested for some other reason, the data object will be encrypted in step 350 before it is returned to the requesting UE, in step 360 and then the procedure is ended in the data object server in step 399.

A data object server may either provide a phonepage directly or just a pointer to a phonepage, the pointer suitably being a URI. In some embodiments, when the data object server does not comprise the phonepages itself, the data object server will forward, *i.e.*, dispatch, the request to the actual phonepage server or provide the requester with the URI to the phonepage. In the event of a dispatch, the data object server forwards the received data object request, with all appropriate parameters, to second server, which then transfers the requested phonepage to the user equipment. Alternatively, the second server may transfer the requested phonepage to the data object server that received the request, for relaying to the user equipment.

In other embodiments, a phonepage request may be redirected. In these embodiments, the data object server returns a URI pointing to a second server to the requesting user equipment and the user equipment makes a new request to the second server using the supplied URI. The second server then fulfills the request by transferring, either directly or indirectly, the requested phonepage to the user equipment.

In Figure 4 is illustrated a flow diagram of procedures included when a circuit switched connection is initiated from a UE, according to one aspect of the present invention. In step 405, the procedure is started when the mobile station is not involved in a call session and when a user, *e.g.*, starts to indicate a B-number to a B-party, step 420, by pressing a digit, a button or by activating voice recognition means. During step 420 the entire B-number is obtained. The mobile station now sets up two different connections, a circuit switched connection for a voice communication channel in step 430-440-498, and a packet switched communication channel for retrieval of a phonepage in step 450-499.

For the circuit switched procedures, a voice connection with a B-party is initiated in step 430, and a communication resource is assigned by a mobile network over which a telephone conversation may take place. The telephone conversation is ended in step 440 as any ordinary voice call, for example by pressing a designated button on the mobile station or hanging up a handheld part of a fixed network telephone. Ending the call also involves de-allocation of relevant communication resources within the circuit switched part of the mobile communication network as well as *e.g.*, any PSTN resources involved in the connection.

The packet switched procedures basically follow the procedures described in connection to Figure 4, where a data object request is sent, possibly after encryption, steps 450 and 460, and a response is received and the phonepage displayed, possibly after proper decryption thereof, steps 470-490, after which the packet switched connection also ends, in step 499.

Now follows an example of a protocol implementation between the UE (100) and the Data Object Server (130). The phonepage service relies generally on the following components: an event-detection function residing either in the user's terminal or in the network; a PhonePage Number Service (PNS) which handles phonepage requests, retrieval of concerned phonepage, and downloading of the information to the involved terminals; and one or more PhonePage Web Servers (PWS) where phonepages are stored and managed.

A PhonePage Number Service (PNS) may be implemented using two node types: local and root PNS. The root PNS receives registrations from PWSs and keeps the local PNS updated. The local PNS acts as a kind of "proxy" between the terminal and the PWSs. In one aspect of the invention a local PNS contains an update client that regularly checks for updates with the root PNS. If there are entries more recent than the last successful local PNS update time, the new entries are conveyed from the root PNS to the local PNS. If communication is performed over the open Internet, information may be encrypted (*e.g.*, using the https: or IPSec protocol). There are other means for keeping the different databases up to date. For example, the root PNS may, upon changes in its database, contact a plurality of local PNS's and, based on their individual update status, convey any changes to the local PNS's. Again information may be protected as described above.

Figure 5 illustrates the case of a mobile phone user where the event-detection function has been implemented in the terminal. The client in the mobile terminal detects an event and

requests 510 a phonepage. The Local PNS 520 receives the requests and finds out in which PWS the phonepage is located. The local PNS retrieves 530 the phonepage from the concerned PhonePage Web Server. The phonepage is downloaded 540 to the terminal.

In general when the Mobile Terminal (MT) detects an event, the MT send a PNS Request to the Local PNS. The PNS Request from a MT client to the PNS may be implemented as a HTTP request using the GET method. The URI used in the HTTP request is denoted request URI. The request URI is a URI identifying the resource upon which to apply the request. The request URI contains the host name of the Local PhonePages Number Server (PNS), a host path (*e.g.*, denoting an appropriate server) and a parameter list. No specific header information in the HTTP request is required.

The parameters included in the phonepage request may include an indication of the triggering event. In some embodiments, this indication may be encoded, *e.g.*, with a numeric value. For example, the phonepage request may include a parameter designated "eventnumber_value", encoded to indicate one or more of the various possible trigger events.

The parameters may also include one or more identifiers indicating one or both of the communication terminals relevant to the particular event. The parameters may further include information indicating one or more capabilities of the requesting terminal, such as a graphics capability, audio capability, data bearer capabilities, or the like.

After receiving and interpreting a phonepage request, a Local PNS server responds with a standard HTTP response message containing the phonepage content. Note that part of the phonepage content may be references (*e.g.*, links) to resources located on other servers (*e.g.*, the PWS) than the Local PNS. In such cases, the actual transfer of the referenced data will be carried out between the MT and the servers hosting the references resources and not pass through the Local PNS.

When the Local PNS receives a PNS Request from the MT, the Local PNS looks up the address to the PWS where the requested phonepage is located. The Local PNS then requests the phonepage from the PWS by sending a HTTP request equal to the PNS Request message as described above. Note that the *host_name* and *host_path* parts of the request URI in this case are equal to the host name and path of the PWS. The PWS responds with a standard HTTP response message containing the phonepage content.

The protocol between the PWS and the Root PNS may be based on HTTP and is used for registration and management of phonepage entries in the PNS. In order to provide a secure transport mechanism the HTTPS (Secure Hypertext Transfer Protocol) can be used.

Figure 6 illustrates a similar procedure to that explained with reference to Figure 4, but where the data object request is completed before the call session is begun. In step 905 the procedure starts and in step 910, the B-number is indicated as described above in reference to Figure 4. In this embodiment, a step 920 is introduced where it is possible to select if a phonepage is to be requested or not. This can typically be a selection made by the user, and/or

indicated by the B-number dialed by appropriate setting. According to one embodiment of the current invention, double clicking on a designated SEND button indicates that the phone page is to be requested. If it is indicated that a phonepage is not desired, then follows in step 950-960 and 999 a circuit switched call connection and termination as explained in relation to Figure 4, steps 430, 440 and 498.

If it is indicated that a phonepage is desired, then the following steps are to encrypt, 930, and send, 935, a data object request on a packet switched communication channel. As long as the packet session is not interrupted, 940, the download of data object continues to the A-party. Data objects are received in step 970, decrypted, if encrypted, in step 980 and rendered in step 990. In step 995 the data objects are detected and as long as there is more information to receive, step 995, and there is no interruptions in step 940, the data download continues. A possible interrupt may occur, *e.g.*, when a user wishes to no longer wait for a complete download of a phonepage and instead initiates the circuit switched communication in step 950. This may be initiated by a time expiring or by manually indicating on a man-machine interface (MMI). At the latest, the circuit switched communication is initiated when there is no more phonepage data to download. According to another embodiment of the present invention the phonepage for a UE is obtained from the data object server, 130, upon call completion or whenever the UE is not involved in a call, and is stored locally in the UE being readily available upon a next triggering event.

So far, the retrieval of phonepages to display in A-party equipment has been addressed. It should be recognized that a B-party may similarly also display a phonepage related to a connection, preferably a phonepage identified with the A-party number. In Figure 7 is illustrated a flow diagram of the procedures in B-party user equipment for retrieval of A-party phonepages according to one embodiment of the present invention. The procedure begins in step 1005, *e.g.*, by an incoming call to a B-party UE. In step 1010 a communication channel is allocated between the UE and the network, 110, it is connected to. In step 1020, an indication of the call originating identity, *i.e.*, the A-party identity, preferably, an A-number, is revealed to the B-party. Then in step 1060 and 1070, a request is sent, subsequent to encryption thereof, to a data object server. The request is, when received in the server, treated similar as the requests received from the A-party, *i.e.*, decrypted if necessary, and responded to in the transmission of a data object related to the A-party identity. The UE receives the data objects, *i.e.*, phonepage in step 1080 and after decryption in step 1090, if necessary, the phonepage can be displayed to the B-party user in step 1095.

If the call is answered in 1030, the voice connection may follow the same procedures as those described in relation to Figure 3 and 4. If the call is not answered the voice part sequence ends in 1098.

For reasons of clarification, several steps in the signaling between the UE 100 and the communication infrastructure 110 and between the UE 100 and the data object server 130 have

been omitted in several embodiments above, and focus has been put on the necessary and novel steps according to the invention, in the aforementioned signaling. It should be understood that other procedures (*e.g.*, authentication, channel assignment and charging) might occur in addition to what has been described in the aforementioned signaling.

Figure 8 illustrates a UE according to be used in one embodiment of the present invention, where the UE is a mobile telephone or a PDA with mobile telephone capabilities. A Central Processing Unit (hereafter CPU) 1150 is connected to at least one memory unit 1151, and at least one display 1120. The CPU 1150 may also be connected to a keyboard device or area 1152 to allow subscribers to enter, for example, digits. The memory unit 1151 may be non-volatile (*e.g.*, EEPROM or SIM card) in order to retain stored information, should power be temporarily unavailable. The CPU 1150 is further connected to a radio unit 1110 that may convert incoming and out going data to RF modulated signals. The radio unit 1110 also connects to an antenna 1160 allowing the RF modulated signals to be received/transmitted to an RF compatible media (*e.g.*, air). The radio unit 1110 may also directly or indirectly be connected to an earphone 1130 and a microphone 1140 in order to allow voice communication. The UE may further comprise a plurality of programs 1170, *e.g.*, a browser, 1171, that can render at least one type of data object and an encryption/decryption engine 1172 allowing data object requests to be encrypted and data objects to be decrypted. The UE may optionally be equipped with a cache memory in which it is possible to store and retrieve data objects without occupying transmission resources within the communication network 10.

Figure 9 illustrates a data object server 130, according to one embodiment of the present invention. The data object server comprises at least one CPU 1230 connected to at least one memory device 1210, a cache memory 1250, at least one database 1240 and at least one interface 1220. Memory devices 1210 and databases 1240 may be non-volatile. The interface 1220 enables the CPU 1230 to send and receive data to/from the data network 120. The cache memory 1250 allows storage of frequently used data objects so that the CPU 1230 may obtain them readily. The database 1240 contains the actual data objects that can be requested by the UE 100 via a communication infrastructure 110 and a data network 120. The data object server may also further comprise a number of programs 1260 including, but not limited to, a filter 1261 allowing the data objects to be optimized according to the rendering capabilities of the UE 100; and an encryption/decryption engine 1262 allowing data object requests to be decrypted and data objects to be encrypted.

According to a variant of the invention the blocks 1210, 1220, 1230, 1240, 1250 and 1260 may be implemented on a plurality of computers. According to another variant of the present invention, the said plurality of computers may be located at a substantial distance.

B-number indication involves any means of indicating a B-number in an A-party UE. A first example of B-number indication procedure is described with reference to Figure 10 where the B-number indication comprises a start step at 1305 and the step 1310 of receiving a

character from a keyboard arrangement. In response to step 1310, the character is stored in a memory buffer in the UE in step 1320 and it is checked if the B-number is complete in step 1330. If the number is incomplete, steps 1310, 1320 and 1330 are repeated. If the B-number is complete, the B-number indication procedure is concluded in 1399. Determination of B-number completion 1330 may or may not involve the use of timers supervising the indication procedure; a short key combination in order to minimize the number of keys pressed; designated buttons to indicate number completion (*e.g.*, pressing SEND or CALL buttons once) or by analyzing the digits in the memory buffer for B-number completeness.

A second example of B-number indication is by means of voice detection, whereby an incoming talk spurt is successfully matched with an entry in an internal database contained in a UE 100, whereby a valid B-number could be obtained in response to the aforementioned talk spurt.

A-number indication involves any means of indicating an A-number to a said UE 100. A first example of an A-number indication procedure is described with reference to Figure 11 where the A-number indication comprises the step 1405 of starting the procedure and 1410 of receiving an A-number from a communication infrastructure 110. In response to step 1410, it is checked if the A-number was valid (*e.g.*, not blocked, secret or misinterpreted) and if it was valid, the A-number is stored in a memory in the UA 100 in step 1430. If the A-number was not valid, a flag indicating a non valid A-number is stored in a memory of UE 100 in step 1440. The procedure is ended in 1499.

A second example of A-number indication is by means of sending an A-number or data objects in response to an A-number directly on a logical data communication link 161.

Figure 12 illustrates a UE 100 according to a second variant of the invention when the UE 100 is a fixed telephone with graphic capabilities. According to this second variant, the UE 100 is equal to a mobile telephone as described in Figure 8 but with the exception that the radio unit 1110 and antenna 1160 are replaced with a media adapter 1510 that converts incoming and outgoing signals to and from a particular media standard including but not limited to ISDN, ADSL, HDSL, VDSL and Cable networks and any combination thereof .

Figure 13 illustrates a UE 100 according to another embodiment of the invention when the UE 100 is a mobile telephone 1690 possibly without data object rendering capabilities, with an antenna 1660, connected to a PDA 1691 via a communication link 1695. The communication link may for example be realized with an infrared, radio (*e.g.*, Bluetooth) or wire communication arrangement. The PDA 1691 further comprises a CPU 1653 connected to at least one memory unit 1654, and at least one display 1621. The CPU 1653 may also be connected to a keyboard device or area 1655 to allow subscribers to enter, for example, digits. The memory unit 1654 may be non-volatile (*e.g.*, EEPROM or SIM card) in order to retain stored information, should power be temporarily unavailable. The PDA 1691 further comprises a collection of programs 1670 including but not limited to a browser 1671 that can render at least

one type of data object and an encryption/decryption engine 1672 allowing data object requests to be encrypted and data objects to be decrypted. The mobile phone 1690 is further described in Figure 8 where 1620 corresponds to 1120, 1610 corresponds to 1110, 1650 corresponds to 1150, 1651 corresponds to 1151, 1652 corresponds to 1152, 1630 corresponds to 1130 and 1640 corresponds to 1140.

There are a number of possible technologies available that are suitable for implementing phonepage functionality in the UE (phonepage client). Examples of such technologies in the context of GSM include SIM toolkit; WAP/WTA; Java and MeXE; and native implementation. Regardless of the implementation details, the main function of the client is to detect call events and launch the browser to the appropriate URL determined by event type, content type, other party's identity, own identity, HPLMN, VPLMN, visiting country code, terminal capability, and other parameters as described in this document. Additionally the client could provide functions for, *e.g.*, activation and configuration of service, security, soft-keys and menus.

As an alternative to directly launching the browser the client may send an SMS to the server which would respond with a push message (*e.g.*, WAP push) containing the phonepage.

Another technology suitable for implementing a phonepage client in the UE is Java. Using, for example, JavaPhone functionality for automatic phonepage download over, *e.g.*, WAP, HTML or SMS can be obtained. Moreover, functionality such as a context sensitive phonepage soft-key can also be obtained. The soft-key could, *e.g.*, automatically appear after a call, in phone address book, and in a call log. When pressing the soft-key a phonepage associated with the telephone number on the display is automatically downloaded.

In a preferred embodiment the functionality of a data object server 130 is divided into two logically different parts, a name server and an object server. A name server and an object server might be physically separated or just logically separated. The name server provides translation between address indications such as telephone numbers, events and an appropriate location of an object server where desired objects, phonepages, reside, *e.g.*, URIs (Universal Resource Identifiers), URLs (Universal Resource Locators). An object server hosts the desired objects, the content of the phonepages. Several name servers might be provided, for example a specific name server might be operated by a mobile telephone network operator or a vendor of a mobile telephone. The particular embodiment of the user equipment will determine which name server is used. The name server can be given by the service provider used, can be based on country, be a general global, be dependent on service (such as email), or a combination. In a preferred embodiment, the user equipment associated with a specific network operator by means of, *e.g.*, a SIM card, will automatically send a request to a name server hosted by the network operator. By automatically, as preprogrammed in, *e.g.*, a SIM card, directing a request from user equipment to a name server hosted by the user's designated network operator (*e.g.*, determined by a SIM card), several advantages such as related to security, speed and redundancy, can be obtained.

According to a variant of the invention, translation of numbers and events to URLs can be made in the UE itself. Upon detection of a triggering event, the UE looks in a memory position (*e.g.*, SIM card or address book) and retrieves or computes a URL corresponding to a particular other party and event. The URL is then conveyed to the other party via SMS. Upon reception of the URL by the other part, the data objects are automatically retrieved.

In another variant of the present invention, USSD or UUI (User-User Information) according to the GSM standard can be used to convey an URL instead of an SMS. In yet another variant, IP signaling between two UIs can be used for conveying the SMS instead of using SMS.

Sharing Event-Triggered, Location-Related Information Between Communication Devices

According to a variant of the present invention, the various systems and methods described herein may enable the delivery of event-triggered, location-related information of a first mobile device to a second mobile device, when the first and second mobile device users are in communication.

Figure 14 illustrates a system 2400 depicting a first communication device A 2405, a second communication device B 2410, a data object server 2415, and a data server D 2420. In some embodiments, communication devices A 2405 and B 2410 may comprise any of the User Equipments (UE) described in this application, such as, for example, UE 100 of Figure 1, and data object server 2415 may comprise any of the data object servers described herein, such as data object server 130 of Figure 1 or any of the Phone pages servers described herein.

In some embodiments, the various systems and methods described herein may enable the user of communication device B 2410 to receive phone pages that include data and information about the user of communication device A 2405. In some embodiments, such data and information may comprise location-related data and information about the user of communication device, such as, for example, a graphical map indicating the location of the user of communication device A 2405.

As shown, the users of communication devices A 2405 and B 2410 are in communication via a session or call. Such a communication may comprise a voice call (*e.g.*, circuit or VoIP), instant message (IM) session, or any other modes of communication such as those described herein. In some embodiments, communication device A 2405 includes a module or application that is able to determine the geographic location of the user of communication device A 2405. For example, in some embodiments, communication device A 2405 may include an embedded GPS receiver that is able to determine the position of the device autonomously or with aiding info from an external source via the communication channel. In another variant, the GPS receiver can make measurements that are sent to location server for the final calculation of the device's position. In some embodiments, such information may be determined by a location server (not shown) that is in communication with communication

device A 2405. In another variant, communication device B 2410 may be a stationary device whose location is determined by a module or application as described above, or alternately by direct input by the user (*e.g.*, address). In the latter case, the user input may be interpreted or converted by an entity within or outside of the communication device (*e.g.*, translation of the address to geographic coordinates).

In some embodiments, during the session or call with communication device B 2410, a triggering event may occur at communication device A 2405. In some embodiments, the identity of such event may be contained in a data object that is transmitted from communication device B 2410 to communication device A 2405 before or during the session or call. Such trigger may occur, for example, upon the occurrence of any of the following events or combinations thereof:

- the establishment of a session or call with communication device B 2410
- meeting the criteria or conditions of the event contained in a data object received from communication device B 2410
- crossing a boundary that communication device A 2405 pre-configured prior to establishing the session or call (*e.g.*, communication device A 2405 moves beyond a radius from the session or call origination point)
- activation by the user of communication device A 2405 (*e.g.*, an explicit)
- another trigger event could be: radio bearer change for multi-radio capable communication device (*e.g.*, handover from one kind of bearer, such as, GSM, to another kind of bearer, such as, WiFi, WiMAX etc.)
- other events such as those described in U.S. Patent No. 6,996,072

In some embodiments, on the trigger event, an application in communication device A 2405 may send a request to data object server C 2415 to provide a data object to communication device B 2410 containing information about the location of communication device A 2405. The request to data object server C 2415 may include information related to the location of communication device A 2405. In some embodiments, request to data object server C 2415 may include the identity of communication device B 2410.

Each of the cases described above involve use of a server, either, C or both C and D. In some embodiments, however, the various features and functionality described herein may operate without the use of a server(s). For example, the communications devices A and B, for example, may store maps locally, and operate in a peer-to-peer mode. In such a system, a protocol such as the one developed by the National Marine Electronics Association (NMEA) may be used to exchange the devices' location information (latitude and longitude etc.) between two devices. Each device may display the locations of both devices on the locally stored map. In other embodiments, devices A and B may interact in a client-server mode, where one device acts as a server, with maps locally stored, while the other one sends its location information to

the server device (*e.g.*, via a protocol like NMEA). The device acting as a server will map out locations of all devices and send the map with locations of all devices identified to the client device. Those skilled in the art will appreciate that either of the two operating modes described here may apply to communications between more than two devices.

Upon receipt of the request, data object server C 2415 may create a data object and transfer it to communication device B 2410. In some embodiments, the data object may comprise an image of a map identifying the location of communication device A 2405. In some embodiments, the data object may contain a link to another server, such as data server D 2420, for example, where the user of communication device B 2410 may retrieve the data object containing the location information. Upon receipt of the data object from data server C 2415, or initiation of the link, communication device B 2410 may display the map.

In some embodiments, an event specified in a data object received from communication device A 2404 via data object server C 2415 may be used as a triggering event in response to which communication device B 2410 sends a data object to communication device A 2405. For instance, many of the triggering events listed above can also be used in this manner.

Figure 15 illustrates an embodiment of a method 2500 for sharing event-triggered, location-related information between mobile devices. As shown, at step 2510 a session or call between a first and second communication device is established. In some embodiments, the first communication device may look for at least one triggering event. In some embodiments, the identity of at least one triggering event is sent from any device or is preconfigured by the user of the first communication device. At step 2515, the first communication device may detect a triggering event. In some embodiments, the identity of such event may be contained in a data object that is transmitted from communication device B 2410 to communication device A 2405 before or during the session or call. In some embodiments, rather than receiving a defined triggering event from B, A may create one or more pre-configured triggering events, or there may be one or more default triggering events set in the device. Also, it should be made clear that the device could respond to an "OR" of events.

At step 2520, upon triggering of the event, communication device A 2405 may transfer a request for a data object to a data server. In some embodiments, the request may include information about the location of communication device A 2405. At step 2525, the data object server may create the requested data object. At step 2530, the data object server may transfer the data object to the second communication device.

Figure 16 illustrates an embodiment of a method 2600 for sharing event-triggered, location-related information between mobile devices. At step 2605, a request for a data object is transferred from a first communication device to a data server. In some embodiments, the transfer takes place upon the occurrence of a triggering event at the first communication device. At step 2610, the data object intended for rendering at the second communication devices is created. At step 2615, the data object is transferred to the second communication device.

In some embodiments, the various features and functionality described above may be performed by a downloadable module or application that may be installed on a communication device, such as a mobile communication device, for example.

The invention is not restricted to the above described embodiments, but may be varied within the scope of the following claims.

CLAIMS

What is claimed is:

1. A method for supplying a data object to a user of a communication device, comprising the steps of:

establishing a session between a first communication device and a second communication device;

transferring, in a first transferring step, a request for a data object from the first communication device to a data object server, the first transfer step to take place upon the occurrence of a triggering event at the first communication device;

creating the data object intended for rendering at the second communication device; and

transferring, in a second transferring step, the data object to the second communication device.

2. The method of claim 1, wherein the data object provides information pertaining to the location of the user of the first communication device.

3. The method of claim 2, wherein the first communication determines its location autonomously or with assistance from a location server.

4. The method of claim 2, wherein the data object comprises a graphical representation of the locations of the first and second communication devices.

5. The method of claim 4, wherein the graphical representation comprises a map indicating the location of the user of the first communication device.

6. The method of claim 2, wherein the data object includes directions to the location of the first communication device.

7. The method of claim 1, wherein the data object comprises additional data or information provided by a second data object server.

8. The method of claim 7, wherein the additional data or information comprises a link.

9. The method of claim 1, further comprising transferring from the second device to the first device the identify of a triggering event to be used by the first device to generate the request for the data object.

10. A system for supplying a data object to a user of a communication system, comprising:

a first communication device, wherein the first communication device includes:

(i) logic for: (1) determining whether a triggering event has occurred at the first communication device, or (2) looking for at least one triggering event, the at least one triggering event being sent from any device or being preconfigured by the user; and

(ii) logic for transferring a request for a data object from the first communication device to a data object server, the request for a data object comprising information pertaining to a user of the first communication device ;

wherein the first communication device and the second communication device are configured to communicate; and

wherein the data object server is coupled to a data network and includes:

(i) logic for creating the data object intended for rendering at the second communication device;

(ii) a database;

(iii) logic for storing the data object in the database; and

(iv) logic for transferring the data object to the second communication device.

11. The system of claim 10, wherein the data object provides information pertaining to the location of the user of the first communication device.

12. The system of claim 11, wherein the first communication device determines its location on its own or via a location server.

13. The system of claim 11, wherein the data object comprises a graphical representation of the locations of the first and second communication devices.

14. The system of claim 13, wherein the graphical representation comprises a map indicating the location of the user of the first communication device.

15. The system of claim 11, wherein the data object includes directions to the location of the first communication device.

16. The system of claim 11, wherein the data object comprises additional data or information provided by a second data object server.

17. The system of claim 16, wherein the additional data or information comprises a link.

18. A device for supplying a data object to a user of a communication device, the device comprising computer software stored on a computer-readable media executable to perform:

(i) determining whether a triggering event has occurred at the device, or looking for at least one triggering event, the at least one triggering event being sent from any device or being preconfigured by the user; and

(ii) transferring a request for a data object from the device to a data object server, the request for a data object comprising information pertaining to a user of the device, wherein the data object server transfers the data object to a second device, and wherein the data object provides information pertaining to the location of the user of the device.

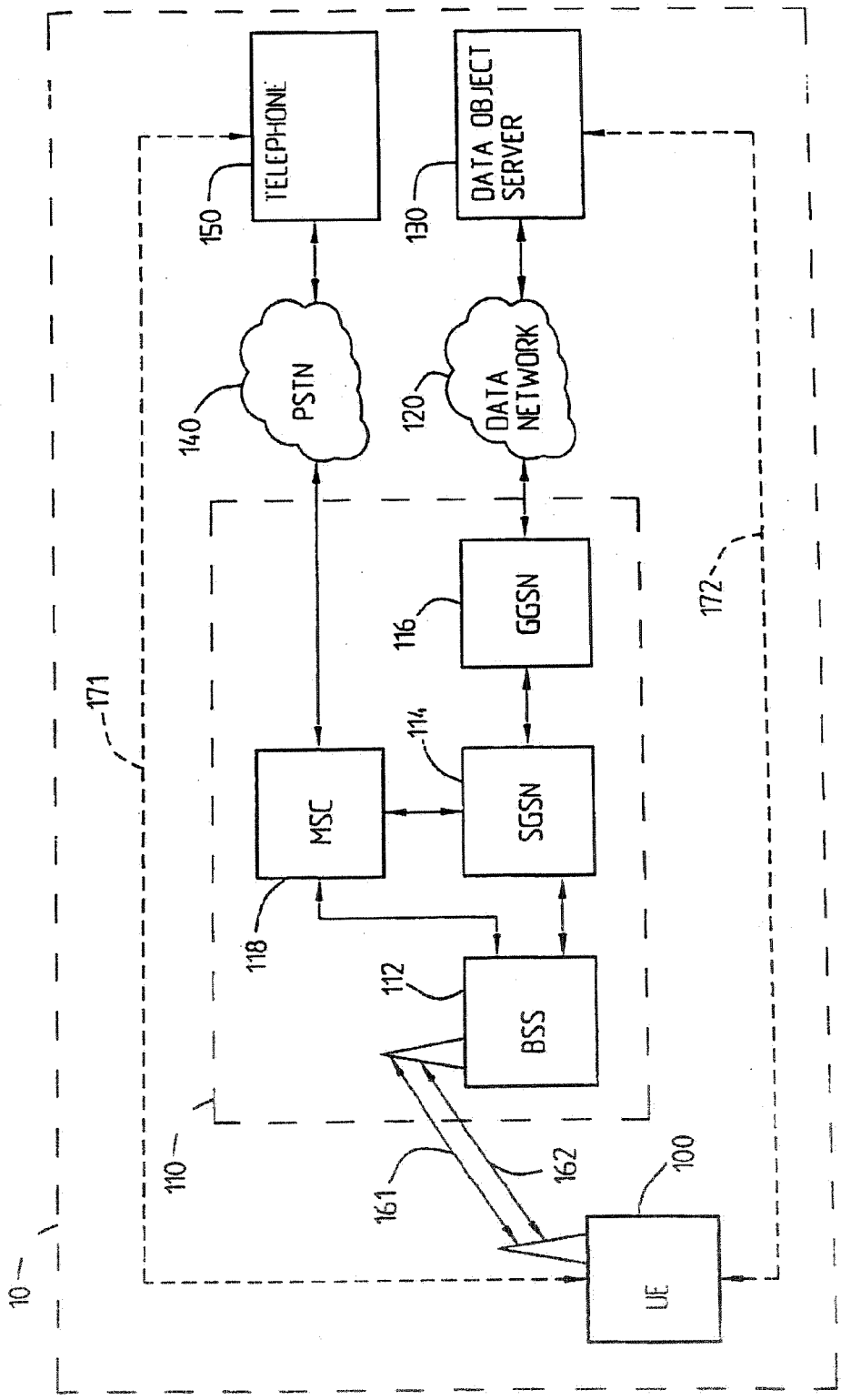
TELEPHONE
150
DATA OBJECT SERVER
130
PSTN
140
DATA NETWORK
120
GGSN
116
MSC
SGSN
114
118
BSS
112
110
161
162
UE
100
171
172
10

Fig. 1

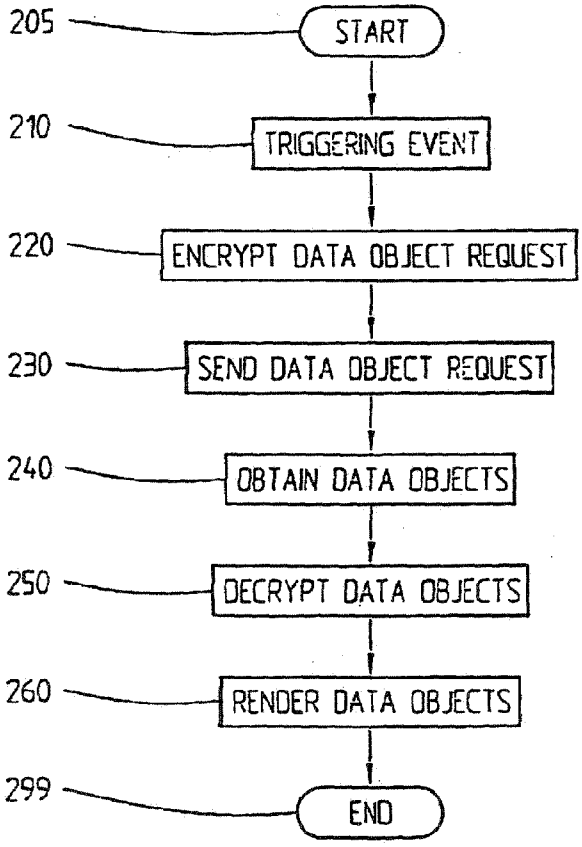
205
START
210
TRIGGERING EVENT
220
ENCRYPT DATA OBJECT REQUEST
230
SEND DATA OBJECT REQUEST
240
OBTAIN DATA OBJECTS
250
DECRYPT DATA OBJECTS
260
RENDER DATA OBJECTS
299
END

Fig. 2

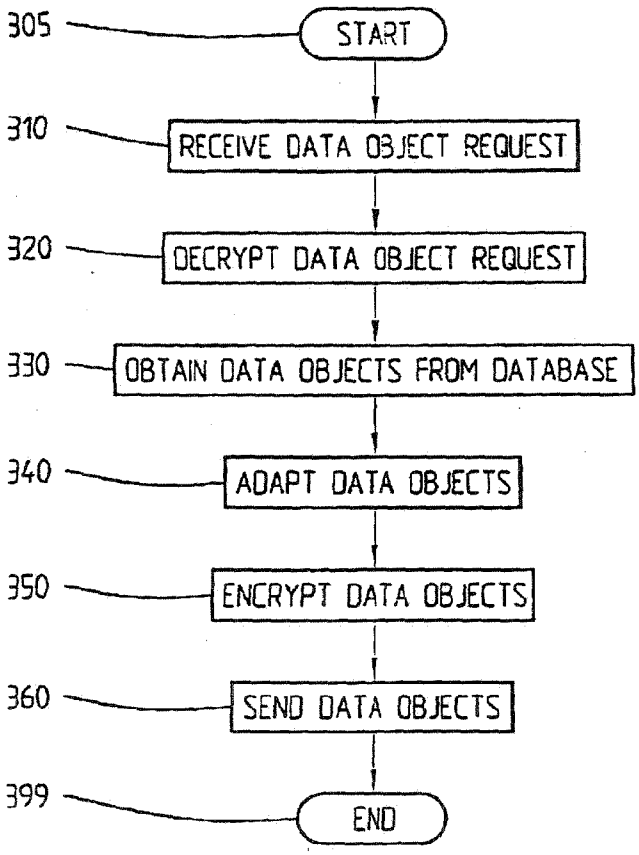
305
START
310
RECEIVE DATA OBJECT REQUEST
320
DECRYPT DATA OBJECT REQUEST
330
OBTAIN DATA OBJECTS FROM DATABASE
340
ADAPT DATA OBJECTS
350
ENCRYPT DATA OBJECTS
360
SEND DATA OBJECTS
399
END

Fig. 3

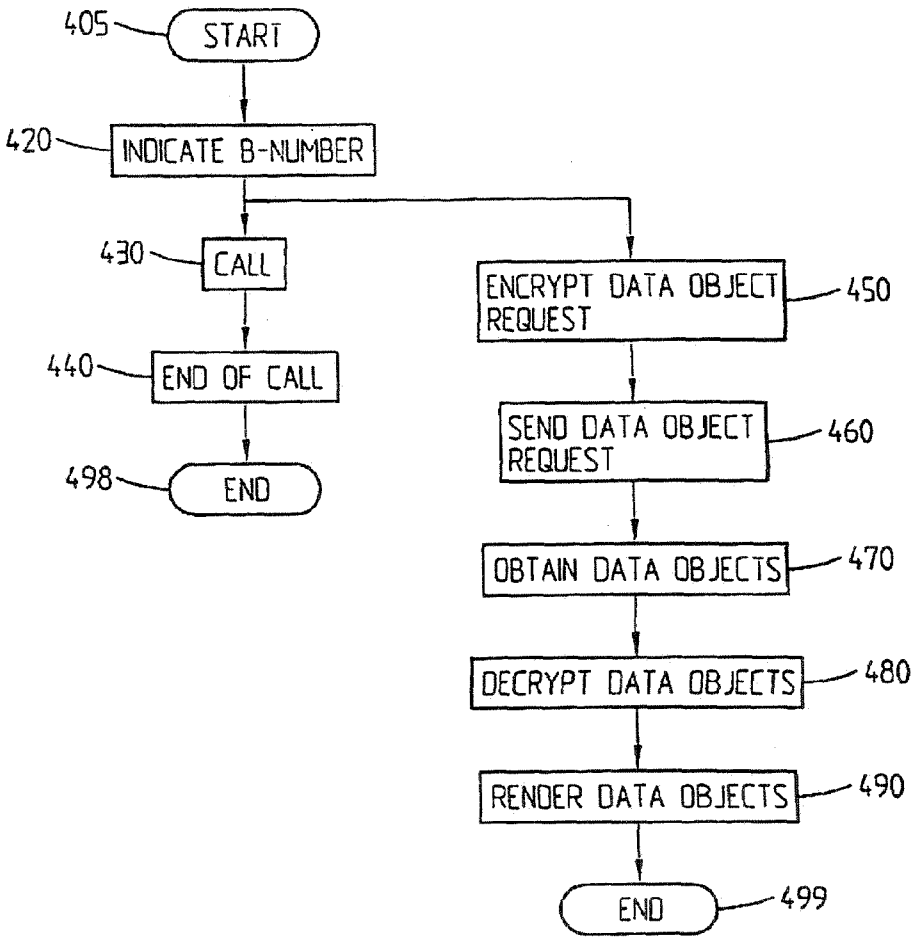
405
START
420
INDICATE B-NUMBER
430
CALL
440
END OF CALL
498
END
ENCRYPT DATA OBJECT REQUEST
450
SEND DATA OBJECT REQUEST
460
OBTAIN DATA OBJECTS
470
DECRYPT DATA OBJECTS
480
RENDER DATA OBJECTS
490
END
499

Fig. 4

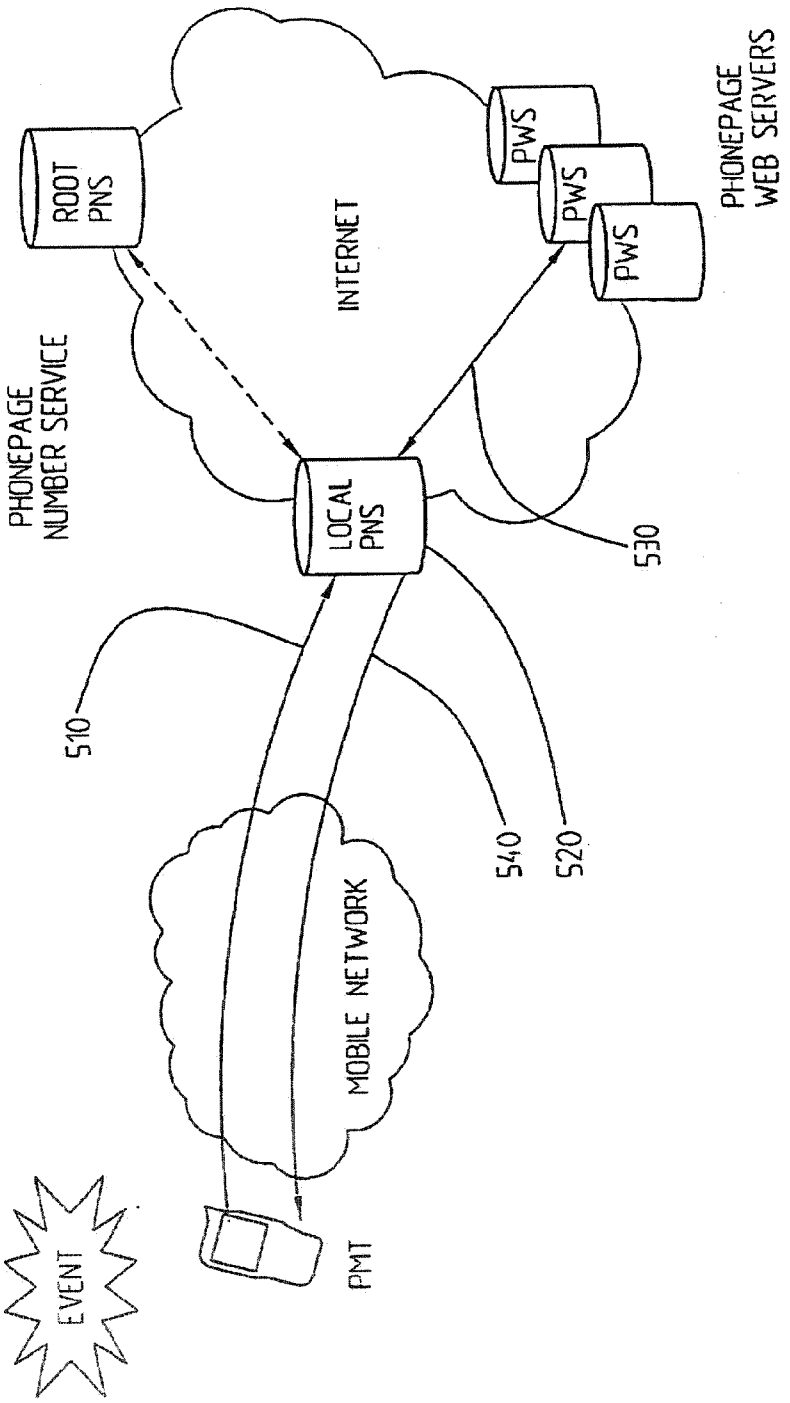
PHONEPAGE
NUMBER SERVICE
ROOT
PNS
INTERNET
PWS
PWS
PWS
PHONEPAGE
WEB SERVERS
LOCAL
PNS
530
510
540
520
MOBILE NETWORK
EVENT
PMT

Fig. 5

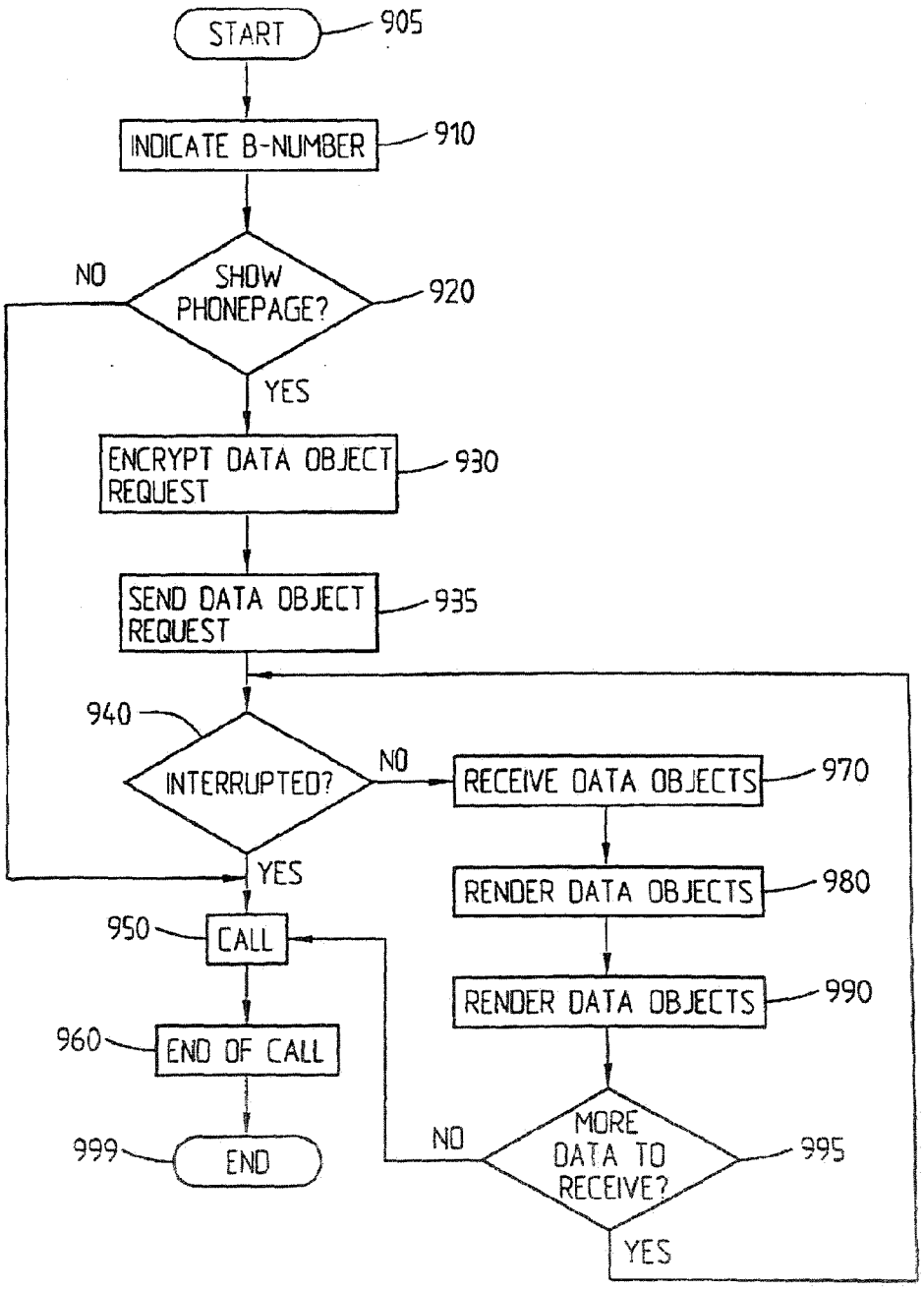
START
905
INDICATE B-NUMBER
910
NO
SHOW PHONEPAGE?
920
YES
ENCRYPT DATA OBJECT REQUEST
930
SEND DATA OBJECT REQUEST
935
940
INTERRUPTED?
NO
RECEIVE DATA OBJECTS
970
YES
RENDER DATA OBJECTS
980
950
CALL
RENDER DATA OBJECTS
990
960
END OF CALL
NO
MORE DATA TO RECEIVE?
995
999
END
YES

Fig. 6

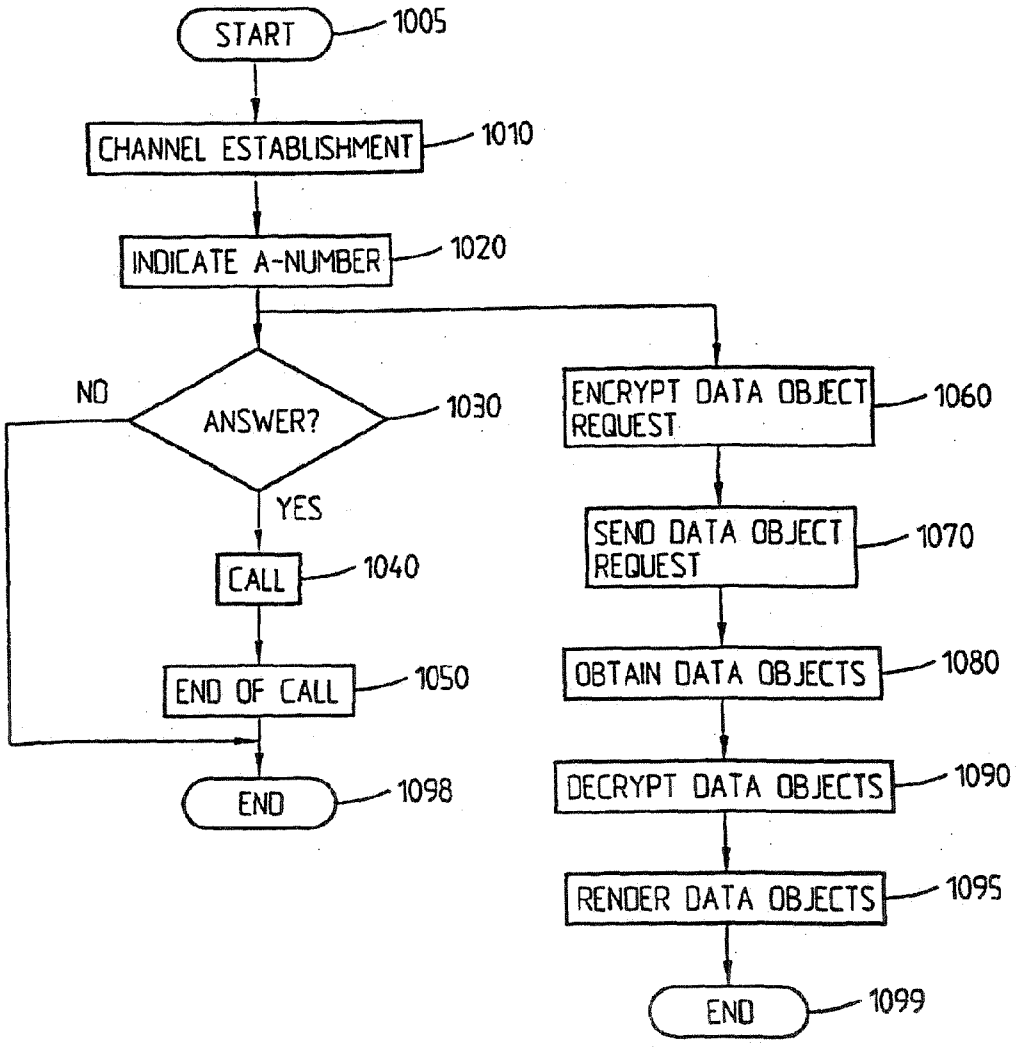
START
1005
CHANNEL ESTABLISHMENT
1010
INDICATE A-NUMBER
1020
NO
ANSWER?
1030
YES
CALL
1040
END OF CALL
1050
END
1098
ENCRYPT DATA OBJECT REQUEST
1060
SEND DATA OBJECT REQUEST
1070
OBTAIN DATA OBJECTS
1080
DECRYPT DATA OBJECTS
1090
RENDER DATA OBJECTS
1095
END
1099

Fig. 7

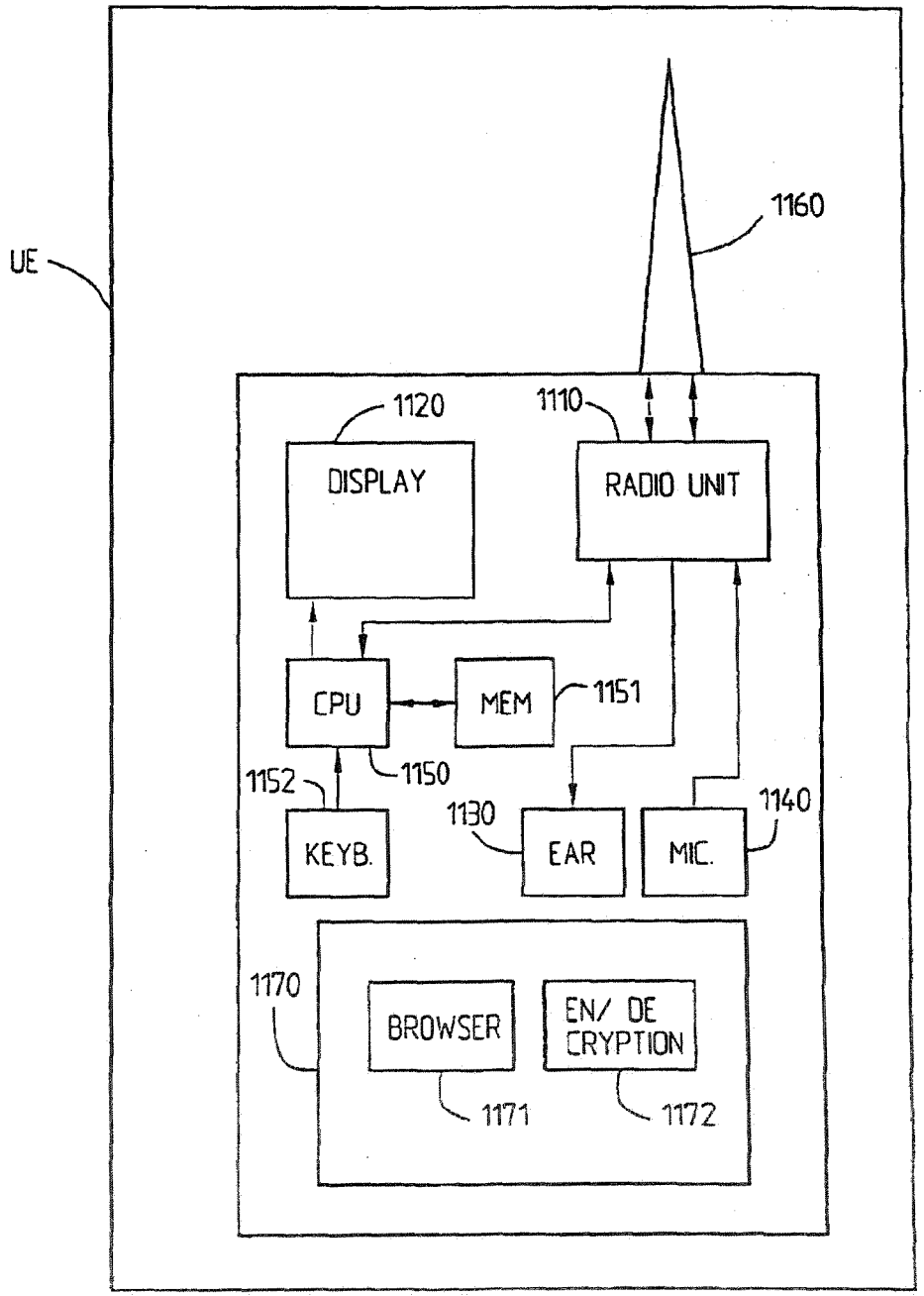
UE
1160
1120
1110
DISPLAY
RADIO UNIT
CPU
MEM
1151
1152
1150
1130
1140
KEYB.
EAR
MIC.
1170
BROWSER
EN/ DE
CRYPTION
1171
1172

Fig. 8

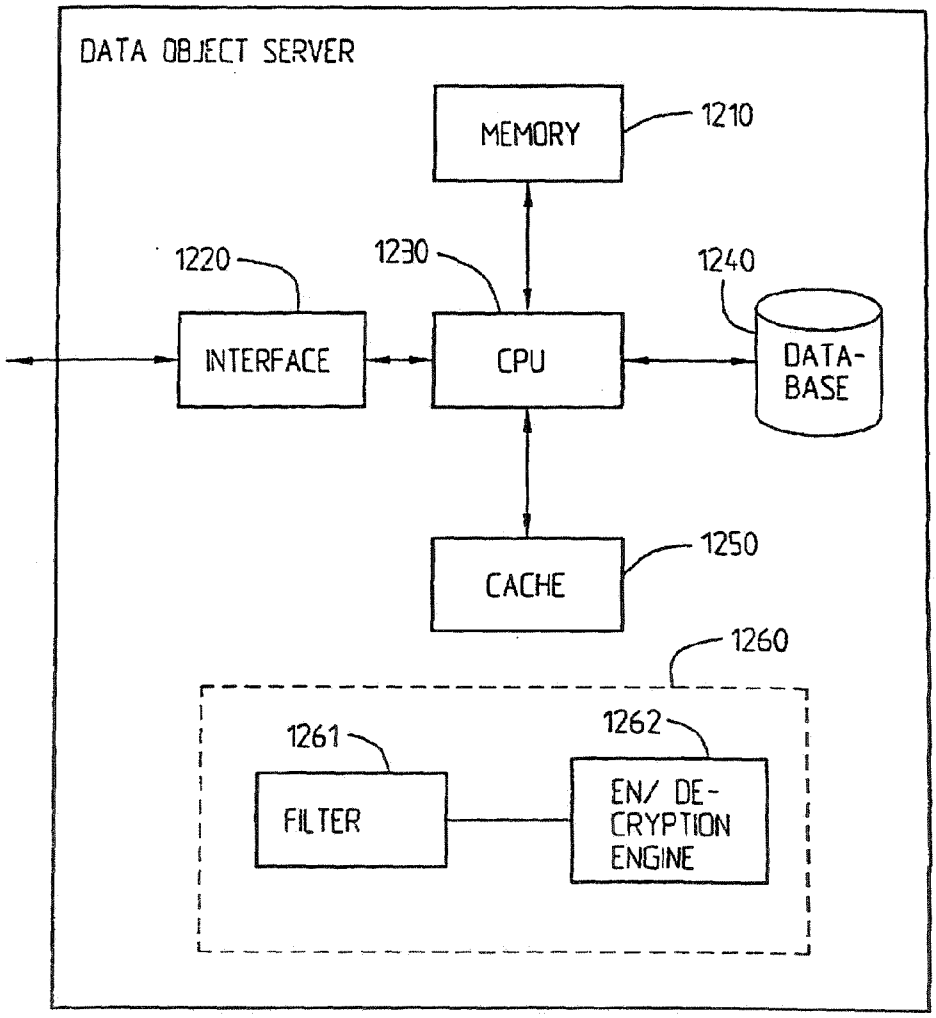
DATA OBJECT SERVER
MEMORY
1210
1220
1230
1240
INTERFACE
CPU
DATA-
BASE
CACHE
1250
1260
1261
1262
FILTER
EN/ DE-
CRYPTION
ENGINE

Fig. 9

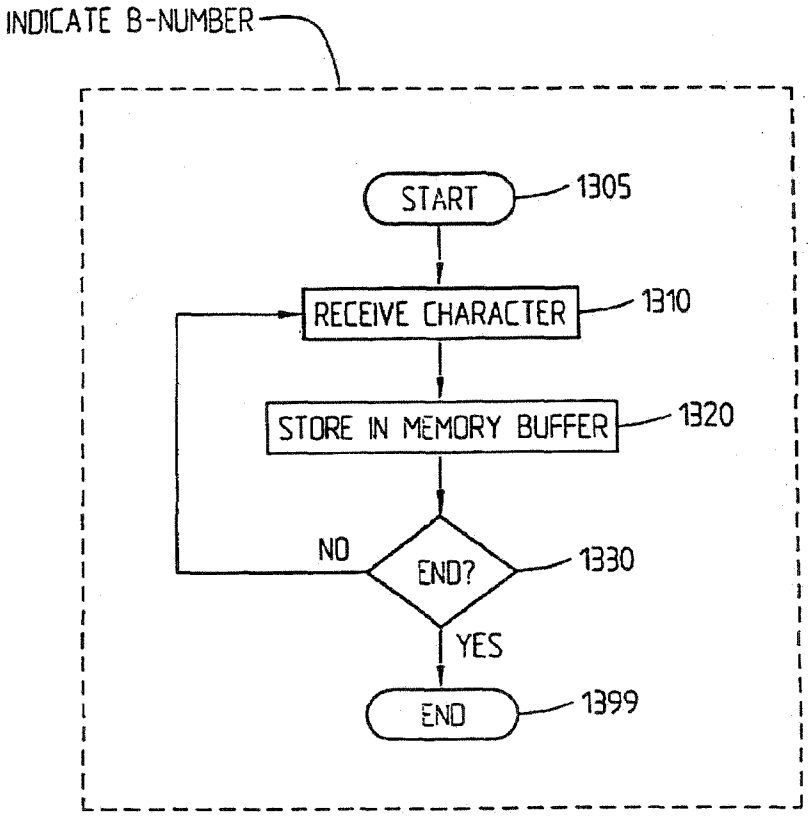
INDICATE B-NUMBER
START
1305
RECEIVE CHARACTER
1310
STORE IN MEMORY BUFFER
1320
NO
END?
1330
YES
END
1399

Fig. 10

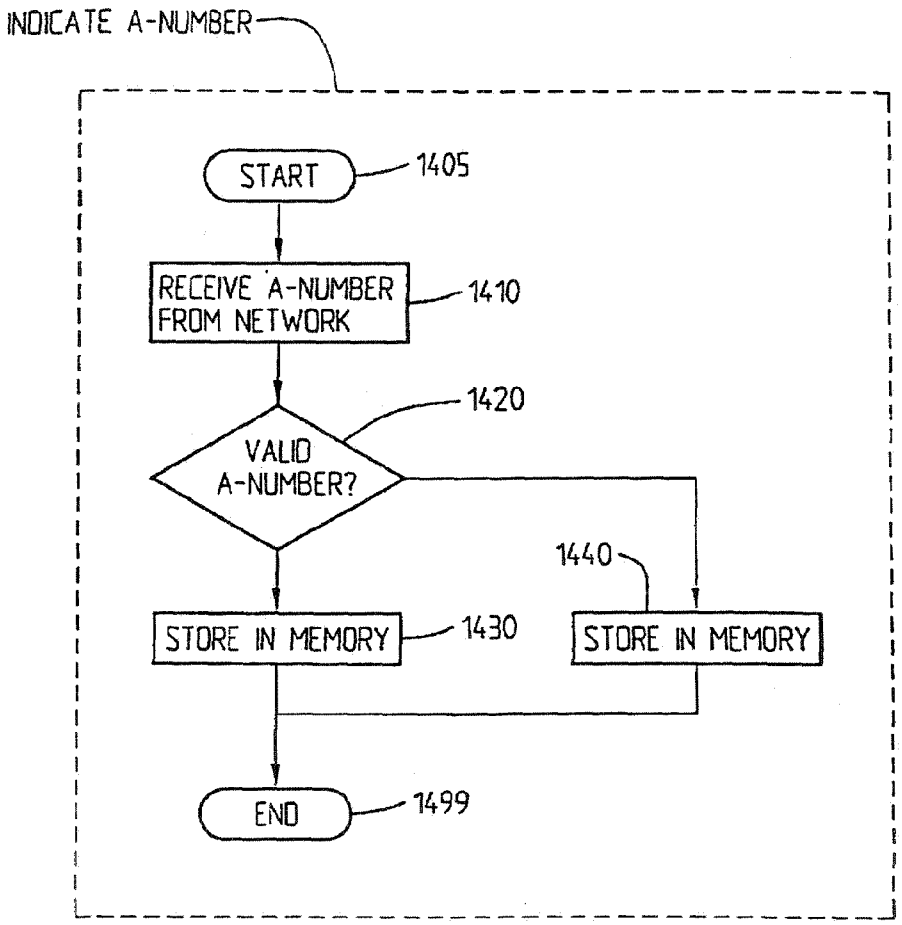
INDICATE A-NUMBER
START
1405
RECEIVE A-NUMBER FROM NETWORK
1410
1420
VALID A-NUMBER?
1440
STORE IN MEMORY
1430
STORE IN MEMORY
END
1499

Fig. 11

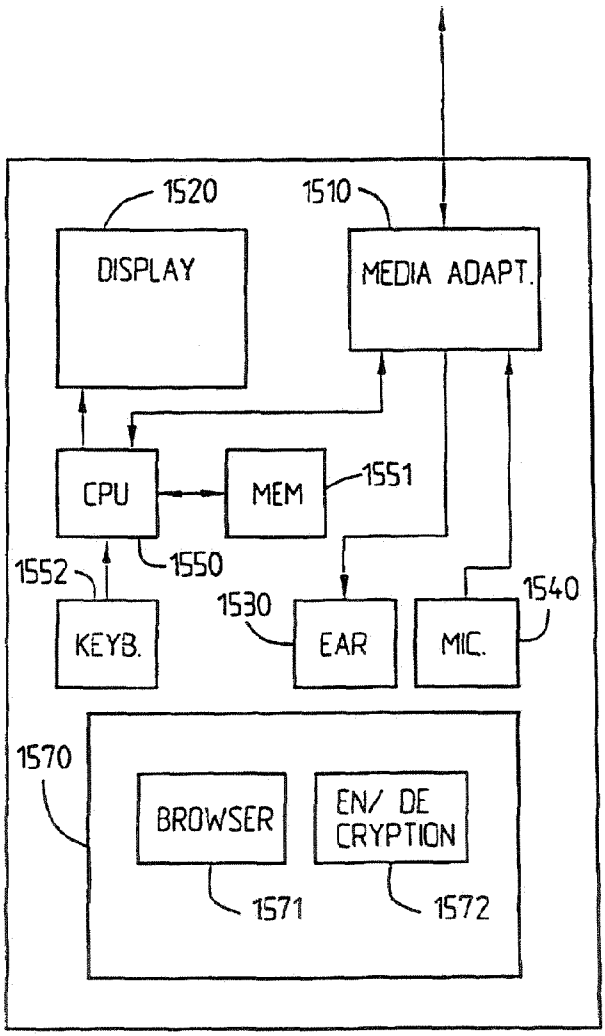
1520
1510
DISPLAY
MEDIA ADAPT.
CPU
MEM
1551
1552
1550
1530
1540
KEYB.
EAR
MIC.
1570
BROWSER
EN/ DE
CRYPTION
1571
1572

Fig. 12

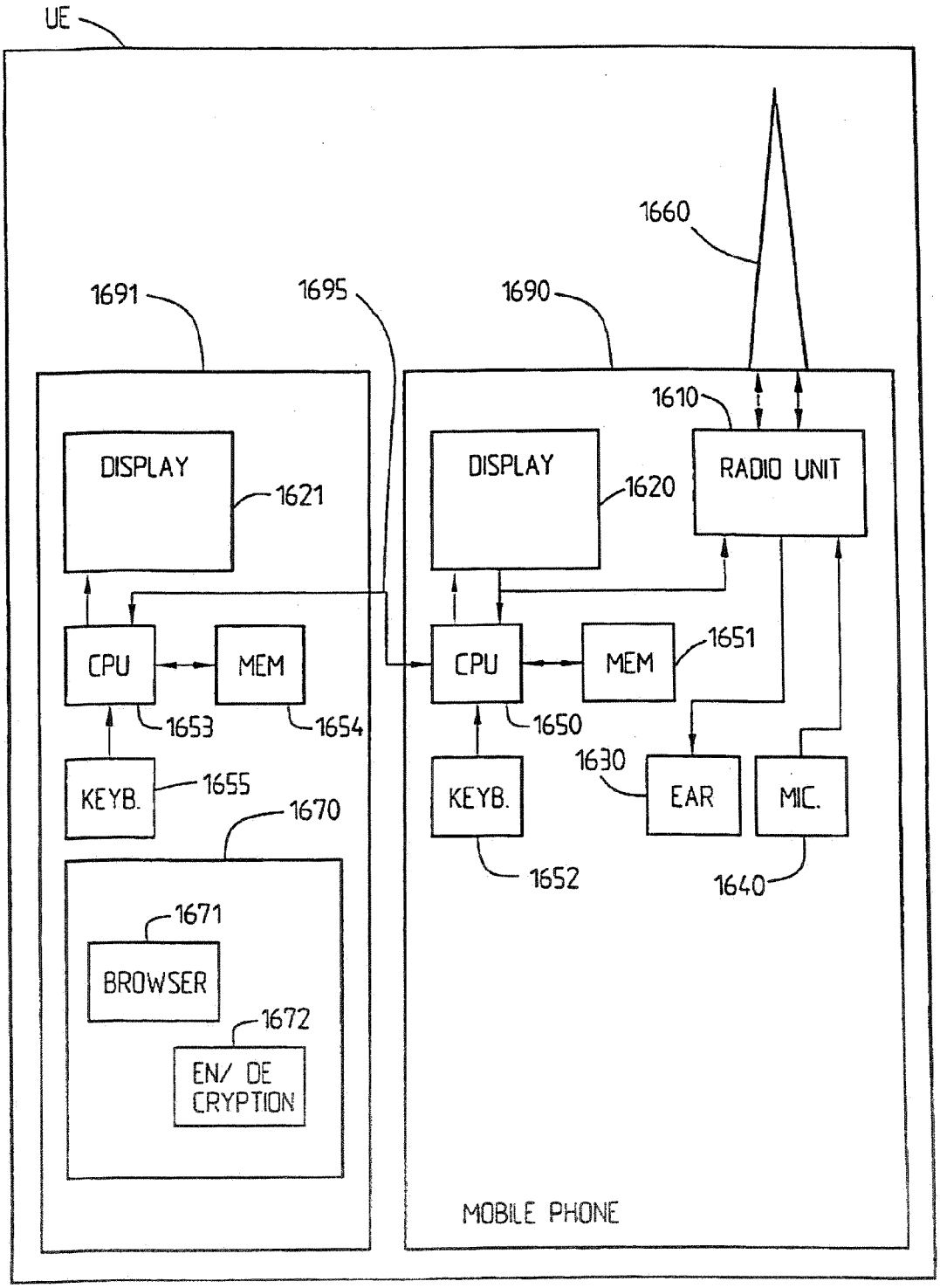
UE
1660
1691
1695
1690
1610
DISPLAY
1621
DISPLAY
1620
RADIO UNIT
CPU
MEM
1653
1654
CPU
MEM
1651
1650
KEYB.
1655
1670
KEYB.
1630
EAR
MIC.
1652
1640
1671
BROWSER
1672
EN/ DE CRYPTION
MOBILE PHONE

Fig. 13

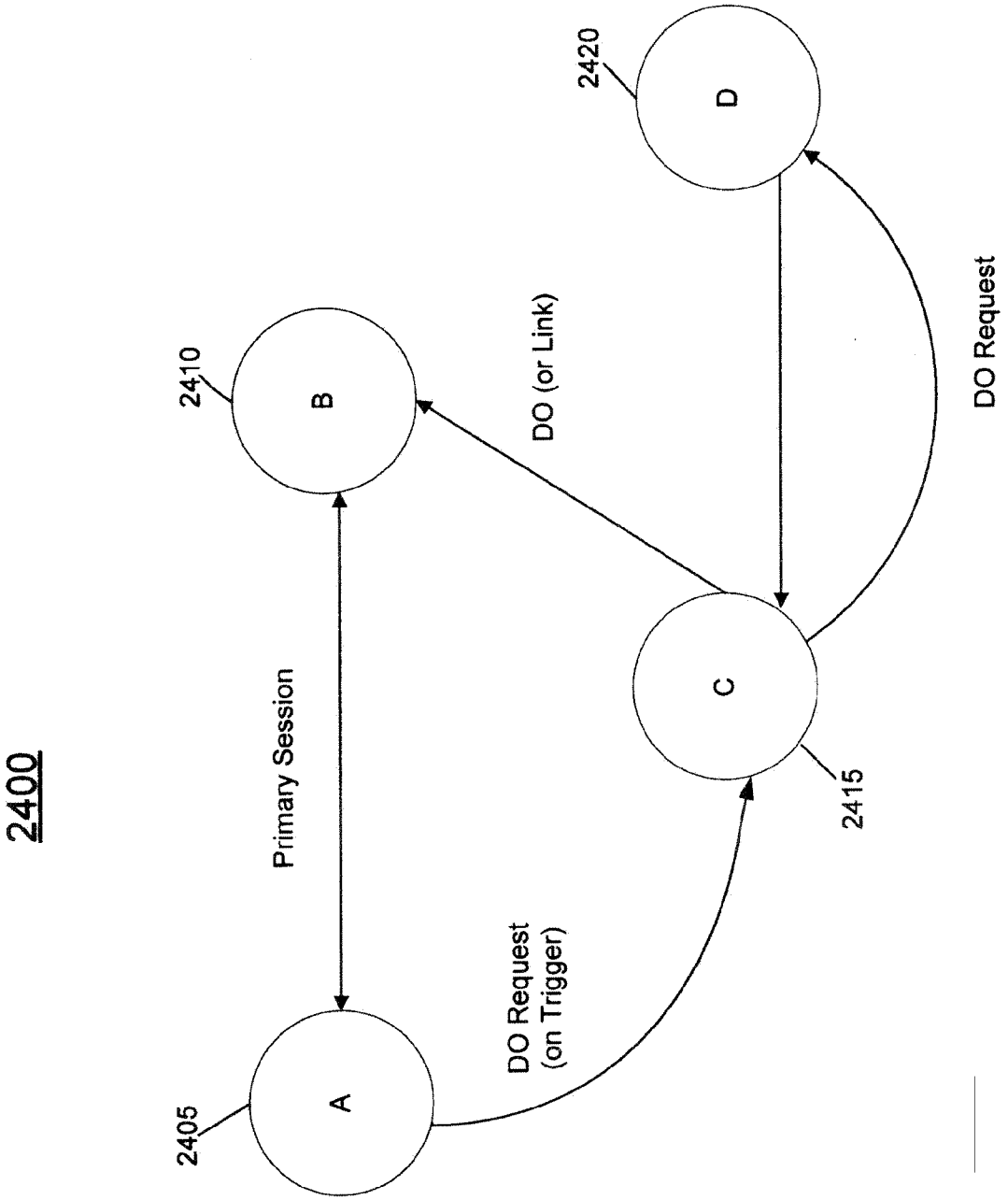
2400
2405
A
2410
B
2415
C
2420
D
Primary Session
DO (or Link)
DO Request
(on Trigger)
DO Request

Fig. 14

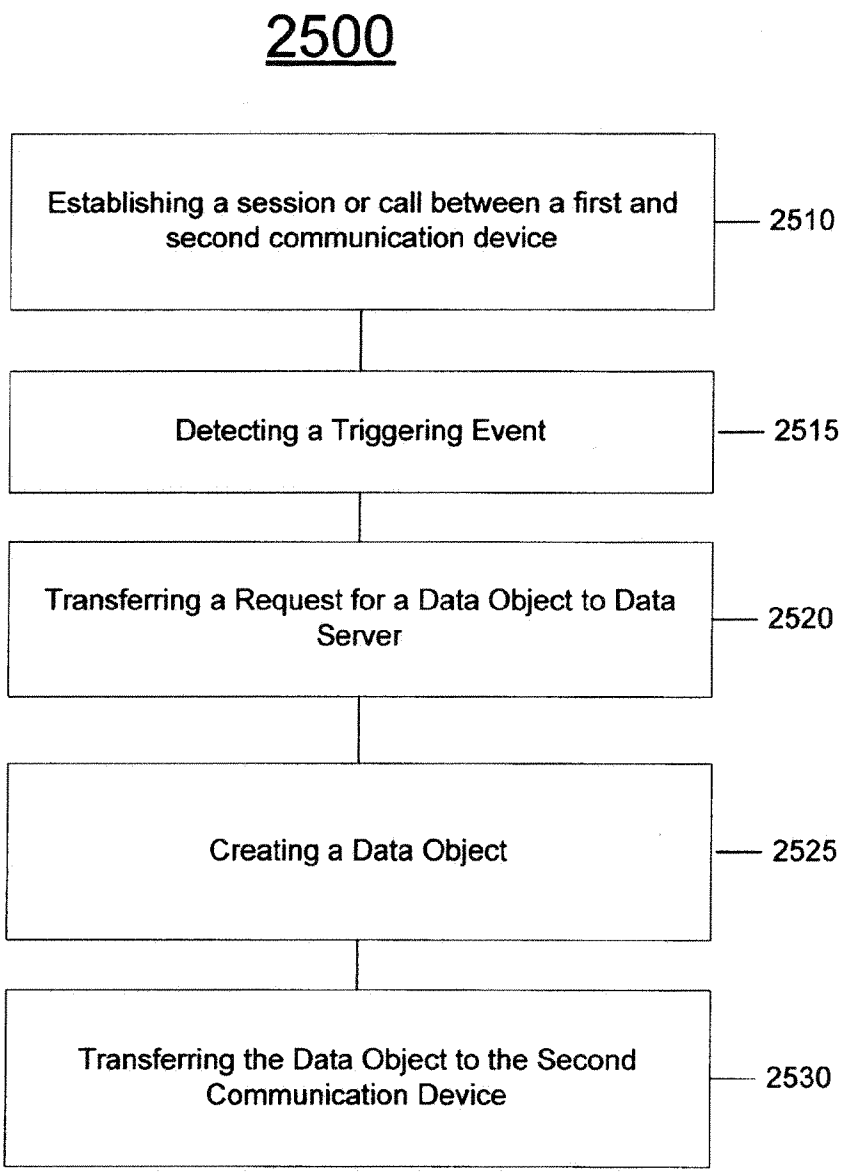
2500
Establishing a session or call between a first and second communication device
2510
Detecting a Triggering Event
2515
Transferring a Request for a Data Object to Data Server
2520
Creating a Data Object
2525
Transferring the Data Object to the Second Communication Device
2530

Fig. 15

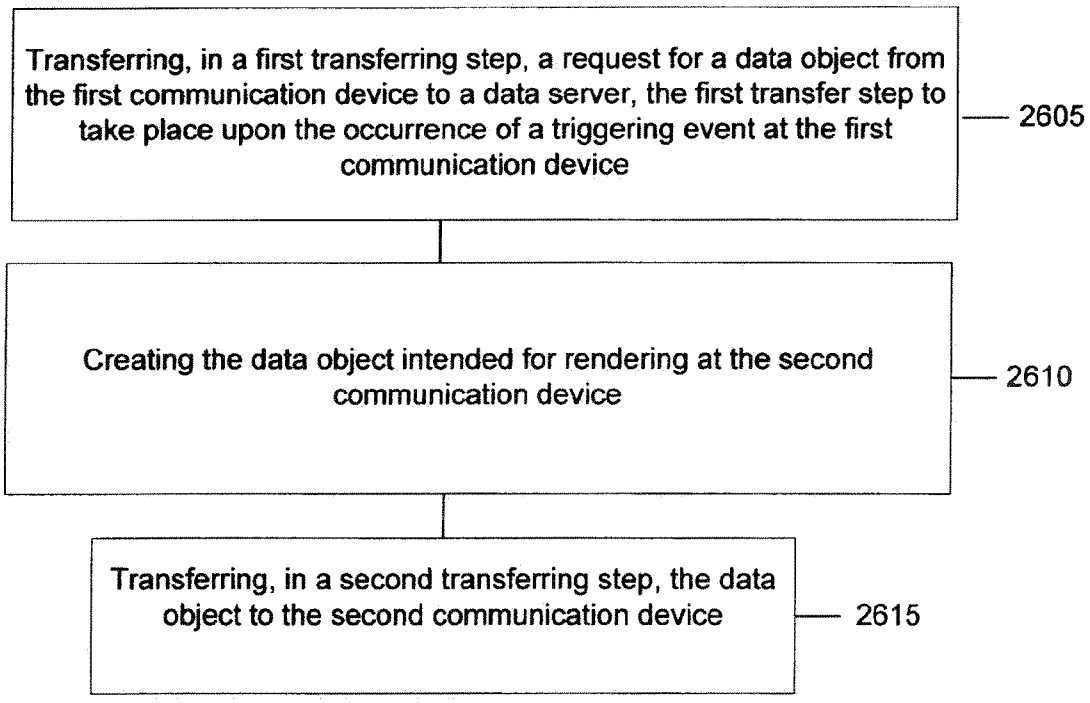
2600
Transferring, in a first transferring step, a request for a data object from the first communication device to a data server, the first transfer step to take place upon the occurrence of a triggering event at the first communication device
2605
Creating the data object intended for rendering at the second communication device
2610
Transferring, in a second transferring step, the data object to the second communication device
2615

Fig. 16

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/052655

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04Q7/38

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)
H04Q

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 922 721 B1 (MINBORG PER-AAKE [SE] ET AL) 26 July 2005 (2005-07-26) cited in the application	1,7-10, 16-18
Y	column 2, line 50 - line 52	2-6, 11-15
	column 8, line 17 - column 11, line 4 column 13, line 21 - line 62	
Y	US 2002/077123 A1 (OTSUKA SHUJI [JP] ET AL) 20 June 2002 (2002-06-20)	2-6, 11-15
A	paragraphs [0026], [0067]	1,7-10, 16-18
	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 June 2008	03/07/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Zembery, Peter

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/052655

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 2002/021696 A1 (MINBORG PER-AKE [SE] MINBORG PER-AAKE [SE]) 21 February 2002 (2002-02-21) cited in the application paragraphs [0014], [0045] - [0068], [0285]	1-18
A	US 2006/114845 A1 (MINBORG PER-AKE [SE]) 1 June 2006 (2006-06-01) cited in the application claims 12-14	1-18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2008/052655

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