(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 January 2009 (15.01.2009)

PCT

(10) International Publication Number
WO 2009/006904 A1

(51) International Patent Classification:
H04W 8/18 (2009.01)

(21) International Application Number:
PCT/DK2008/050170

(22) International Filing Date: 4 July 2008 (04.07.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PA 2007 01006 6 July 2007 (06.07.2007) DK

(71) Applicant *(for all designated States except US)*: **FUNDAMENTURE A/S** [DK/DK]; Horkaer 16, 1.sal, DK-2730 Herlev (DK).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **MAEGAARD, Christian** [DK/DK]; c/o Logos Smart Card A/S, Hørkær 16, DK-2730 Herlev (DK).

(74) Agent: **HØIBERG A/S**; St. Kongensgade 59A, DK-1264 Copenhagen K (DK).

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

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

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(54) **Title:** A SIM CARD, A SYSTEM, AND A METHOD FOR A MOBILE COMMUNICATION DEVICE FOR ESTABLISHING AND/OR MAINTAINING ACCESS TO INTERNET COMMUNICATION SERVICES AND A METHOD FOR MANUFACTURING SUCH A SIM CARD

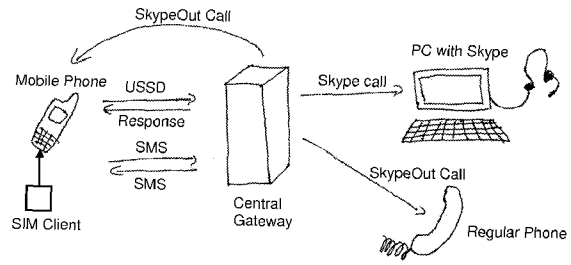

Fig. 1

(57) **Abstract:** The invention concerns a SIM card for a mobile communication device, said SIM card being enabled to use SIM application toolkit for cooperation with said mobile communication device for establishing and/or maintaining access from and to at least one internet communication service (ICS). Preferably, said SIM card comprises a client, which when run is establishing and maintaining access from and to at least one internet communication service (ICS), which is available to a user on a PC, wherein a memory of said SIM card stores a first data record comprising user specific ICS data, such as login name and/or password; and is enabled for storing a second data record comprising callee specific ICS data, such as callee ID and/or presence information, and wherein said client when run is enabling said mobile communication device to transmit at least part of said first data record to a central gateway, which is in connection both to a network for the mobile communication device and said internet communication service, for establishing and/or maintaining a connection to said central gateway; and during a call request, provide said central gateway with at least part of said second data record for providing a connection to at least one selected callee. Accordingly, mobile capabilities of accessing, maintaining and updating ICS services using e.g. a standard mobile phone has been provided by said SIM card, system and method according to the invention. With the invention, ICS services will be accessible to the user immediately after inserting the SIM card in virtually any communication device existing today. Accordingly, presently available mobile communication devices, even standard mobile telephones, can be provided ICS, which the owner or user of the mobile communication device already have established on any, e.g. stationary or laptop PC. One advantage of the invention is that it is not limited to such WiFi enabled devices, but works on existing 2G and 3G devices. This provides the added advantage of calls being established from any one mobile communication device comprising such a SIM card according to the invention using a IPC service, such as Skype for voice calls or sending text messages, may significantly reduce his or her telephone bill costs, especially if the person to which the device user is calling, lives abroad, eliminating high transfer costs between phone companies.

WO 2009/006904 A1

A SIM card, a system, and a method for a mobile communication device for establishing and/or maintaining access to Internet communication services and a method for manufacturing such a SIM card

Field of invention

The present invention relates to a SIM card for a mobile communication device enabling access to Internet communication services. It further relates to a system and method for a mobile communication device enabling access to Internet communication services and a method of manufacturing such a SIM card.

Background

Services offering instant messaging and voice calls over the Internet using Internet Protocols in a computer device such as a PC have become very popular.

One type of service is fixed telephone systems in larger corporations, termed VoIP (Voice over Internet Protocol) system exchanges, where the entire communication is performed in data package communication, from VoIP telephones transferring the voice data in data packet forms to a central computer in a network for transformation into and normal distribution onto a public switched telephone network (PSTN). The VoIP phones may be fixed or mobile VoIP enabled handsets. However, this type of service is mainly suitable for larger corporations employing a certain number of users, and not readily available to the general user.

Another type of service, which is the focus of the present application, is Internet communication services (ICS), defined herein as operations wherein a user defined as an entity operating a PC on the Internet is establishing and maintaining personal communication to other computer users.

One example of an ICS on the emerging market of Internet telephony service providers (ITSP) are systems such as the Skype™ telephony system, wherein a PC is connected with a microphone and head phones for the PC user establishing and corresponding by voice with other PC-users also in contact on the Internet using Skype™. Skype™ offers features such as chat, SkypeOut™ for calling regular stationary telephones and mobile

phones via local gateways worldwide, and multi-party conference calls. Another example of an ICS is Google Talk, using either Internet page communication or software client downloads, and providing instant talk, and message services for distributing video and pictures. Yet another example of an ICS is MSN Messenger, providing text messages, picture messages, video streaming in near real-time, and voice messaging using a software client by logging on to the Internet web page. The latter services require a software client on the PC and/or that the PC user connects to a specific web page on the Internet. The data transfer of the different types of ICS transferred information, such as voice data, picture data, video data and the like, are sent using standardized Internet communication protocols for such data, such as ITU-T H.323 for audio and video.

In stead of using telephone numbers, which are not available for a computer based system, the users of such systems generally use locally recorded personal address books, so called “Buddy-lists”, which are records of names or nick-names of persons or callees, the user is or may be in contact with over the Internet, and/or an individual identification code or number for each of these for the computer system to be able to identify the persons on the internet via the ICS being used.

However, it is often cumbersome for a user to travel around with a PC due to weight restrictions and accessibility problems at the location of the user, when moving around. Accordingly, attempts have been made to provide ICS to mobile phones or the like mobile communication devices, which would require a translation from and to mobile phone data such as analog speech over the cellular network, and/or mobile text data, such as Short Messages Services (SMS) data, to and from said ICS transferred information, respectively, e.g. by processing voice signals i.e. digitizing, encoding, including compression, and packetizing the audio data such that the voice and control data may be carried over a common communication protocol.

One advanced solution has been to enable the mobile communication device to access and run Internet applications such as Internet Communications Services directly within the mobile device, such as Wi-Fi or 3G adapted mobile telephones, also referred to as W-CDMA or UTMS phones. Mobile network technologies are used for providing a wireless connection either to access the Internet using wireless Internet hubs provided e.g. in airports, or to access the internet using advanced mobile

telephone data exchange. ETSI and 3GPP have set standards for the devices and interfaces such as the SIM cards being used by these technologies. These devices and hubs have until now been costly to acquire for a user. They have further been costly and difficult to maintain and secure against threats to the Internet and users thereof.

In order to access the ICS service such as Skype, the Skype client is simply running on such a Wi-Fi enabled device. In this case Skype will function just as normal as the device is directly connected to the internet having a (Inter)network connection that is fully sufficient for any ICS service.

Other attempts have been made to provide ICS capabilities using a standard mobile telephone, herein defined as a mobile communication device providing mainly voice, SMS and possibly MMS services, which device has not been enabled to be a part of a VoIP system or provided with a capacity of providing a Wi-Fi or 3G mobile phone. Recent developments have further brought about facilities for managing the delivery from mobile phones of voice based information using Internet Protocol based communications. This involves sending voice information in digital form in discrete packets rather than using the traditional circuit-switched protocols of the telephone networks. Any of the packet based services may be used, such as GPRS being deployed by GSM, CDMA packet, UMTS packet or the like.

One solution requires the use of a separate device or adapter for enabling such a mobile phone to communicate with the PC and/or a network, and thus provide Internet access. Examples of these are MobiGater® and IPdrum VoiceLink. Both systems require a software download to a PC, and comprise a device providing a gateway containing a mobile phone's SIM card or a second SIM card, respectively, and sending out a local mobile phone signal for a mobile phone in the nearby vicinity. Accordingly, Skype™ calls to a users PC may easily be redirected to his mobile phone.

However, these require the acquisition and setup of both software and extra device, which fact many people, i.e. users in general find are technically difficult, and therefore will not choose to buy or install.

Another example is the UbiQuisys ZoneGate device, which in reality is a base station in the mobile phone network for connecting a mobile phone in the vicinity with the user's

broadband connection at home. This is only accessible by a mobile phone in the vicinity of the ZoneGate device, and accordingly does not provide real mobile capabilities.

Another solution attempt was the EQO system, which at one time required a download of an agent to the user PC and an application to said user's standard mobile phone. Then the agent and Skype™-software on a PC must be run, then the application on the mobile phone must be run, then while using the buddy-list ID a telephone call is made to a person from said list from said mobile phone, and a phone call is established. The EQO system uses the Skype™ conference call to establish the contact between the mobile phone and the person to be called, i.e. the EQO agent establishes a Skype™ conference call within the network.

In international patent application WO 2007/005124 A2 is disclosed a system and method for establishing and maintaining communication between two or more communication devices coupled to communication networks, which in one embodiment is a mobile phone and a Skype™ user PC. The system employs a gateway server for establishing and maintaining communication by assigning an alphanumeric code (ID) to the communication request from the mobile phone, and associating the code to a contact list provided at the server. However, the way that the mobile phone is being enabled for said communication to be performed is presented as follows: The mobile phone is activated e.g. manually or by voice actuation, then it logs on to the gateway server, using generally known authentication steps so that the server can determine the identity of the mobile phone. This may also be accomplished by the mobile phone dialling a predetermined telephone number for accessing the server. The gateway server has in advance been provided the buddy list of the ITPS associated with the mobile phone in question. Thus, the gateway server provides the link between the mobile telephone and the Skype™ service already established by the user of the mobile phone in question.

The applicant of the above international patent application is the company ISkoot Inc, which promote and sell the commercially available ISkoot system. This system requires downloading and installing software using Bluetooth®, IR or USB cable to each specific mobile phone handset available on the market, as the individual handsets are not compatible. When a contact to call is selected from the downloaded buddy list, the

iSkoot software on the handset communicates with iSkoot's gateway server. The server connects the call using Skype's™ Internet telephony service so that the user only pays for air time on the mobile phone.

However, at present, only a selected few mobile communication devices, predominantly all enabled for Internet capabilities, may be upgraded to accessing the ICS using ISkoot. Individual adaptation of the software to each model of mobile communication device available requires intensive development, testing and installation costs.

Accordingly, some solutions over regular 2G and 3G connections require special client software installed within the mobile communication device. Such solutions include iSkoot, EQO, and Mobivox. One drawback for each of these is that the user will have to install specific software on the device in order to access the service. Each of them do only offer support for specific devices as these are not all compatible and specific software must be developed for each model. Further they will all require a subscription with a “data plan” or “internet plan”.

The MobiVox system, developed by VoxLib, does not feature any software downloads to neither PC nor mobile phone. Instead, the MobiVox application works “in the network cloud”. VoxLib provides the mobile phone user with a local telephone number. When the user calls the local telephone number, Mobivox has registered the mobile phone number making the call, opens a user account on a server, and the computer application VoxGirl answers the user in a recorded voice. Now, a standard phone number may be called, or the user may speak a name from his contact book, which must be registered during setup. To import any changes made to the Skype™ contact list, the user has to sign out of Skype™ on his PC and after at least 12 hours, either call the MOBIVOX application or press the Skype™ Import button in the Contact Book. Thus, new contacts and recent changes can not be downloaded easily and quickly. Other features are the user speaking the command “presence (name)” or “conference (name1) and (name2)” to VoxGirl, and thus ask if (name) is present on the Internet or open a conference call between the user and name1 and name2, respectively. Accordingly, the cost of the mobile call amounts to the local mobile telephone fare, which is an advantage, when for example the name being called up is a long distance contact name. However, this system will only be an advantage, when the mobile user is

calling locally, not when he is e.g. travelling abroad. Then he has to set up a new local MobiVox telephone number again. Keeping track of the different local MobiVox telephone numbers to be used in the different countries may prove to be difficult.

On this background, one purpose of the present application is to provide a SIM card for an easy and quick system and method of accessing and performing Internet communication services using a mobile communication device, which SIM card, system and method eliminates the above disadvantages.

Summary of invention

According to one aspect of the invention, there is provided a SIM card for a mobile communication device, said SIM card being enabled to use SIM application toolkit for cooperation with said mobile communication device for establishing and/or maintaining access from and to at least one internet communication service (ICS).

With the invention, ICS services will be accessible to the user immediately after inserting the SIM card in virtually any communication device existing today. Accordingly, presently available mobile communication devices, even standard mobile telephones, can be provided ICS, which the owner or user of the mobile communication device already have established on any, e.g. stationary or laptop PC. One advantage of the invention is that it is not limited to such WiFi enabled devices, but works on existing 2G and 3G devices. This provides the added advantage of calls being established from any one mobile communication device comprising such a SIM card according to the invention using a IPC service, such as Skype for voice calls or sending text messages, may significantly reduce his or her telephone bill costs, especially if the person to which the device user is calling, lives abroad, eliminating high transfer costs between phone companies.

The substantially reduced functional capabilities of the SIM application toolkit may then be utilized to a large extent, taking into account the development of more powerful SIM modules. It has by the invention been realized, that the entire communication request may be established using the already present functionalities of mobile communication devices available today, in particular SIM Application Toolkit. The increase in memory size of SIM cards, the independent abilities of the SIM card to initiate commands and

control the communication from and to the mobile phone or other communication device.

Preferably, said SIM card comprises a client, which when run is establishing and maintaining access from and to at least one internet communication service (ICS), which is available to a user on a PC, wherein a memory of said SIM card stores a first data record comprising user specific ICS data, such as login name and/or password; and a second data record comprising callee specific ICS data, such as callee ID and/or presence information, and wherein said client when run is enabling said mobile communication device to transmit at least part of said first data record to a central gateway, which is in connection both to a network for the mobile communication device and said internet communication service, for establishing and/or maintaining a connection to said central gateway enabling the access to said internet communication service, and during a call request, provide said central gateway with at least part of said second data record for providing a connection to at least one identified callee.

Using a client, i.e. software code provided on the SIM card itself, as opposed to a client of software on the device itself as in known devices, eliminates the need for any user to download and install any potentially difficult to handle program. This removes a main obstacle in performing mobile ICS service.

The use of a SIM application Toolkit client working on the SIM is known in the art, and may be applied in different fields. One example is described in WO 03/003694, wherein a SIM application Toolkit client is operable on a SIM card. However, the described client is enabled only to detect whether the device into which the SIM card is provided is present on the mobile network for a presentation of this fact to users having said person's number upon their telephone book.

Further, in another aspect of the invention, there is provided a system for establishing and/or maintaining access from and to at least one internet communication service, which is available to a user from a PC, to a mobile communication device, comprising a SIM-card according to the invention, a mobile communication device comprising said SIM card, said communication device being adapted for operation within a network, and a central gateway upon said network for providing communication between said network and an Internet communication service.

In a further aspect, there is provided a method for establishing and/or maintaining access to internet communication services, which is available to a user from a PC, from a mobile communication device, comprising the following steps: enabling a SIM card to use SIM application toolkit for cooperation with said mobile communication device for establishing and/or maintaining access from and to at least one internet communication service; in the SIM memory storing a first data record comprising user specific ICS data, such as login name and/or password; and running a client within said SIM card for establishing and/or maintaining access from at least one internet communication service (ICS) for storing a second data record comprising callee specific ICS data, such as callee ID and/or presence information, for transmitting at least part of said first data record to a central gateway, which is in connection both to a network for the mobile communication device and said internet communication service, for establishing and/or maintaining a connection to said central gateway; and during a call request, providing said central gateway with at least part of said second data record for providing a connection to at least one selected callee.

Accordingly, mobile capabilities of accessing, maintaining and updating ICS services using e.g. a standard mobile phone has been provided by said SIM card, system and method according to the invention.

Short Description of Drawings

In the following, the invention will be described in more detail with reference to two examplary embodiments illustrated in the schematic drawings, where like numerals indicate same features, in which:

Fig. 1 shows an overview of a system according to a first embodiment of the invention, comprising a standard mobile phone, wherein a SIM toolkit application cooperating with a SIM card according to the invention for enabling access to Internet communication services via a central gateway on a computer server connected to the Internet; during the process of establishing a phone call from said standard mobile telephone to an ITSP service, using USSD and/or SMS data for the call request;

Fig. 2 shows an overview of the system of figure 1 using a different call request sequence, where the gateway is receiving a USSD and/or SMS request to connect the ensuing incoming call to the callee(s);

Fig. 3 shows an overview of a system according to a second embodiment of the invention, wherein the central gateway in part is replaced by a users own PC, and

Fig. 4 shows a an overview of a system according to a third embodiment of the invention, comprising a regular mobile phone, wherein a SIM application toolkit upon a SIM card according to the invention therein enables access to Internet communication services via a central gateway on a computer server connected to the Internet; during the process of establishing a phone call from said standard mobile telephone to an ITSP service, using a connection establishment with data for the call request.

Detailed Description of Embodiments

The described system is implemented as a client on a SIM card or SIM client, i.e. a piece of computer code or software, which is applicable to SIM cards, as well as in cooperation with a service hosted on a server or Gateway, that is connected to the internet network as well as to a mobile device network, such as the GSM or 3G network.

The described SIM card, system and method is suitable for transmitting user specific ICS records, such as buddy lists or contact lists to and/or from an Internet communication service from and/or to a mobile communication device. Further, said system and method may be adapted for transmitting the current User Status or presence information for each user in the contact list to the device. Such status could include but would not be limited to the following: offline, online, away, or unavailable. Further, said method, device and system may be able to synchronize and keep the contact list and User Status up to date as held in the device and/or the gateway. Preferably e.g. the contact list with status information may be presented for selection by the user of the device. The user may then be allowed to select contacts from the contact list and initiate communication actions with the selected users, using the Internet Communication Service. An implementation of the mentioned client on a SIM card, using SIM application toolkit is disclosed.

Definitions

The invention takes advantage of a number of technologies. A brief over view of these are described below.

Call and Callee

To perform a Call is the steps of setting up a communication link between said mobile communication device and any of a number of ICS', e.g. a voice call, a text, such as a chat call, and performing the transfer of data in such a call back and forth between these, for providing communication between a user of the device and a callee at the other end of the communication.

Network

GSM and 3G GSM and 3G (also referred to as WCDMA or UMTS) as standardised by ETSI and 3GPP are mobile network technologies, defining standards for devices and interfaces. All devices for these networks have SIM cards.

SIM card

In the context of the present application, the term Subscriber Identity Module or "SIM card", means smart cards with a CPU and memory, that is in general used for authentication and/or billing of the individual subscriber towards the cellular or other network being used by the mobile communication device, in which the SIM card is installed, and the term is intended to cover every type of conceivable authentication token for GSM, 3G, UMTS, CDMA or other mobile telephony network, such as a Java Card ™ enabled smart card, a CDMA (Code Division Multiple Access) enabled smart card, USIM (Universal Subscriber Identity Module), UIM (User Identity Module), or R-UIM cards. In general SIM cards use a standardised interface to the device, such as ETSI GSM 11.11 and 3GPP TS 31.101.

SIM Application Toolkit

SIM Application Toolkit (commonly referred to as STK or SAT) is a standard of the GSM system which enables the SIM card to initiate actions which can be used for various value added services.

The SIM Application Toolkit consists of a set of commands programmed into the SIM card which define how the SIM should interact directly with the outside world and initiates commands independently of the device and the network. This enables the SIM card to build up an interactive exchange between a network application and the end user and access or control access to the network. The SIM card also gives commands to the device, such as display menu, and asks for user input.

SAT has been deployed by many mobile operators around the world for many applications, often where a menu-based approach is required, such as Mobile Banking and content browsing. Designed as a single application environment, SAT can be started at the initial power up of the SIM card and is especially suited to low level applications with simple user interfaces.

In 2G networks, SIM Application Toolkit (SAT) was defined in GSM 11.14 standard in 1995. From release 4 onwards, GSM 11.14 is replaced by 3GPP 31.111 which also includes specifications of USIM Application Toolkit (USAT) for 3G networks. SIM application toolkit, or the like applications for SIM cooperation with the mobile communication device are expected to develop further, and the specific type or version of such application is not relevant in the present context.

SAT defines an interface for applications residing on the SIM card to make use of the user interface and other services of the device. SIM toolkit applications may e.g:

- Install an application specific menu in the devices user interface
- Display texts to the user
- Provide selection lists for the user browse and choose
- Prompt for input to be keyed
- Send and receive data through the network using SMS and USSD
- Setup a call to a specific destination address

SIM toolkit sessions (a sequence of actions taken by a SIM toolkit application on the SIM card) may be activated by a number of different events including:

- Menu selection
- Call control (user request outgoing call)

In fig. 1, a SIM card according to one embodiment of the present invention is shown, provided within a system according to a first embodiment of the present invention comprising a mobile telephone holding said SIM card, a central gateway provided in a gateway server, and a user's PC running the ICS, such as Skype™. The central gateway will act as a gateway to an Internet Communication Service. The gateway server may be remotely positioned both relative to the mobile telephone and/or to the user's PC.

A voice call from the mobile phone to the ICS may be set up in essentially three ways:

Fig. 1: USSD + Call-back

1. User selects contact from contact list or keys in PSTN to call, using the SIM toolkit driven user interface
2. The SIM generates a call request for the gateway using USSD or SMS (the data sent identifies the called parties)
3. The gateway sets up a call to the user's mobile and to the called parties – e.g. all connections based on Skype and SkypeOut.

Fig 2 and 3: USSD + Call-in

1. User selects contact from contact list or keys in PSTN to call, using the SIM toolkit driven user interface
2. The SIM generates a call request for the server using USSD or SMS
3. The gateway awaits a call from the mobile user.
4. The SIM initiates a call to the gateway
5. The gateway connects the call from the user to the outbound, e.g. using Skype or SkypeOut calls.

As shown in fig. 1 to 3, the SIM client and the gateway may initiate the call, i.e. using a call request, by communicating using Short Message Service (SMS) and/or Unstructured Supplementary Service Data (USSD). SMS communication can be initiated from both components and is referred to as mobile terminated or mobile originated. USSD communication is always initiated by the SIM client and involves transmitting a data block to the Gateway and receiving back a response.

As shown in fig. 4, an alternative way of initiating the call may be to use Call-in and DTMF signals instead:

1. User selects contact from contact list or keys in PSTN to call, using the SIM toolkit driven user interface
2. The SIM initiates a call to the gateway
3. After connecting, the SIM requests transmission of DTMF data, where the sequence of digits thus transferred identifies the called parties.
4. The gateway connects the call from the user to the outbound, using e.g. Skype or SkypeOut calls.

Users of the services offered by the invention may preferably be subscribers to one or more of the Internet Communication Services to be accessed, and as such the SIM card may be provided a first data record comprising information for accessing one or more IDS, such as USER ID, Password, or the like, herein termed user specific ICS data. Further, the PC user, who may also be the SIM card client may be a subscriber to the service offered by the gateway, and the gateway is provided with a database with all information, i.e. the records of user specific ICS data, to effectively authenticate the user towards the Internet Communication Service to be accessed.

The gateway communicates with the Internet Communication Service using its internet connection and published interfaces of that service. The gateway may be a centre for collecting said records, e.g. contact list information for the subscribed users from each Internet Communication Service to be accessed.

The gateway may initiate actions in the Internet Communication Service, such as initiating a voice call or a conference call to one or more persons, respectively, available through the provided Internet Communication Service. Similarly, alternatively or as a supplement, text messages, such as SMS and/or e-mails, image files, such as video, MMS, and pictures, and/or computer code files or the like may be transmitted from said gateway to one or more persons, respectively, available through the provided Internet Communication Service

The SIM client in question may appear to the user as an extra menu on the device, which may be installed using the SIM toolkit SET UP MENU proactive command. The menu will give the user access to the different functions of the service.

Before use, the SIM client is configured to hold the user's authentication information for the Internet Communication Service, such as login name and/or password. The SIM client will enable the mobile communication device to transmit this information to the gateway in order to gain access to the service, e.g. including download of contact list present at this service.

Preferably, the SIM client maintains a dynamic contact list with a second data record comprising User ID, i.e. callee ID and optionally User Status, i.e. callee presence data stored in memory on the SIM card. Further data in such second data record, callee specific ICS data, may comprise any conceivable interchangeable data such as nick-name, e-mail address, photo, home web address, or other ICS transferable and/or mobile device transferable data.

In one embodiment of the invention, the SIM client will periodically poll the server for the current contact list with User Status. This may be done by transmitting a request using the proactive command SEND USSD, and receiving the list in the USSD response. Depending of the amount of data, more than one SEND USSD command may be required as each command has a limit to the amount of data carried. The contact list as received by the SIM client may be stored in place of any previously stored contact list or telephone book application on the SIM card or supplement it. In order to minimize the amount of data transmitted, a protocol may be used to ensure that only changes to the contact lists and User Status are transmitted. Such protocol may be implemented by transmitting the checksums of least parts of data constituting the contact list, and only when a difference to last transmitted information is found, an actual transfer will take place.

In another embodiment of the invention, the gateway will during set up and/or periodically thereafter, push the contact list with User Status to the SIM client. This may be done using SMS. In one embodiment, the gateway will only push information when it is different from the last SMS that was acknowledged by the SIM.

In a third embodiment a combination may be used, taking advantage of both methods of SMS and USSD communication supported, where the method being used may depend on which method is available for the client and/or the choice of the user.

Using the menu being installed by the SIM client in question the user may access and browse the current contact list as stored on the SIM card, e.g. using the built in function of telephone books in SIM cards generally available, i.e. a user available and selectable telephone book. The SIM client may use SELECT ITEM proactive command to display the list of contacts by name. Special icons or colour indications, such as grey for not available, green for available and red for off line, stored on the SIM card may be passed to the SELECT ITEM command to show User Status. Alternatively special selected characters may be used together with the contact name to indicate User Status.

There are a number of actions the user may carry out for contacts that he selects.

The user may set up a call to a contact, or a conference call to a number of contacts. In that case, the SIM client will send a request to the gateway, and the gateway will in turn command the Internet Communication Service to setup the call/conference. The request from the SIM card is sent using a specific data string sent via USSD or SMS.

As shown in fig Fig. 1, in one embodiment of the invention, the gateway instructs the Internet Communication Service to set up a conference call between all selected parties and the user himself. As the user may be using a standard mobile network and cannot be reached via an IP connection, this service requires that the Internet Communication Service is able to call out to the public switched telephone numbers (PSTN). The user will receive an ordinary call on his mobile communication device, which he must then pick up and thereafter be connected to the conference call as managed by the Internet Communication Service.

As shown in fig. 2, in another embodiment of the invention the gateway in addition to the request containing called parties is instructed by the SIM Client that it will receive an incoming call. In this case the SIM client may, after receiving acknowledge of the request from the gateway, set up an ordinary voice call to the gateway by using the proactive command SETUP CALL. In this case the gateway is provided with the capability to connect and switch incoming calls to the Internet Communication Service. The advantage of this implementation is that the user will not have to wait for an incoming call, but is automatically connected as the other users pick up or accepts the call inquiry just as when making an ordinary phone call.

Alternatively, the request for a call or conference call may contain a PSTN destination, so that the invention may be used also for calling other regular fixed line or mobile devices, e.g. utilizing the Internet communication services. Thus, a selection of different options I available to the user, like when the user is in one country, he may select using ICS for setting up long distance calls to a PSTN number, e.g. the gateway may apply SkypeOut when calling said PSTN number, or he may select using a standard mobile phone call to a local PSTN number, using regular mobile phone services.

The user and/or gateway may configure the SIM client to capture any attempt by the user to call any regular PSTN destination. This may be done by the SIM offering Call Control service, and the SIM client is activated by the Call Control event as defined in ETSI GSM 11.14 and 3GPP TS 31.111. In this case the SIM client may, rather than allowing the call, enable the telephone to transmit a request to the Internet Communication Service to connect to this number.

In one embodiment, such calls for PSTN numbers from said mobile telephone will be analysed by said SIM client, based on SIM card stored rules, either be allowed as standard mobile phone calls or be translated into call requests for ICS transmittal. Such rules may be based on current location of the mobile communication device as compared to the location i.e. PSTN number being called, in order to reduce calling costs, or be based on time of day of the call, either at the location of the mobile communication device or the callee phone or callee mobile communication device according to the invention, or PC, or the like rules as they may be devised by a person skilled within the arts.

The SIM client is able to associate specific short-numbers dialled by the user, with specific contact names in the contact list. Thus when the user calls one of those numbers the SIM will intercept the call attempt using the CALL CONTROL functionality. The SIM Client will then request a call to the associated contact in the contact list using one of the approaches above.

The SIM client may be commanded by the user and/or gateway to generate short codes for all or selected contacts in the contact list, and store them in the phone book (abbreviated dialling numbers) on the SIM card, to allow the user to access the contacts from the ICS as easily as the ordinary phonebook entries.

In one embodiment of the invention, the user may select a number of contacts to initiate a chat session with. In this case the user will be able to transmit and receive text messages to and from the users identified by the selected contact IDs. The SIM client will prompt the user for the text to be sent using proactive command GET INPUT. When the user has keyed in a message for the selected contacts, the SIM client sends a request to the Gateway including the destination contacts as well as the text. This request may be sent using USSD or SMS (proactive command SEND USSD or SEND SHORT MESSAGE). The Gateway starts the chat session using the Internet Communication Service and sends the received text to the destination contacts as received in the request. Any chat responses from the contacted callees or other users of the ICS, may be sent by the Gateway to the SIM Client using SMS or USSD. In order to use USSD to receive the responses from other users, the SIM Client may poll the Gateway periodically. The chat responses received by the SIM Client will be displayed to the user using proactive command DISPLAY TEXT. Following each action the user will have the choice of ending the chat session or to provide a new text to be sent to all contacts in the chat session.

As shown in Fig. 3, in one embodiment of the invention, the gateway may in part be replaced by the user's own PC. In this case the user's own PC must be powered in order for the service to work. This implementation requires a small service running on the user's PC that will allow the Gateway to "remote control" the Internet Communication Service instance running on the user's PC.

In fig. 3, the central gateway comprises at least partly a locally positioned computer, such as the user's own PC with a network connection, such as an Internet connection. In that case, the PC functions as the central gateway to the Internet or the gateway to a gateway server (not shown). This may be accomplished by downloading a software or application applet to the PC, e.g. from an internet site provided by the ITPS, which program when run establishes a connection to the Internet.

In another embodiment the Gateway would itself run an Internet Communication Service instance for each user. This would remove the need for the user to have his own PC powered at all times. This implementation would put additional requirements on the Gateway capacity.

In order to offer scalability and be able to serve large numbers of users at the same time, the Gateway may be implemented as a server farm consisting of a number of physical servers.

A gateway may be also be provided by existing services, such as the one delivered by ISkoot, or any other gateway service. Thus, the invention could be used in combination with an existing gateway with adaptations. E.g. the iSkoot Gateway could be adapted to be able to receive requests from the SIM Client.

It has been realized, that a major advantage of the present invention is the ability of updating and copying interchangeable data of a telephone/contact book using a SIM card and presently available mobile communication devices and SIM application toolkit.

Obviously, other applications and variations of the SIM card, system and method according to the invention may be envisaged, many of which may be devised by the skilled person, however all being within the scope of the appended claims.

In particular, by the invention it has been realized that the communication device, herein referred to as being mobile, may in fact be relatively stationary, e.g. in the case of SIM cards being applied to substantially stationary device, such as refrigerators, TV-sets, vehicles, or the like, in order to access ICS from said other devices, thereby providing the possibility of providing individual device specific authentication and/or billing to each device for each ICS provided.

PATENT CLAIMS

1. A SIM card for a mobile communication device, said SIM card being enabled to use SIM application toolkit for cooperation with said mobile communication device for establishing and/or maintaining access from and to at least one internet communication service (ICS).

2. A SIM card according to claim 1 comprising a client, which when run is establishing and maintaining access from and to at least one internet communication service (ICS), which is available to a user on a PC,

- wherein a memory of said SIM card
  - stores a first data record comprising user specific ICS data, such as login name and/or password; and
  - is enabled for storing a second data record comprising callee specific ICS data, such as callee ID and/or presence information,

and wherein said client when run is enabling said mobile communication device to

- transmit at least part of said first data record to a central gateway, which is in connection both to a network for the mobile communication device and said internet communication service, for establishing and/or maintaining a connection to said central gateway;
- and during a call request, provide said central gateway with at least part of said second data record for providing a connection to at least one selected callee.

3. A SIM card according to claim 2, wherein said client is further configured to enable the storing in said SIM memory of at least part of said first data record during the manufacturing of said SIM card.

4. A SIM card according to claim 2 or 3, wherein said client is further configured to enable the periodical storing in said SIM memory of at least part of said first data record of said SIM card, such as once every week or the like.

5. A SIM card according to claim 3 or 4, wherein said client is further configured to enable the user of the communication device to select the storing and/or periodical storing in said SIM memory of at least part of said first data record of said SIM card.

6. A SIM card according to any of the claims 2 to 5, wherein said client is further configured to enable the gateway to select the storing and/or periodical storing in said SIM memory of at least part of said first data record of said SIM card.

7. A SIM card according to any of the claims 2 to 6, wherein said client is further configured to enable the storing in said SIM memory of at least part of said second data record during the manufacturing of said SIM card.

8. A SIM card according to any of the claims 2 to 7, wherein said client is further configured to enable the periodical storing in said SIM memory of at least part of said second data record of said SIM card from once every millisecond to once every month, preferably once every millisecond to once every minute using polling.

9. A SIM card according to claim 7 or 8, wherein said client is further configured to enable the user of the mobile communication device to select the storing and/or periodical storing in said SIM memory of at least part of said second data record of said SIM card.

10. A SIM card according to any of the claims 2 to 9, wherein said client is further configured to enable that the gateway selects the storing and/or periodical storing of at least part of said second data record in said SIM memory, e.g. by said gateway sending an SMS to said mobile communication device.

11. A SIM card according to any of the claims 2 to 10, wherein said client is further configured to enable the storing of at least part of said records in said SIM memory, only supplying with new data for said records.

12. A SIM card according to any of the claims 2 to 11, wherein said client is further configured to enable keeping said records up to date, as well as keeping the information provided with said gateway up to date, respectively, by swapping data between these.

13. A SIM card according to any of the claims 2 to 12, wherein said client is further configured to enable the storing of at least part of said second data record in a mobile communication device provided user selectable telephone book.

14. A SIM card according to any of the preceding claims, wherein said internet communication service comprise at least one of the following services: voice conversation, text message, SMS, image file, video streaming, MMS, software file transfer, and the like.

15. A SIM card according to any of the claims 2 to 14, wherein said client further is configured to enable a selection option, such as on a display by said mobile communication device for a user of said mobile communication device to be able to select at least part of said record for said transmittal to said central gateway to set up a connection for selecting at least one Internet communication service to connect to and/or at least one callee to call.

16. A SIM card according to claim 15, wherein said client is further configured to enable a selection by said user of the records to be transferred, at least by selecting one or more callee ID's provided.

17. A SIM card according to any of the claims 2 to 16, wherein said second data record comprises caller ID, such as name, nickname, or buddy name; presence data; PSTN telephone number and/or the like.

18. A SIM card according to any of the claims 2 to 16, wherein the client is adapted for enabling the device to transmit at least the call request comprising a predetermined data string via Unstructured Supplementary Service Data (USSD) and/or Short Message Service (SMS) signals.

19. A SIM card according to any of the claims 2 to 18, wherein the client is adapted for enabling communication between said central gateway and the mobile communication device using Unstructured Supplementary Service Data (USSD) and/or Short Message Service (SMS) signals.

20. A SIM card according to any of the claims 2 to 19, wherein the client is adapted for enabling a user to configure the client to capture any attempt by the user to call any regular PSTN destination using the SIM feature “Call Control”.

21. A SIM card according to any of the claims 2 to 20, wherein the client is adapted for enabling to display contact presence information.

22. A SIM card according to any of the claims 2 to 21, wherein the SIM card is adapted for cooperation with a mobile communication device being a standard mobile telephone.

23. A SIM card according to any of the claims 2 to 22, wherein the SIM card is adapted for cooperation with a mobile communication device being a Wi-Fi or 3G enabled mobile telephone.

24. A SIM card according to any of the claims 2 to 23, wherein the SIM client is configurable by said user and/or gateway to capture any attempt by the user to initiate a call to any regular PSTN number, said SIM client being activatable by the Call Control event service, and rather than allowing the call, enabling the mobile communication device to transmit a request to the Internet Communication Service for connection to this number.

25. A SIM card according to any of the claims 2 to 24, wherein the SIM client is able to associate callee specific ICS data, such as nickname, selected by the user by typing or selection, with specific contact names in the contact list; when the user calls one of those numbers the SIM client is able to intercept the call attempt using the CALL CONTROL functionality; and request a call to the associated contact in the contact list.

26. A SIM card according to any of the claims 2 to 25, wherein the SIM client is commandable by the user and/or gateway to generate short codes for all or selected contacts in the contact list, and able to store said short codes in the telephone book on the SIM card.

27. A SIM card according to any of the claims 24 to 26, wherein the SIM client is adapted for analyzing whether calls made to PSTN numbers from said mobile

communication device, based on SIM card stored rules, either will be allowed as standard mobile phone calls or be translated into call requests for ICS transmittal.

28. A system for establishing and/or maintaining access from and to at least one internet communication service, which is available to a user from a PC, to a mobile communication device, comprising
- a SIM-card according to any of the preceding claims 1 to 27,
- a mobile communication device comprising said SIM card, said communication device being adapted for operation within a network,
- a central gateway upon said network for providing communication between said network and an Internet communication service.

29. A system according to claim 28, wherein said mobile communication device is a standard mobile telephone.

30. A system according to claim 28, wherein said mobile communication device is a WiFi or 3G enabled mobile telephone.

31. A system according to any of the claims 28 to 30, wherein at least part of the central gateway is a remotely positioned gateway server application.

32. A system according to any of the claims 28 to 31, wherein at least part of the central gateway is a locally positioned computer application.

33. A system according to any of the claims 28 to 32, wherein the gateway server is implemented as a server farm consisting of a number of physical computers and/or servers.

34. A system according to any of the claims 28 to 33, wherein the gateway server is enabled to run an Internet Communication Service instance for each user.

35. A method for establishing and/or maintaining access to internet communication services, which is available to a user from a PC, from a mobile communication device, comprising the following steps:

- enabling a SIM card to use SIM application toolkit for cooperation with said mobile communication device for establishing and/or maintaining access from and to at least one internet communication service
- in the SIM memory storing a first data record comprising user specific ICS data, such as login name and/or password; and
- running a client within said SIM card for establishing and/or maintaining access from at least one internet communication service (ICS)
    - for storing a second data record comprising callee specific ICS data, such as callee ID and/or presence information,
    - for transmitting at least part of said first data record to a central gateway, which is in connection both to a network for the mobile communication device and said internet communication service, for establishing and/or maintaining a connection to said central gateway;
    - and during a call request, providing said central gateway with at least part of said second data record for providing a connection to at least one selected callee.

36. A method according to claim 35, further comprising the step of storing at least part of said second data record in a mobile communication device provided user selectable telephone book.

37. A method according to claim 35 or 36, wherein the client is adapted for enabling the call request as a conference call request by selecting at least two buddies from the contact list, and/or sending a predetermined data string indicating a conference call request.

38. A method according to any of the claims 35 to 37, wherein said client further is adapted to enable a reception of a buddy list provided to said central gateway to the SIM card memory.

39. A method according to any of the claims 35 to 38, wherein said client further is adapted to enable a transferral in steps of parts of said second data record from or to said central gateway to or from the SIM card memory, respectively.

40. A method according to any of the claims 35 to 39, wherein said client further is adapted to enable a storing of at least part of the transferred and/or received Callee specific ICS data in the memory of the SIM card.

41. A method according to any of the claims 35 to 40, wherein said client further is adapted to enable a protocol to be used, such that only changes to the contact list are transferred and/or received.

42. A method according to any of the claims 35 to 39, wherein said user selects from said selection display or keys in a PSTN to call using the SIM toolkit driven user interface; the SIM card generates a call request for the gateway using USSD or SMS; the gateway sets up a call to the user's mobile and to the called parties, all connections e.g. based on Skype and SkypeOut.

43. A method according to any of the claims 35 to 40, wherein in addition to the call request comprising callee specific ICS data the gateway is instructed by the SIM client that it will receive an incoming call, then the SIM Client will, after receiving the acknowledge of the request from the Gateway, set up an ordinary voice call to the Gateway by using the proactive command SETUP CALL, wherein the Gateway is enabled for connecting to and switching incoming calls to the Internet Communication Service.

44. A method according to any of the claims 35 to 43, wherein the User selects contact from contact list or keys in PSTN to call, using the SIM toolkit driven user interface, then the SIM client generates a call request for the server using USSD or SMS; then the gateway awaits a call from the mobile user, then the SIM initiates a call to the gateway, then the gateway connects the call from the user to the outbound, e.g. using Skype or SkypeOut calls.

45. A method according to any of the claims 35 to 44, wherein the User selects one or more contacts from contact list or keys in PSTN to call, using the SIM toolkit driven user interface, then the SIM client initiates a call to the gateway, after connecting, the SIM requests transmission of DTMF data, where the sequence of digits thus transferred identifies the called parties, and the gateway connects the call from the user to the outbound, using e.g. Skype or SkypeOut calls.

46. A method of manufacturing a SIM card according to any of the claims 1 to 27, comprising the step of installing said client during manufacturing of said SIM card using SIM application toolkit.

47. A method of manufacturing a SIM card according to any of the claims 1 to 27, comprising the step of providing said client as part of a hardware component for said SIM card during manufacturing of said SIM card.

48. A method of manufacturing a SIM card according to any of the claims 1 to 27, comprising the steps of providing said client to a computer;
transferring said client to said SIM card from said computer, e.g. in the form of an API; and installing said client upon SIM card.

49. A method of manufacturing a SIM card according to any of the claims 1 to 27, comprising the step of sending an SMS to said SIM card comprising code for said client and installing said client on said SIM card.

50. A method according to any of the claims 35 to 45, wherein said SIM card is a SIM card according to any of the claims 1 to 27.

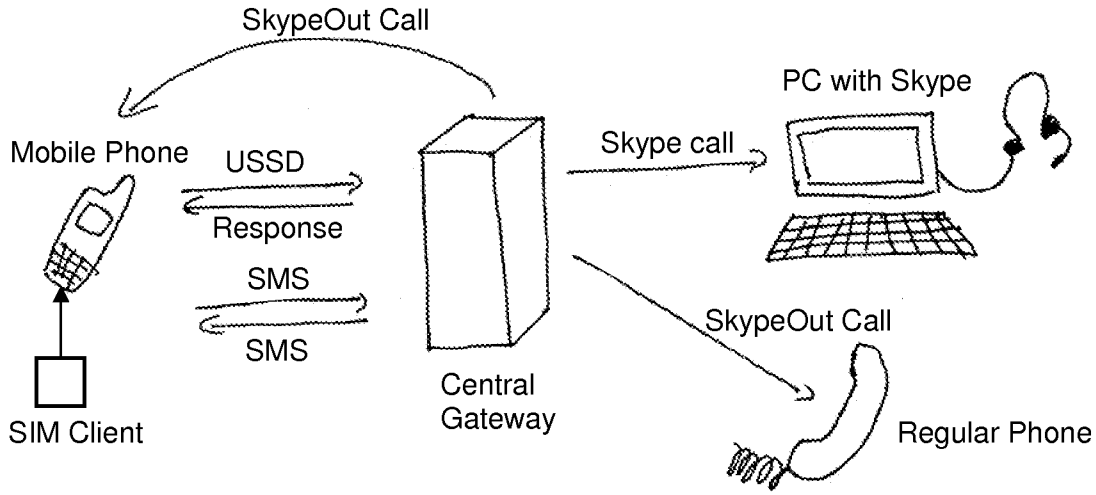
SkypeOut Call
Mobile Phone
USSD
Response
SMS
SMS
SIM Client
Central
Gateway
Skype call
PC with Skype
SkypeOut Call
Regular Phone

Fig. 1

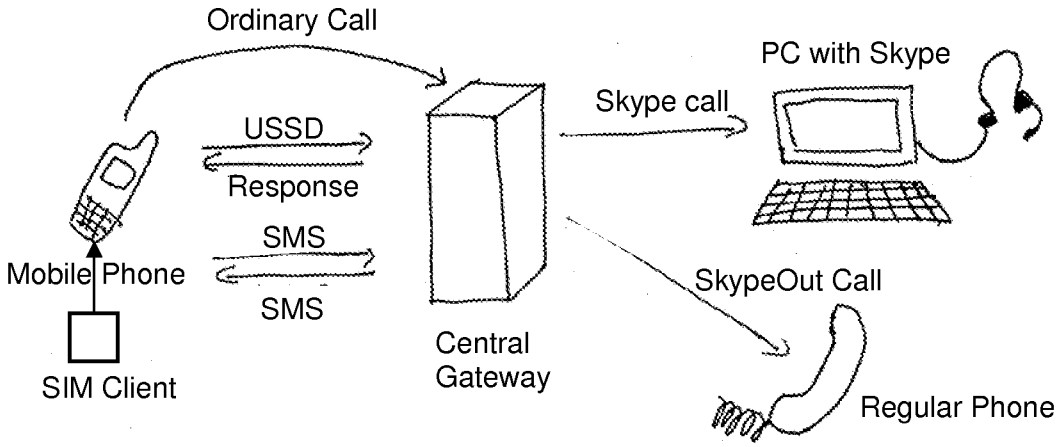
Ordinary Call
USSD
Response
SMS
SMS
Mobile Phone
SIM Client
Central
Gateway
Skype call
PC with Skype
SkypeOut Call
Regular Phone

Fig. 2

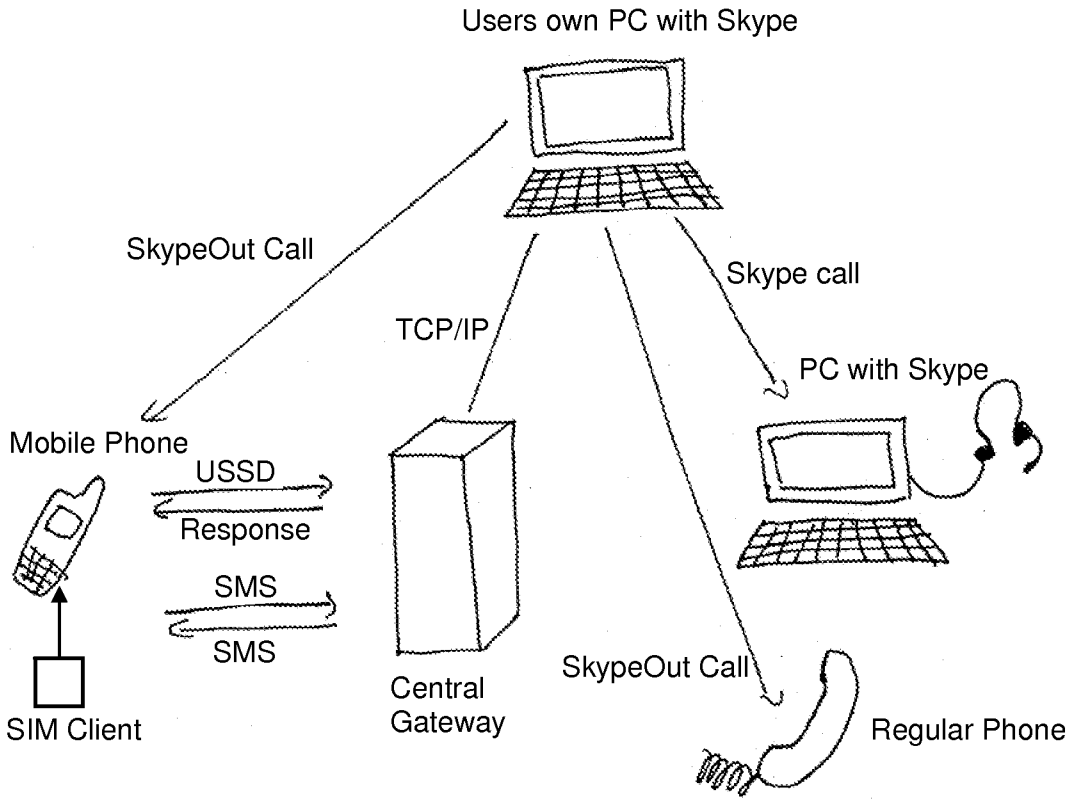
Users own PC with Skype
SkypeOut Call
Skype call
TCP/IP
PC with Skype
Mobile Phone
USSD
Response
SMS
SMS
SIM Client
Central
Gateway
SkypeOut Call
Regular Phone

Fig. 3

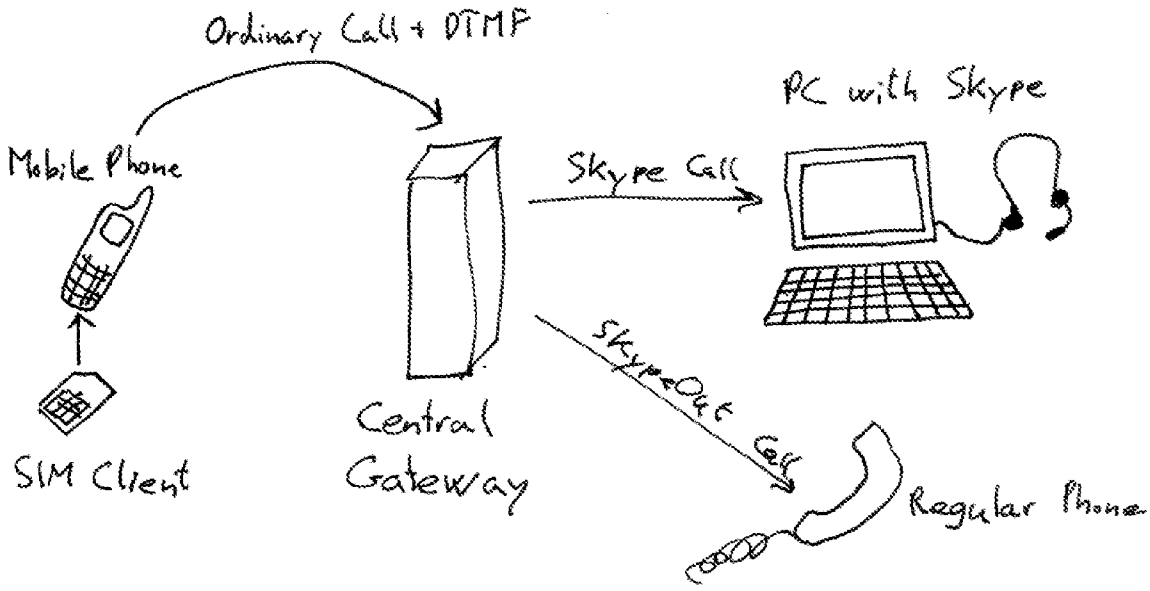
Ordinary Call + DTMF
PC with Skype
Mobile Phone
Skype Call
SIM Client
Central
Gateway
Regular Phone

Fig. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/DK2008/050170

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04W8/18

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)
H04W

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	EP 1 672 899 A (SWISSCOM AG [CH]) 21 June 2006 (2006-06-21) abstract; figure 1 claim 17 paragraphs [0016] - [0020] paragraphs [0026] - [0044]	1-50
X	US 2003/073440 A1 (MUKHERJEE ATANU [US] ET AL) 17 April 2003 (2003-04-17) abstract; figure 2 paragraphs [0053] - [0061] paragraphs [0081] - [0085] paragraphs [0118] - [0128]	1-50

-/--

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

[X] See patent family annex.

* Special categories of cited documents :

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

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 November 2008	26/11/2008

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, Fax: (+31-70) 340-3016	Straniero, Roberto

INTERNATIONAL SEARCH REPORT

International application No
PCT/DK2008/050170

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	"Fring Installation and User Manual" [Online] 26 June 2007 (2007-06-26), , XP002503658 Retrieved from the Internet: URL:http://web.archive.org/web/20070704225846rn_1/www.fring.com/support/user_guide/fring_user_manual_s8_3.pdf> [retrieved on 2008-11-11] the whole document	1-50

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/DK2008/050170

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1672899 A	21-06-2006	NONE	
US 2003073440 A1	17-04-2003	NONE	