

Method and Apparatus for Exchange of Information in a Communication Network

BACKGROUND

The present invention relates generally to a method and apparatus for exchanging information in a communication system. More specifically, the invention relates to a communication system, which connects to a private or public data communication network and to a public or private telecommunication network.

The present evolution of data-communication is such that more and more users gain access to the Internet worldwide. Internet has become both a source of knowledge but also a market place for business, and it is attracting more and more users. Currently there is a high pressure on the data-communications industry to provide solutions that allow everyone to gain access to Internet. Broadband solutions are continuously developed and both local as well as national access networks are planned and launched. The presently most common method of modem access through the telecommunications network (e.g., the Public Switched Telecommunication Network, PSTN provider) is being replaced by other ways of access, with a possibility to higher data rates, e.g., through electric power lines or cable TV.

At the same time, the telecommunications industry is struggling another battle; that of providing mobility to each and every user. Traditionally, telecommunication has been focused on voice communication. With the increase of data communication however, other demands are arising (e.g., higher data rate transfer), but also new possibilities. Evolutions of mobile systems are presently in a period when more and more packet-based systems will be deployed. Packet switched systems has, in contrast to circuit switched systems, certain advantages when it comes to transfer of data-communication. In a packet switched system, a user is only utilizing a

transmission resource when system control signaling or user information is transmitted. In a circuit switched system, a user is allocated a transmission resource continuously, even though no current transfer is active. Circuit switched systems has some obvious advantages in real-time voice communication, since it is difficult to predict the communication for real time transfer. For data-communication, it is not as important to predict the transmission resources required, since the demands on delay and delay variations are not as crucial to the communication quality as for voice. It is therefore possible to allow more users onto the transmission resources by allowing usage thereof only when there is something to transmit and leave the channel available for additional users otherwise.

One such system is the packet data evolution of the mobile communication system pursuant to the ETSI GSM specification, called General Packet Radio Service (GPRS). With GPRS, higher bit rates and more users may be allowed than what is possible today, when data communication is deployed on a circuit switched channel. GPRS is a step towards mobility for data communication users, in contrast to GSM, which is optimized for mobility for "traditional" telecommunication users, i.e., real-time voice communication users.

The data-communication run over the telecommunications networks today is usually initiated by an access to an Internet- or a mail server. A user logs on to a distant server and accesses the data-communications network through e.g., modem pools. The user dials up the modem pool and is therefrom connected to a server, from which access can be made to both local as well as global networks. Browsers like e.g., Microsoft Explorer or Netscape Navigator are used to navigate on the Internet and switch between Internet pages or addresses. Users and institutions usually design their own data objects, or homepages, on an internal or external network that provides personal information or any other kind of information. Once connected to the data network a user may access these data objects by entering the correct address. The address is often selected by combining a node name in the network (e.g. server name) and an arbitrary text-string. Typically, it is not trivial to find a desired data object, since the text strings and server names are not obvious.

Addressing in a telecommunications network, e.g., when engaging in a voice communication is usually performed by entering a telephone number on a User Equipment (UE), like a mobile telephone. A telephone number is a, world-wide, unique addressing string. A calling party (A-party) dials the addressing string (B-number) to the called party (B-party). Dependent on what type of network the A-party is a subscriber on, the call request is routed through one or several public telecommunication networks to the correct addressee and the communication may begin.

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The above principle also applies when a user wish to connect to the Internet from a computer connected to a telecommunications network. The user connects to a data-communications network by dialing a B-number to a modem pool, from which accessing the data-communications network is possible. There are no information or interaction possibilities with the called server other than this access opportunity.

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Applicants have identified that there is a problem in the present way of accessing the Internet for specific data objects because of the non-obvious way of addressing data objects. There is further a need in the telecommunications industry to provide a simpler way of accessing the Internet and to guide a user by other means than a modem number to call, from where the user is left on her own to be further guided to the desired homepage or data object.

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SUMMARY

The present invention overcomes the above identified deficiencies of identifying and finding a data object and navigate between a set of data objects by applying a novel connection between a data-communications network and a telecommunications network.

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In one aspect of the present invention a technique for connecting a dialed B-party number to a data object is described. The connecting of a B-party number to a specific data object, hereafter referred to as phonepage, will allow an A-party direct

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access to information that a B-party wishes to display to a calling party. 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 A-party user equipment.

Dependent on the type of equipment used by the A-party, the node storing the phonepages may, upon detection of type of equipment, select the most advantageous way of displaying a selected data object.

Also, dependent on the A-party user equipment, the phonepage may provide different levels of interaction possibilities, i.e., only display information, or be a fully interactive data object with a duplex communication between the A-party and the node housing the memory in which the phonepage is stored.

The phonepages may be configured to be displayed automatically or by indication from the A-party. In a variant of the invention also a B-party has the same capabilities of obtaining phonepages upon reception of an A-number in conjunction with an incoming call.

In another aspect of the present invention, a node in a data-communication or telecommunication system is described. The node consists of at least a data base memory including at least indications of the phonepages and upon access from a remote request, respond with said indication.

The transfer of the indication to a calling A-party may be dependent on type of connection and access technology used in the connection. For example in a connection where both circuit switched and packet switched communication is simultaneously possible, the indication may be transferred on a packet switched communication resource and, e.g., voice communication may be initiated on the circuit switched communication resource. In other types of connections, two data

flows may be set-up on one or several simultaneous packet switched communication resources, e.g., speech and data transfer. Another example is when voice communication is initiated over a circuit switched communication resource and the phonepage indications are transferred over a packet switched channel with limited performance such as an SMS channel.

According to the invention a method of retrieving an object in a first user equipment connectable via a first communication channel with a second user equipment comprises a number of steps. In a first step acquiring an address indication. In a second step determining the occurrence of a triggering event assembling a request for an object associated with the address indication, the request comprising at least two parameters, a first parameter representing the acquired address indication and a second parameter representing the determined triggering event. In a third step sending the request for the object via a second communication channel to a data object server. In a fourth step receiving the data object or an indication of the object from the data object server in view of the parameters. And finally in a fifth step processing the received object or indication of the object.

In some versions of the method the first communication channel and the second communication channel are concurrent communication channels. In other versions of the method the first communication channel and the second communication channel are non-concurrent communication channels.

The first communication channel is can be either circuit switched communication or a packet switched communication channle and the second communication channel can be either a circuit switched communication channel or a packet switched communication channel.

The address indication can advantageously either be a telephone number of the first user equipment and/or of the second user equipment.

In some versions of the method the first user equipment is an originating user equipment and the second user equipment is a terminating user equipment. In other versions of the method the second user equipment is a originating user equipment and the first user equipment is a terminating user equipment.

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Advantageously a parameter of the request can be one or more of a representation of a code indicating home operator, a representation of a code indicating data bearer type, a representation of a code indicating the vendor, a representation of a code indicating the type of the user equipment, a representation of a code indicating an available and/or attached accessory such as a handsfree set, a chatboard, an mp3
10 player, a radio, a barcode reader, a PDA, and/or any blue tooth equipment, a representation of a code indicating if an accessory, eg. a handsfree accessory, such as a headset or a car handsfree set, is active or not (an active handsfree accessory will entail an audio data object), or a representation of a code indicating the version of
15 the method.

Preferably request is encrypted before sending. Advantageously the received data object is encrypted and in that the step of processing comprises decryption of the data object.

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A triggering event can be one or more of an event of an outgoing call being or is about to be initiated, an event of an addressed called party answering a call, an event of an addressed called party being busy, an event of an addressed called party not answering, an event of an addressed called party rejecting a call, an event of an incoming call being imminent or having just started, an event of a call being
25 disconnected, an event of a call being conducted. A triggering event can also be one or more of a new cell in the public land mobile network (PLMN) has been selected, or the location of a subscriber has changed. Preferably when the address indication is a representation of the new cell or the location of the subscriber, and in that the requested data object is related to the new cell or the location of the subscriber such
30 as a local advertisement. A triggering event can be that a new Public Land Mobile Network (PLMN) operator is selected. Preferably when the address indication is a

representation of the new Public Land Mobile Network operator, then the requested data object can be related to the new Public Land Mobile Network operator, such as comprising a pricelist of the new Public Land Mobile Network operator to be presented. A triggering event can be that a new country of registration is made.
5 Preferably when the address indication is a representation of the new country of registration, then the requested data object is related to the new country.

In some versions of the method the step of determining a triggering event further determines if there are any additional triggering events during the time a call is being
10 conducted to thereby be able to initiate further data object requests during the call.

Advantageously commercial information can be sold by calling a telephone number and the triggering event can then be payment completion, such as when the call is connected by means of the first communication channel or when the call is
15 disconnected. Preferably the data object is either the commercial information or a representation of the commercial information.

The triggering event can be an event of a designated button on a user equipment being pressed. Then the address indication can be a telephone number comprised in
20 a list in the first user equipment. Preferably the telephone number is a telephone number of either one of a missed incoming call, an outgoing call, or an incoming call.

Advantageously a parameter of the request can be a representation of a code
25 identifying a data object server. Then the representation of a code identifying a data object server preferably represents a server name or a plain IP address.

Whenever the first user equipment is not involved in a call or upon call completion, data objects can be obtained from the data object server and stored locally in the first
30 user equipment to be readily available upon the next triggering event.

Advantageously a universal resource locator of the data object server is preprogrammed into the first user equipment.

5 In some versions of the method the data object server is at least logically divided into a name server and an object server, and in that the step of sending the request for the object via a second communication channel is sent to the name server. Then in some versions the step of receiving the indication of the object from the data object server can comprise a step of receiving the indication of the object from the name server, and then additionally that the step of processing the indication of the object
10 comprises the steps of sending a request for the object to the object server by means of the received indication of the object, receiving the data object from the object server in view of the parameters, and processing the received object. Then in other versions the step of receiving the data object from further comprises the steps of the name server dispatching the request for the object to the object server, and receiving
15 the data object from the object server in view of the parameters. A universal resource locator of the name server can preferably preprogrammed into the first user equipment.

In some versions, the received object or indication of the object is from a selection of
20 data objects in dependence of an identity of the requester, e.g. a returned phonepage to a requester may take different appearances in dependence of who is requesting the phonepage.

In some versions, the received object comprises a sound which at least temporarily
25 replaces, or is added to, a calling sound of the first user equipment. In other versions the received object comprises a sound, and in that a calling sound of the first user equipment is at least temporarily muted, the sound being rendered instead of the calling sound.

30 One embodiment of the invention is a stationary telephone comprising graphic possibilities, which telephone executes any version of the method according to the invention as described herein. Another embodiment of the invention is a mobile

telephone comprising a central processing unit, a memory unit, and at least one display, which mobile telephone executes any version of the method according to the invention as described herein. A further embodiment of the invention is a mobile telephone comprising a central processing unit, a memory unit, a removable memory unit (e.g. a SIM card) and at least one display, which mobile telephone executes, preferably out of the removable memory unit, any version of the method according to the invention as described herein. Another embodiment of the invention is a mobile telephone comprising a central processing unit, a memory unit, and at least one display, which mobile telephone has downloaded the method according to any version of the method according to the invention as described herein, into the memory unit. Another embodiment of the invention is a data equipment comprising a central processing unit, a memory unit, and at least one display, such as a personal digital assistance device or a laptop computer, having mobile telephone capabilities or being connected to a mobile telephone, which data equipment executes the method according to any version of the method according to the invention as described herein.

According to the invention a telecommunication system comprises a first user equipment, a second user equipment, and a communication network to establish a first communication channel between the first user equipment and the second user equipment, and a data object server. The first user equipment is arranged to acquire an address indication, determine the occurrence of a triggering event, and assembling a request of an object associated with the address indication. The request comprises at least two parameters, a first parameter representing the acquired address indication and a second parameter representing the determined triggering event. The first user equipment is arranged to send the request of an object via a second communication channel to the data object server. The data object server is arranged to return the data object or an indication of the data object in view of the parameters to the first user equipment via the second communication channel in response to the request. The first user equipment is arranged to receive the data object or the indication of the data object from the data object server and to then process the received data object or the indication of the data object.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be more thoroughly described and features and advantages will become readily apparent by reading the following detailed description, where
5 references will be made 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;
- 10 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, when data and voice communications can be conducted simultaneously;
- 15 Figure 5 illustrates a third flow diagram of a subscriber interaction in an A-party UE according to another embodiment of the present invention, when data and voice communications can not be conducted simultaneously;
- Figure 6 illustrates a flow diagram of a subscriber interaction in a B-party UE according to an embodiment of the present invention;
- 20 Figure 7 illustrates an exemplary block diagram of a UE according to one embodiment of the invention;
- Figure 8 illustrates a block diagram of a data object server in a data network according to one embodiment of the invention;
- Figure 9 illustrates a flow diagram of B-number indication procedure according
25 to one embodiment of the present invention;
- Figure 10 illustrates a flow diagram of A-number indication procedure according to one embodiment of the present invention;
- Figure 11 illustrates a data and signaling flow according to one embodiment of the present invention;
- 30 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.

5 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 for both data and voice communication. Voice communication can be transported over circuit switched as well as packet switched systems. Both fixed as well as mobile circuit and packet switched systems with any suitable 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 can be used. 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 include 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 to the present invention also includes a data object server, 130. Typically, a plurality 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. 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) for example 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 a user equipment will determine which name server is used. In a preferred embodiment a 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, direct a request of a 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.

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, 161, 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, 162, 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.

According to one aspect of the present invention a data object server, 130, includes graphical information objects, i.e., phonepages, associated to an address indication such as 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 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 separated 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
5 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. After having received the B-party
10 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 payservice is used, may occur. This is of course also dependent upon the A-party device, UE, 100, used.

15 In a variant of the present invention, the UE, 100, does not support the use of a PS communication channel whereby data objects can be retrieved by other means, such as a Short Message Service (SMS) or a temporary CS communication channel. The data objects retrieved can in some cases be just the URIs to a desired phonepage which is presented by means of a SMS. In cases when the reception of a SMS is
20 used as a triggering event, the user equipment can scan the incoming SMS, and if any URI is found, then start a browser with the received URI. 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
25 in figure 1).

Figure 2 illustrates a flow diagram of a procedure in an originating 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
30 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). A manual

request is especially suitable when a phone page of a number which is last called, missed, or last received, i.e. a phonepage associated with a number stored in the user equipment. The phonepages can have been stored in association with the appropriate number within the user equipment for a true offline session, or be retrieved on demand. The triggering event, 210, may be at least one of a number of events, e.g.;

- A call is conducted under which several triggering events can be generated, to thereby generate a flow of phone pages.
- An outgoing call is or is about to be initiated.
- An addressed B-party answers a call.
- 10 • 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).
- 15 • An incoming call is imminent or has just started.
- A conference call is or is about to be initiated.
- A call is disconnected.
- A subscriber is put on hold.
- A UE is about to be switched off.
- 20 • 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.

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Certain triggering events may provide special services by for example a network operator or automatically provide information or advertisement relating to a location. These triggering events may be one or more of:

- A new cell in the PLMN has been selected.
- 30 • The location of a subscriber has changed. Local advertisement can be provided, such as a nearest fast food chain restaurant.

- A new Public Land Mobile Network (PLMN) operator is selected. This, for example, enables a pricelist of the selected PLMN operator to be presented.
- A new country of registration is made. This triggering event can be used to supply one or more phonepages concerning the new country.

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As mentioned, several triggering events during a call can generate requests for phonepages. There can be a greeting phonepage which is used before voice communication is commenced, one or more phonepages (which may be pushed, i.e. ordered/sent by the other party) during the conversation and a final goodbye
10 phonepage in connection with termination of the voice communication. All the phonepages can be retrieved before the voice communication commences and cached in respective user equipment, both on the originating and terminating side. Caching of phonepages in the respective user equipment is especially suitable if one or both of the user equipment does not support simultaneous voice and data communication.

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The A-party initiates a request in step 230, possibly after encryption in step 220, and sends this request via a communication channel, (e.g., packet switched as illustrated in Figure 1) to a data object server. The data object request may include at least one of a number of different parameters, e.g.;

- 20 • A code indicating home operator.
- A code indicating data bearer type.
- A code indicating the vendor, i.e. brand/manufacturer, of the user equipment, e.g. Nokia.
- A code indicating the type of the user equipment, e.g 7110.
- 25 • One or more codes indicating available and/or attached accessories such as a handsfree set, a chatboard, an mp3 player, a radio, a barcode reader, a PDA, and/or any blue tooth equipment.
- A code indicating if an accessory, eg. a handsfree accessory, such as a headset or a car handsfree set, is active or not. An active handsfree headset will preferably
30 entail an audio phonepage presentation.
- A code indicating software versions of the user equipment.

- A requested protocol to be used for transmission (e.g., WAP, WML, HDML, HTML, HTTP).
- 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).
- 5 • 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 or a subscription identity, e.g. IMSI (International Mobile Subscriber Identity).
- A network address of the A-party (e.g. IP address) used by the data object server
- 10 when returning a requested data object.
- A capability code indicating the rendering capabilities of the A-party (e.g. screen resolution, audio etc.).
- A code indicating an encryption scheme and/or encryption key used.
- A code indicating in what country the mobile station is registered (country code).
- 15 • 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 an equipment unique identity.
- A validation code (e.g. a checksum) of the parameters.
- 20 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.

If the data objects comprise one or more phonepages then in the next step follows a rendering procedure in step 260, where the data objects are displayed and/or voiced

25 according to the capability of the UE after which the procedure is ended in step 299. As an example, if a handsfree equipment of a recipient user equipment is active, then it is suitable to at least use the audio interface as a complement to any displayed information. A phonepage can comprise information and functionality for updating a

30 phone book in the recipient user equipment or SIM card. Suitably any updating is only done after acceptance of the recipient. According to one embodiment of the invention, the first time a call is made to or received from someone who does not

exist in a phonebook of the user equipment, then upon reception of a phonepage comprising name and other information, an inquiry is put to a user of the user equipment whether an entry with one or more parts of the information received should be added to the phonebook.

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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.

According to one of the above mentioned embodiments, where a continuous triggering event is that a call is conducted, special advantages may be relevant, e.g. commercial information may be sold in response to a dialed B-number allowing easy payment for information received by means of a phonepage. Single issues of a magazine can be sold by calling a pay-number, the originators phonepage giving the name and address to send the magazine. Information that is retrievable by means of a password or the like can be sold by calling a pay-number and receiving a phonepage in return with any paid-for password or the like, suitably when the call is terminated or is ongoing.

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 a, to the data object server, connected memory in another server and the data object, e.g. a phonepage, will be retrieved in step 330. As mentioned previously, the data object server can 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. A dispatch can be described as:

- A user equipment sends a request for a phonepage to the data object server;
- The data object server forwards the request, with all appropriate parameters, to an actual phonepage server;
- 5 - The actual phonepage server transfers the requested phonepage to the user equipment.

A redirect can be described as :

- A user equipment sends a request for a phonepage to the data object server;
- 10 - The data object server returns a URI of an actual phonepage server to the user equipment;
- The user equipment makes a new request to the actual phonepage server using the supplied URI;
- The actual phonepage server transfers either directly or indirectly (e.g. via the name server) the requested phonepage to the user equipment.
- 15

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. The request in step 310 may also include an indication of an identity, e.g. a telephone number, of the requester, in which case a returned phonepage or phonepages can be from a selection of phonepages in dependence of the identity of the requester. 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 699.

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The above described general solution to obtain a data object connected to an address indication may of course be varied in a number of different ways, depending on, e.g., the capabilities of communication of the UEs involved. For example, a method of simultaneously requesting, encrypting, obtaining, decrypting and rendering a sequence of data objects can also be applied in a variant of the present invention.

30

User equipment, like mobile stations, are today developed to handle both packet switched and circuit switched communication simultaneously. These are generally referred to as class A mobile stations. Other mobile station design allows packet switched and circuit switched communication alternatively, i.e., no simultaneous PS and CS transmission and reception. These are generally referred to as class B mobile stations.

In Figure 4 is illustrated a flow diagram of procedures included when a circuit switched connection is initiated from a UE which is a class A mobile station according to one aspect of the present invention. In step 405, the procedure is started when a class A 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 start to set 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. These procedures may in a class A mobile station be simultaneous.

For the circuit switched procedures, a voice connection with a B-party is initiated in step 430, 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 3, 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.

As mentioned above, a class B type mobile station cannot handle two simultaneous connections, one packet and one circuit switched, so for some events another approach to retrieve a phonepage is then necessary when setting up a circuit switched
5 voice connection

Figure 5 illustrates a similar procedure to that explained with reference to Figure 4, but with a mobile station of a class B type used in the A-party, call originating end. In step 505 the procedure starts and in step 510, the B-number is indicated as
10 described above in reference to figure 4. In this embodiment, a step 520 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
15 requested. If it is indicated that a phonepage is not desired, then follows in step 550-560 and 599 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,
20 530, and send, 535, a data object request on a packet switched communication channel. As long as the packet session is not interrupted, 540, the download of data object continues to the A-party. Data objects are received in step 570, decrypted, if encrypted, in step 580 and rendered in step 190. In step 595 the data objects are detected and as long as there is more information to receive, step 595, and there is no
25 interruptions in step 540, 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 550. 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
30 there is no more phonepage data to download. According to another embodiment of the present invention the phonepages for a class B 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 an A-party equipment has been
5 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 6 is illustrated a flow diagram of the procedures in a B-party
user equipment for retrieval of A-party phonepages according to one embodiment of
10 the present invention when the B-party has the capabilities corresponding to that of a
class A mobile station. The procedure start in step 605, e.g., by an incoming call to a
B-party UE. In step 610 a communication channel is allocated between the UE and
the network, 110, it is connected to. In step 620 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 660 and 670, a request is sent, subsequent to encryption thereof,
15 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 transmission of a data object related to the A-party identity. The UE receives the
data objects, i.e., phonepage in step 680 and after decryption in step 690, if
necessary, the phonepage can be displayed to the B-party user in step 695. A
20 greeting phonepage received by a B-party in a terminating user equipment which has
been requested in response to an incoming call being imminent triggering event
can comprise a personalized call signal of the originator, the A-party, i.e. a caller, an
A-party, identifies him- or herself to a B-party by means of special call signal in the
B-party user equipment. In one version of the invention a sound in a phonepage can
25 replace a call signal sound, preferably only temporary for the duration of the call or
call setup, to thereby use the phonepage sound as a call signal. In another version the
call signal of a phonepage recipient is muted, preferably only for the duration of the
call, to thereby enable only a sound of a phonepage to be heard instead of the normal
call signal.

If the call is answered in 630, 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 698.

- 5 For reasons of clarification, several steps in the signaling between the UE 100 and the communication infrastructure 110; 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
10 assignment and charging) might occur in addition to what has been described in the aforementioned signaling.

- Figure 7 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
15 capabilities. A Central Processing Unit (hereafter CPU) 750 is connected to at least one memory unit 751, and at least one display 720. The CPU 750 may also be connected to a keyboard device or area 752 to allow subscribers to enter for example digits. The memory unit 751 may be non-volatile (e.g. EEPROM or SIM card) in order to retain stored information, should power be temporarily unavailable. The
20 CPU 750 is further connected to a radio unit 710 that may convert incoming and outgoing data to RF modulated signals. The radio unit 710 also connects to an antenna 760 allowing the RF modulated signals to be received/transmitted to an RF compatible media (e.g. air). The radio unit 710 may also directly or indirectly be connected to an earphone 730 and a microphone 740 in order to allow voice
25 communication. The UE may further comprise a plurality of programs, e.g., a browser, 771, that can render at least one type of data object and an encryption/decryption engine 772 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
30 transmission resources within the communication network 10.

Figure 8 illustrates a data object server 130, according to one embodiment of the present invention. The data object server comprises at least one CPU 830 connected to at least one memory device 810, a cache memory 850, at least one database 840 and at least one interface 820. Memory devices 810 and databases 840 may be non-volatile. The interface 820 enables the CPU 830 to send and receive data to/from the data network 120. The cache memory 850 allows storage of frequently used data object so that the CPU 830 may obtain them readily. The database 840 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 including, but not limited to, a filter 861 allowing the data objects to be optimized according to the rendering capabilities of the UE 100; and an encryption/decryption engine 862 allowing data object requests to be decrypted and data objects to be encrypted.

According to a variant of the invention the blocks 810, 820, 830, 840, 850 and 860 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 9 where the B-number indication comprises a start step at 905 and the step 910 of receiving a character from a keyboard arrangement. In response to step 910, storing the character in a memory buffer in the UE in step 920 and checking if the B-number is complete in step 930. If the number is incomplete step 910, 920 and 930 is repeated. If the B-number is complete the B-number indication procedure is concluded in 999. Determination of B-number completion 930 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.

5

A-number indication involves any means of indicating an A-number to a said UE 100. A first example of A-number indication procedure is described with reference to Figure 10 where the A-number indication comprises the step 1005 of starting the procedure and 1010 of receiving an A-number from a communication infrastructure
10 110. In response to step 1010 checking if the A-number was valid (e.g. not blocked, secret or misinterpreted) and if it was valid, storing the A-number in a memory in the UA 100 in step 1030. If the A-number was not valid a flag indicating a non valid A-number is stored in a memory of UE 100. The procedure is ended in 1099.

15 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 162.

Figure 11 illustrates a UE 100 according to a second variant of the invention when
20 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 7 but with the exception that the radio unit 710 and antenna 760 are replaced with a media adapter 1210 that converts incoming and outgoing signals to and from a particular media standard including but not limited to ISDN, ADSL, HDSL, VDSL and Cable
25 networks and any combination thereof.

Figure 12 illustrates a UE 100 according to another embodiment of the invention when the UE 100 is a mobile telephone 1390 possibly without data object rendering capabilities, with an antenna 1360, connected to a PDA 1490 via a communication
30 link 1395. The communication link may for example be realized with an infrared, radio (e.g. Bluetooth) or wire communication arrangement. The PDA 1490 further comprises a CPU 1450 connected to at least one memory unit 1451, and at least one

display 1420. The CPU 1350 may also be connected to a keyboard device or area 1452 to allow subscribers to enter for example digits. The memory unit 1451 may be non-volatile (e.g. EEPROM or SIM card) in order to retain stored information, should power be temporarily unavailable. The PDA 1490 further comprises a
5 collection of programs 1470 including but not limited to a browser 1471 that can render at least one type of data object and an encryption/decryption engine 1472 allowing data object requests to be encrypted and data objects to be decrypted. The mobile phone 1390 is further described in figure 7 where 1320 corresponds to 720, 1310 corresponds to 710, 1350 corresponds to 750, 1351 corresponds to 751, 1352
10 corresponds to 752, 1330 corresponds to 730 and 1340 corresponds to 1340.

The functionality of the present invention can either be preprogrammed into a user equipment or be loaded or downloaded into the user equipment. Alternatively a network operator may provide the application in a SIM card that is provided to the
15 users for access to the a network.

Basically the invention can be said to provide an association between address indications such as telephone numbers to a data object such as an Internet address pointing to a phonepage. When a user dials a telephone number, an Internet address
20 associated with the telephone number is automatically obtained and the content located at the Internet address (i.e. the phonepage) is automatically downloaded and displayed on the user's telephone. At the same time, the user's own phonepage will be downloaded and displayed on the called party's telephone. Besides being associated with a telephone number (possibly both the owner's and also the
25 requester's, giving a possibility to send different phonepages in dependence of who is requesting/receiving them), a phonepage is also associated with a particular event. Examples of such events are when the user dials a telephone number, answers a call, receives an incoming call or when a dialed number is busy. A user can have several different phonepages, each associated with one or several events. This
30 allows a user to provide different types of information to other users depending on the situation. One useful example is the possibility for a user to provide additional

information (such as an e-mail address) if he or she is busy or do not answer. In short the invention can be exemplified by:

- A phonepage event occurs, e.g. a user dials a number on a telephone, e.g. a mobile phone. The mobile phone automatically sends a request to a phonepage number server asking for the Internet address (i.e. the location of the phonepage) associated with the dialed phone number.
- The phonepage number server uses the telephone number together with other parameters to look up the Internet address in a database.
- When the mobile phone receives the location of the phonepage, a browser, or an equivalent functionality, is and launched and a request to retrieve the information at the Internet address is sent.
- The phonepage content is downloaded to the mobile terminal.

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

What is claimed is:

- 5
1. A method of retrieving an object in a first user equipment connectable via a first communication channel with a second user equipment, **characterized in that** the method comprises the following steps:
- acquiring an address indication;
 - 10 - determining the occurrence of a triggering event;
 - assembling a request for an object associated with the address indication, the request comprising at least two parameters, a first parameter representing the acquired address indication and a second parameter representing the determined triggering event;
 - 15 - sending the request for the object via a second communication channel to a data object server;
 - receiving the data object or an indication of the object from the data object server in view of the parameters;
 - processing the received object or indication of the object.
- 20
2. The method according to claim 1, **characterized in that** the first communication channel and the second communication channel are concurrent communication channels or non-concurrent communication channels.
- 25
3. The method according to any one of claims 1 to 2, **characterized in that** the first communication channel is a circuit switched communication or a packet switched communication channel and the second communication channel is a circuit switched communication channel or a packet switched communication channel.
- 30
4. The method according to any one of claims 1 to 3, **characterized in that** the address indication is a telephone number of the first user equipment or a telephone number of the second user equipment.

5. The method according to any one of claims 1 to 4, **characterized in that** a parameter of the request is a representation of a capability of the first user equipment.
6. The method according to claim 5, **characterized in that** the data object is
5 displayed according to the capability of the first user equipment..
7. The method according to any one of claims 1 to 6, **characterized in that** the request is encrypted before sending.
- 10 8. The method according to any one of claims 1 to 7, **characterized in that** the received data object is encrypted and in that the step of processing comprises decryption of the data object.
9. The method according to any one of claims 1 to 8, **characterized in that** the
15 triggering event is one of:
- an event of an outgoing call being or is about to be initiated;
 - an event of an addressed called party answering a call;
 - an event of an addressed called party being busy;
 - an event of an addressed called party not answering;

20 - an event of an addressed called party rejecting a call;

 - an event of an addressed called party being unavailable;
 - an event of an addressed called party being unavailable since an addressed mobile phone being out of coverage;
 - an event of an incoming call being imminent or having just started;

25 - an event of a conference call being or is about to be initiated;

 - an event of a call being disconnected;
 - an event of a call being conducted;
 - an event of a subscriber being put on hold;
 - an event of a new cell in the public land mobile network having been
30 selected;
 - an event of a location of a subscriber having changed;
 - an event of a new public land mobile network operator being selected;

- an event of a new country of registration being made;
- an event of a user equipment being about to be switched off;
- an event of a user equipment having been switched on;
- an event of a designated button on a user equipment being pressed;
- 5 - in response to a talk spurt received by a user equipment;
- an event of a voice mail having been left to a subscriber;
- an event of an SMS having been sent to a subscriber.

10. The method according to any one of claims 1 to 8, **characterized in that** the
10 triggering event is an event of a completeness of the address indication by analysis.

11. The method according to any one of claims 1 to 8, **characterized in that** the
triggering event is an event of a completeness of the address indication by a
designated button.

15

12. The method according to claim 9, **characterized in that** the triggering event
of a call being conducted can generate several triggering events during the call.

13. The method according to any one of claims 1 to 12, **characterized in that**
20 the step of determining a triggering event further determines if there are any
additional triggering events during the time a call is being conducted to thereby be
able to initiate further data object requests during the call.

14. The method according to any one claims 1 to 13, **characterized in that** the
25 triggering event is an event of a designated button on a user equipment being
pressed, and where the address indication is a telephone number comprised in a list
in the first user equipment, and the telephone number is a telephone number of either
one of a missed incoming call, an outgoing call, or an incoming call.

30 15. The method according to claim 12, **characterized in that** commercial
information is sold by calling a telephone number and the several triggering events
are used for payment of the information.

16. The method according to any one of claims 1 to 15, **characterized in that** the at least two parameters further comprise one or more parameters of:
- a parameter representing a requested protocol to be used for transmission,
5 which can be either WAP, WML, HDML, or HTML;
 - a parameter representing an identification of a data object server, which can be a server name or a plain IP address;
 - a parameter representing a code denoting what kind of event that triggered the data object request, which can be an outgoing call setup;
 - 10 - a parameter representing an indicated called number associated to at least one terminating party user equipment;
 - a parameter representing a caller identity, which can represent a caller number of a mobile station;
 - a parameter representing a network address of a caller party used by the data
15 object server when returning a requested data object, which can be an IP address;
 - a parameter representing a capability code indicating the displaying capabilities of the caller party, which can be screen resolution and/or audio;
 - a parameter representing a code indicating an encryption scheme or
20 encryption key used;
 - a parameter representing a code indicating in what country a mobile station is registered;
 - a parameter representing a code identifying a current public land mobile network operator or a public land mobile network where a originating party
25 has a subscription or both;
 - a parameter representing a code indicating a vendor of a mobile station and a type of the mobile station;
 - a parameter representing a code indicating an equipment unique identity;
 - a parameter representing a validation code of the parameters, which can be a
30 checksum.

17. The method according to any one of claims 1 to 16, **characterized in that** one or more of the parameters of the request is:

- a parameter representing a code indicating home operator;
- a parameter representing a code indicating data bearer type;
- 5 - a parameter representing a code indicating the vendor;
- a parameter representing a code indicating the type of the user equipment;
- a parameter representing a code indicating an available and/or attached accessory such as a handsfree set, a chatboard, an mp3 player, a radio, a barcode reader, a PDA, and/or any blue tooth equipment;
- 10 - a parameter representing a code indicating if an accessory, eg. a handsfree accessory, such as a headset or a car handsfree set, is active or not;
- a parameter representing a code indicating the version of the method;
- a parameter representing of a code indicating the version or versions of the software included in the first user equipment.

15

18. The method according to any one of claims 1 to 17, **characterized in that** whenever the first user equipment is not involved in a call or upon call completion, obtaining data objects from the data object server and storing them locally in the first user equipment to be readily available upon the next triggering event.

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19. The method according to any one of claims 1 to 18, **characterized in that** the address indication is a representation of the new country of registration and in that the requested data object is related to the new country.

25 20. The method according to any one of claims 1 to 19, **characterized in that** commercial information is sold by calling a telephone number and the triggering event is payment completion, such as when the call is connected by means of the first communication channel or when the call is disconnected.

30 21. The method according to claim 20, **characterized in that** the data object is either the commercial information or a representation of the commercial information.

22. The method according to any one of claims 1 to 21, **characterized in that** a universal resource locator of the data object server is preprogrammed into the first user equipment.
- 5 23. The method according to any one of claims 1 to 22, **characterized in that** the data object server is at least logically divided into a name server and an object server, and in that the step of sending the request for the object via a second communication channel is sent to the name server.
- 10 24. The method according to claim 23, **characterized in that** the step of receiving the indication of the object from the data object server comprises the step of:
- receiving the indication of the object from the name server;
- and in that the step of processing the indication of the object comprises the steps of:
- 15 - sending a request for the object to the object server by means of the received indication of the object;
- receiving the data object from the object server in view of the parameters;
 - processing the received object.
- 20 25. The method according to claim 23, **characterized in that** the step of receiving the data object from the object server further comprises the step of:
- the name server dispatching the request for the object to the object server;
 - receiving the data object from the object server in view of the parameters.
- 25 26. The method according to any one of claims 23 to 25, **characterized in that** a universal resource locator of the name server is preprogrammed into the first user equipment.
27. The method according to any one of claims 1 to 26, **characterized in that**
- 30 the received object or indication of the object is from a selection of data objects in dependence of an identity of the requester.

28. The method according to any one of claims 1 to 27, **characterized in that** the received object comprises a sound which at least temporarily replaces a calling sound of the first user equipment
- 5 29. The method according to any one of claims 1 to 27, **characterized in that** the received object comprises a sound, and in that a calling sound of the first user equipment is at least temporarily muted, the sound being rendered instead of the calling sound.
- 10 30. The method according to any one of claims 1 to 29, **characterized in that** the received object comprises information and functionality for updating a phone book in the recipient user equipment or SIM card.
- 15 31. A fixed telephone comprising graphic possibilities, **characterized in that** the telephone executes the method according to any one of claims 1 to 30.
- 20 32. A mobile telephone comprising a central processing unit, a memory unit, and at least one display, **characterized in that** the mobile telephone executes the method according to any one of claims 1 to 30.
- 25 33. A data equipment comprising a central processing unit, a memory unit, and at least one display, such as a personal digital assistance device or a laptop computer, having mobile telephone capabilities or being connected to a mobile telephone, **characterized in that** the data equipment executes the method according to any one of claims 1 to 30.
- 30 34. A mobile telephone comprising a central processing unit, a memory unit, a removable memory unit such as a SIM card and at least one display, **characterized in that** the mobile telephone executes the method according to any one of claims 1 to 30 out of the removable memory unit.

35. A mobile telephone comprising a central processing unit, a memory unit, and at least one display, **characterized in that** the mobile telephone has downloaded the method according to any one of claims 1 to 30 into the memory unit.

5 36. A telecommunication system comprising a first user equipment, a second user equipment, and a communication network to establish a first communication channel between the first user equipment and the second user equipment, and a data object server, **characterized in that** the first user equipment is arranged to acquire an address indication, determine the occurrence of a triggering event, and assembling
10 a request of an object associated with the address indication, the request comprising at least two parameters, a first parameter representing the acquired address indication and a second parameter representing the determined triggering event, and is arranged to send the request of an object via a second communication channel to the data object server, and in that the data object server is arranged to return the data object or
15 an indication of the data object in view of the parameters to the first user equipment via the second communication channel in response to the request, and in that the first user equipment is arranged to receive the data object or the indication of the data object from the data object server and to then process the received data object or the indication of the data object.

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37. The telecommunication system according to claim 36, **characterized in that** a parameter of the request is the capability of the first user equipment.

38. The telecommunication system according to claim 37, **characterized in that**
25 the data objects are displayed according to the capability of the first user equipment..

39. The telecommunication system according to any one of claims 36 to 38, **characterized in that** the triggering event is one of:

- an event of an outgoing call being or is about to be initiated;
- 30 - an event of an addressed called party answering a call;
- an event of an addressed called party being busy;
- an event of an addressed called party not answering;

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- an event of an addressed called party rejecting a call;
 - an event of an addressed called party being unavailable, which can be an addressed mobile phone being out of coverage;
 - an event of an incoming call being imminent or having just started;
 - 5 - an event of a conference call being or is about to be initiated;
 - an event of a call being disconnected;
 - an event of a call being conducted;
 - an event of a subscriber being put on hold;
 - an event of a new cell in the public land mobile network having been
 - 10 selected;
 - an event of a location of a subscriber having changed;
 - an event of a new public land mobile network operator being selected;
 - an event of a new country of registration being made;
 - an event of a user equipment being about to be switched off;
 - 15 - an event of a user equipment having been switched on;
 - an event of a designated button on a user equipment being pressed;
 - in response to a talk spurt received by a user equipment;
 - an event of a voice mail having been left to a subscriber;
 - an event of an SMS having been sent to a subscriber.
 - 20
40. The telecommunication system according to any one of claims 36 to 39, **characterized in that** the triggering event is an event of a completeness of the address indication by a designated button.
- 25 41. The telecommunication system according to any one of claims 36 to 40, **characterized in that** the at least two parameters further comprise one or more parameter of:
- a parameter representing a requested protocol to be used for transmission, which can be either WAP, WML, HDML, or HTML;
 - 30 - a parameter representing an identification of a data object server, which can be a server name or a plain IP address;

- a parameter representing a code denoting what kind of event that triggered the data object request, which can be an outgoing call setup;
 - a parameter representing an indicated called number associated to at least one terminating party user equipment;
 - 5 - a parameter representing a caller identity, which can be a caller number of a mobile station;
 - a parameter representing a network address of a caller party used by the data object server when returning a requested data object, which can be an IP address;
 - 10 - a parameter representing a capability code indicating the displaying capabilities of the caller party, which can be screen resolution and/or audio;
 - a parameter representing a code indicating an encryption scheme or encryption key used;
 - parameter representing a code indicating in what country a mobile station is registered;
 - 15 - a parameter representing a code identifying a current public land mobile network operator or a public land mobile network where a originating party has a subscription or both;
 - a parameter representing a code indicating a vendor of a mobile station and a type of the mobile station;
 - 20 - a parameter representing a code indicating an equipment unique identity;
 - a parameter representing a validation code of the parameters, which can be a checksum.
- 25 42. The telecommunication system according to any one of claims 36 to 41, **characterized in that** one or more of the parameters of the request is:
- a parameter representing a code indicating home operator;
 - a parameter representing a code indicating data bearer type;
 - a parameter representing a code indicating the vendor;
 - 30 - a parameter representing a code indicating the type of the user equipment;

- a parameter representing a code indicating an available and/or attached accessory such as a handsfree set, a chatboard, an mp3 player, a radio, a barcode reader, a PDA, and/or any blue tooth equipment;
- a parameter representing a code indicating if an accessory, eg. a handsfree
5 accessory, such as a headset or a car handsfree set, is active or not;
- a parameter representing a code indicating the version of the method;
- a parameter representing of a code indicating the version or versions of the software included in the first user equipment.

10 43. The telecommunication system according to any one of claims 36 to 42, **characterized in that** the first user equipment further comprises a cache memory and in that whenever the first user equipment is arranged, when it is not involved in a call or upon call completion, to obtain data objects from the data object server and store them in the cache memory to readily be available upon the next triggering
15 event.

44. The telecommunication system according to any one of claims 36 to 43, **characterized in that** the triggering event is an event of a designated button on a user equipment being pressed, and where the address indication is a telephone
20 number comprised in a list in the first user equipment, and the telephone number is a telephone number of either one of a missed incoming call, an outgoing call, or an incoming call.

45. The telecommunication system according to any one of claims 36 to 44,
25 **characterized in that** a universal resource locator of the data object server is preprogrammed into the first user equipment.

46. The telecommunication system according to any one of claims 36 to 45, **characterized in that** the data object server is at least logically divided into a name
30 server and an object server, and in that the step of sending the request for the object via a second communication channel is sent to the name server.

47. The telecommunication system according to claim 46, **characterized in that** the first user equipment is, in relation to when it receives the indication of the object from the data object server, arranged to receive the indication of the object from the name server, and, in relation to when it processes the indication of the object,
5 arranged to send a request for the object to the object server by means of the received indication of the object, receive the data object from the object server in view of the parameters, and process the received object.

48. The telecommunication system according to claim 46, **characterized in that**
10 the name server is arranged to dispatch the request for the object to the object server, and in that the first user equipment is, in relation to when it receives the data object from the data object server, arranged to receive the data object from the object server in view of the parameters.

15 49. The telecommunication system according to any one of claims 36 to 48, **characterized in that** the received object comprises a sound which at least temporarily replaces a calling sound of the first user equipment

50. The telecommunication system according to any one of claims 36 to 48,
20 **characterized in that** the received object comprises a sound, and in that a calling sound of the first user equipment is at least temporarily muted, the sound being rendered instead of the calling sound.

51. The telecommunication system according to any one of claims 36 to
25 50, **characterized in that** the received object comprises information and functionality for updating a phone book in the recipient user equipment or SIM card.

52. A mobile telephone comprising a central processing unit, a memory unit, a removable memory unit such as a SIM card and at least one display, **characterized**
30 **in that** the mobile telephone comprises appropriate functionality according to any one of claims 36 to 51 programmed into the removable memory unit.

ABSTRACT**METHOD AND APPARATUS FOR EXCHANGE OF INFORMATION IN A COMMUNICATION NETWORK**

A technique for connecting a dialed B-party number to a data object is described. The connecting of a B-party number to a specific data object, hereafter referred to as phonepage, will allow an A-party direct access to information that a B-party wishes to display to a calling party. 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 A-party user equipment.

(FIG 1)