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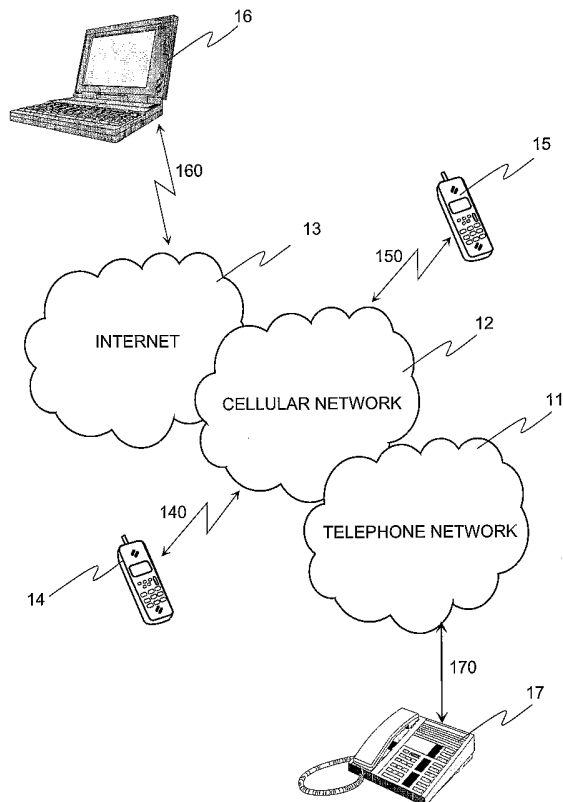
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(54) Title: A METHOD FOR UPDATING SESSION INITIATION INFORMATION IN CONNECTION WITH A TELEPHONE CALL AND A TERMINAL DEVICE USING THE METHOD



(57) Abstract: The invention relates to a method for updating session initiation information saved in a terminal device (14, 15) of a data communications network (12), and a data communications network arrangement utilizing the method and a mobile terminal device (14, 15, 40) belonging to the data communications network arrangement, in which method either the SIP protocol or a conventional telephone number is used for session initiation.

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A method for updating session initiation information in connection with a telephone call and a terminal device using the method

The invention relates to a method for updating session initiation information saved
5 in a terminal device connected to a data communications network which uses
either SIP (Session Initiation Protocol) or a conventional telephone number for
setting up a connection. The invention also relates to a data communications
network arrangement using the method, a terminal device used in the data
communications network and a software application saved in the terminal device,
10 which implements the method.

Conventionally, a telephone connection to be established is controlled and
initiated using a telephone number. Each terminal device or user has a unique
serial number, and by dialling this number the user can establish a connection
15 only with this one terminal device or its user. In practice, this technique has been
the only possibility for establishing a connection in conventional circuit-switched
telephone networks.

The emergence of various data networks has brought along also other ways to
20 control or establish a communications connection between two terminal devices.
Today, more and more conventional telephone calls are also transmitted via these
networks that were originally intended for data transfer. This provides the
possibility of using packet-switched data transfer connections in which the cost of
data communications is reasonably low. One example of such networks is the
25 Internet. In the Internet, the contact information of the other party is generally
defined or presented in some other way than the conventional telephone number.
One possible way of establishing a communications connection in these data
networks is to use SIP, the Session Initiation Protocol. The Session Initiation
Protocol has been standardized by IETF (Internet Engineering Task Force), and
30 its standard number is RFC 2543. The recipient's or user's address according to
SIP is of the form: user@network station[parameters] [additional information], i.e.
it resembles the form of e-mail addresses. Thus the SIP protocol makes it
possible to use various addresses that resemble e-mail addresses for establishing
voice connections as well.

35

Even today a telephone user can come to a situation where one of the persons to
be reached uses a conventional telephone number and some other person to be
reached uses a "telephone number" enabled by the SIP protocol, or a connection

identifier. In practice, this sets higher requirements for the telephone user, because the contact information of the other party can be any of the ways of presentation described above. In one way or another the telephone user must remain up to date and update the contact information of the other party frequently
5 enough in order to make it as easy as possible to establish a connection. This updating work takes time and is laborious, and therefore it is often neglected.

It is an objective of the present invention to provide a method and a data communications network arrangement, which can be used to ensure the up-to-
10 date condition of the contact information of the person with whom a communications connection has been established using the SIP protocol. Therefore, in the procedure according to the invention it is possible to use, when establishing a new voice connection, the most suitable session initiation procedure which is always up to date, and it is not necessary for the user to look for the
15 session initiation information needed before the initiation of the session in a separate step.

The objectives of the invention are achieved by a procedure in which during an active communications connection, the terminal devices in the connection
20 exchange up-to-date session initiation information concerning each other. When the user so wishes, the terminal devices transmit/save the received session initiation information in a telephone memo or the like used by the terminal device at the terminal device/person in question. Next time the last updated information is used when initiating a session.

25 The method according to the invention has the advantage that when establishing a new communications connection, it is always possible to use the most up-to-date session initiation information based on the previous communications connection.

30 In addition, the invention has the advantage that the information updating procedure can take place independently of the terminal device user, but the user can always prevent the updating of his/her contact information to another device.

35 Furthermore, the invention has the advantage that the user of the terminal device is saved the trouble of updating the information manually.

The method according to the invention for updating the session initiation information of a terminal device connected to a data communications network is characterized in that during a communications connection established using the SIP protocol, the terminal devices in the communications connection exchange
5 session initiation information.

The data communications network arrangement according to the invention is characterized in that during a communications connection established in the data communications network arrangement using the SIP protocol, the terminal devices
10 in the communications connection are arranged to exchange session initiation information.

The terminal device according to the invention is characterized in that during a communications connection established using the SIP protocol, the first terminal
15 device is arranged both to send its own session initiation information to another terminal device and to receive the session initiation information of another terminal device.

The software application according to the invention is characterized in that it
20 comprises software means for exchanging session initiation information between terminal devices, if the communications connection has been established using the SIP protocol.

Some preferred embodiments of the invention are described in the dependent
25 claims.

The basic idea of the invention is the following: The terminal device comprises a software application by means of which it is possible to transfer, between two terminal devices in a communications connection with each other, information on
30 the procedures and types of address information that can be used to establish a communications connection with the terminal device. During the communications connection, the terminal device receives and checks contact information it has received from another terminal device, and this information is compared with previous information that may exist in the memory of the terminal device. If the
35 pieces of information differ from each other or they do not exist yet, the received session initiation information is saved in the memory of the terminal device as the new contact information of the person or terminal device in question. Next time when a communications connection with the same person or terminal device is

wanted, the new contact information found in the memory of the terminal device is used as the default value for session initiation.

5 In the following, the invention will be described in more detail. Reference will be made to the accompanying figures, in which

Figure 1 shows, by way of example, a network arrangement according to the invention for establishing a communications connection,

10 Figure 2 shows, by way of example, the session initiation procedure between two terminal devices as a signal flow diagram,

Figure 3 shows, by way of example, a flow chart for saving information in terminal devices, and

15

Figure 4 shows, by way of example, a terminal device using the method according to the invention.

20 Fig. 1 shows an example in which the method according to the invention can be advantageously applied. The invention is not limited to the data communications network examples shown in Fig. 1, but it can also be applied to any other data communications network in which or through which the session initiation messages according to the SIP protocol can be transferred from one terminal device to another. The example of Fig. 1 shows three different data transfer
25 networks: the Internet, reference number 13, a cellular telephone network, reference number 12, and a conventional telephone network, reference number 11. The data communications networks shown in the example of Fig. 1 can transfer, at least in a limited manner, messages and signals from one network to another.

30

Reference numbers 14 and 15 denote two mobile terminal devices with voice connection capability, which are connected to the cellular network 12 and establish wireless communications connections 140 and 150 with the core of the cellular network 12. Reference number 17 denotes a telephone connected to the
35 telephone network 11 with a fixed connection 170. The telephone 17 can be a telephone based on analogue technology or alternatively a telephone based on ISDN (Integrated Services Digital Network) technology. Reference number No. 16 denotes a data processing device, which is connected to the Internet 13 via a

communications connection 160. This communications connection 160 can be either a fixed or a wireless communications connection. The data processing device 16 advantageously also comprises means by which a voice connection can be initiated to another corresponding device or the terminal devices 14 and 15 of a cellular network or a telephone 17 shown in the figure.

In the example of Fig. 1, it is thus possible to initiate a voice connection between any two terminal devices, e.g. from terminal device 14 to terminal device 15. The invention is advantageously applied in a situation where at least the terminal device 14 requesting the connection uses the SIP protocol. During the session initiation procedure, the terminal device 14 that requested the connection sends its own contact information via the data communications network 12 used to another receiving terminal device 15. The data communications network 12 used knows whether or not the receiving terminal device 15 can use the SIP protocol. If it can use the SIP protocol, the information of the terminal device 14 that requested the connection is sent to the recipient 15. If the receiving terminal device or the recipient 15 allows transmitting its own contact information, it is transmitted via the network 12 to the terminal device 14 that requested the connection. The received contact information of the other party can be saved in both terminal devices 14 and 15, if it is considered necessary.

If it is found out during session initiation that the recipient, e.g. the telephone 17, cannot use the SIP protocol, the data communications network used can convert the session initiation information of the recipient into a form in which a communications connection can be established. Information about this manner of session initiation and the address/number created is advantageously returned to the terminal device that requested a communications connection.

Fig. 2 shows, as an example, a signal flow diagram, which shows how the method according to the invention can be utilized in connection with terminal devices that use the SIP protocol. Figure 2 shows two subscribers: the first subscriber A, the session initiation information of whom is, according to the example, UserA@here.com and the IP address 100.101.102.103, and the second subscriber B, the session initiation information of whom is UserB@where.com and the IP address 110.111.112.113. Naturally, some other feasible unique user identifier which can be used by the data communications network is a possible alternative to be added to the subscriber information. Data communications between these two subscribers A and B is controlled and supervised by the proxy

server PROXY.com, which belongs to the data communications network and the IP address of which is 120.121.122.123.

5 In the example of Fig. 2, subscriber A wants to initiate a communications connection to subscriber B. Subscriber A sends an invitation 21, which is directed to the proxy server PROXY.com. The invitation 21 comprises at least one piece of the contact information of subscriber B known by subscriber A. The proxy server directs the invitation 22 to subscriber B. Subscriber B is alerted, of which alert subscriber B transmits a message 23, which is directed via the proxy server as a
10 message 24 to subscriber A. When subscriber B is ready for data transfer, an OK signal is transmitted. The session initiation information of subscriber B according to the invention can advantageously be included in this OK signal 25. They can be transmitted fully automatically, or subscriber B must accept the transmission of session initiation information separately in each case. For example, automatic
15 transmission of information can be used for a calling subscriber who is already known, whereas information is transmitted to a previously unknown caller only with the permission of subscriber B.

From the proxy server PROXY.com, the information of subscriber B is then
20 transmitted in connection with the signal 26 to subscriber A. When subscriber A has received the message 26, it sends an acknowledgement message ACK 27. The session initiation information of subscriber A can advantageously be included in this acknowledgement message ACK 27. From the proxy server, the acknowledgement message ACK is transmitted as a message 28 to subscriber B.
25 Thus the session initiation information of each party has been transferred to the other party, if it has been considered necessary.

After this, data transfer continues between the terminal devices and is terminated when either of the users asks for it. The session initiation information according to
30 the invention can naturally also be transmitted during the actual data transfer or as part of the session termination procedure. The exchange of session initiation information that takes place during data transfer or session termination is advantageously carried out at the request of or as accepted by either user.

35 Fig. 3 shows, by way of example, a flow chart of the steps of handling the session initiation information of the other party that take place in the subscriber's terminal device. In step 31, a communications connection has been established between two terminal devices by using the procedure shown in Fig. 2, for example. In that

case, the session initiation information of the first subscriber have advantageously been transferred for the use of the other subscriber and vice versa. In step 32, it is checked if the information has really been received and whether it has changed since the last session initiation. In step 33, a decision is taken on saving the information received. If saving of the information received is not wanted or if the information has not changed, the next step is 35, in which the data handling process according to the invention ends. If it is decided in step 33, either automatically or as accepted by the user of the terminal device, to save the session initiation information, saving takes place in step 34. When saving has been performed, the next step is 35, in which the handling process ends.

Fig. 4 shows, by way of example, the principal parts of a mobile terminal device 40 of a cellular network that is part of the data communications network arrangement according to the invention. The terminal device 40 uses an antenna 41 for signal transmission and reception. Reference number 42 denotes the equipment that compose the receiver RX, by which the mobile terminal device 40 receives a signal from the cellular network 12. The receiver 42 comprises prior art equipment for all messages or signals to be received.

Reference number 43 denotes the equipment that compose the transmitter TX of the mobile terminal device. The transmitter means 43 perform on the signal to be transmitted all the signal processing functions needed when working with the cellular network 12.

In the terminal device, the essential operational unit with regard to utilizing the invention is the control unit 44 that controls the operation of the terminal device. It controls the operation of all the essential parts of the terminal device 40. It controls both reception and transmission. It is also used to control both the user interface UI, referenced number 46, of the terminal device and the memory 45 of the terminal device.

In the device arrangement according to the invention, the control unit 44 decides when the session initiation information according to the invention received from some other terminal device is saved in the terminal device 40 and whether to send its own session initiation information to another terminal device. On the basis of the session initiation information of the other party/terminal device it has received it also decides whether to alert the user of terminal device 40 about the information received or not. These procedures are advantageously implemented

by software applications saved in the memory 45 of the terminal device that implement the procedures of Figures 2 and 3.

- 5 The user interface 46 is used to control the functions of the terminal device and for the alerts and messages given to the user. By means of the user interface 46, the user of the terminal device 40 either accepts or prevents transmitting its own session initiation information. It can also be used to give a storing instruction concerning the session initiation information received.
- 10 Some preferred embodiments of the method and device according to the invention have been described above. The invention is not limited to the solutions just described, but it can also be used for exchanging between the parties e-mail addresses, web page addresses or possible image files related to a party. In addition, the inventive idea can be applied in many different ways within the scope
- 15 defined by the attached claims.

Claims

1. A method for updating (32-34) session initiation information saved in a first terminal device (14, 15, 16) connected to a data communications network (11, 12, 13), in which either the SIP protocol or a conventional telephone number is used for session initiation, **characterized** in that during a data communications connection (21-28) initiated by means of the SIP protocol, terminal devices in the data communications connection exchange session initiation information (25-28).
5
- 10 2. The method according to Claim 1, **characterized** in that the session initiation information is exchanged during a session initiation procedure (25 - 28).
3. The method according to Claim 2, **characterized** in that the session initiation information to be exchanged is at least one of the following: a connection identifier according to the SIP protocol, telephone number of a wired network, telephone
15 number of a cellular network, e-mail address or a web page address.
4. The method according to Claim 1, **characterized** in that in addition, the received session initiation information of a second terminal device is saved (33 - 34) always when previous session initiation information that concern the second
20 terminal device but differ from it is found in the first terminal device.
5. The method according to Claim 1, **characterized** in that in addition, the received session initiation information of the second terminal device is saved only
25 with the permission of a user of the first terminal device if no previous session initiation information of the second terminal device is found in the first terminal device.
6. A data communications network arrangement, which comprises at least one
30 data communications network (11, 12, 13), in which either the SIP protocol or a conventional telephone number is arranged to be used for session initiation, and terminal devices (14, 15, 16) connected to the data communications network, which comprise means for saving session initiation information, **characterized** in that during a data communications connection established by means of the SIP
35 protocol, the terminal devices (14, 15, 16) in the data communications connection are arranged to exchange session initiation information.

7. The data communications network arrangement according to Claim 6, **characterized** in that the session initiation information is arranged to be exchanged between the terminal devices (14, 15, 16) connected to the data communications network during the session initiation procedure.

5

8. The data communications network arrangement according to Claim 7, **characterized** in that the session initiation information to be exchanged is at least one of the following: a connection identifier according to the SIP protocol, telephone number of a wired network, telephone number of a cellular network, e-mail address or a web page address.

10

9. A terminal device (14, 15, 16, 40) of a data communications network, which comprises means for receiving (41, 42) signals, means for transmitting signals (41, 43), a control unit (44), a memory (45) and a user interface (46), the terminal device also comprising means for initiating a session either by means of the SIP protocol or a telephone number, **characterized** in that during a data communications connection initiated by means of the SIP protocol, a first terminal device (14, 15, 16, 40) is arranged both to transmit its own session initiation information to a second terminal device (14, 15, 16, 40) and to receive the session initiation information of the second terminal device.

15

20

10. The terminal device according to Claim 9, **characterized** in that said session initiation information transmitted or received by the terminal device is at least one of the following: a connection identifier according to the SIP protocol, telephone number of a wired network, telephone number of a cellular network, e-mail address or a web page address.

25

11. The terminal device according to Claim 10, **characterized** in that in addition, the received session initiation information of the second terminal device is arranged to be saved in the memory (45) of the first terminal device (40) always when previous session initiation information that concerns the same second terminal device but differs from it is found in the memory of the first terminal device.

30

12. The terminal device according to Claim 10, **characterized** in that the received session initiation information of the second terminal device is arranged to be saved only with the permission of a user of the first terminal device (40) if no

35

previous session initiation information of the second terminal device is found in the memory (45) of the first terminal device.

13. The terminal device according to Claim 10, **characterized** in that the
5 terminal device is a terminal device (14, 15) of a cellular network.

14. A software application saved in a terminal device (14, 15) of a cellular network (12), comprising:

- software means for transmitting its own session initiation information to a second
10 terminal device, and

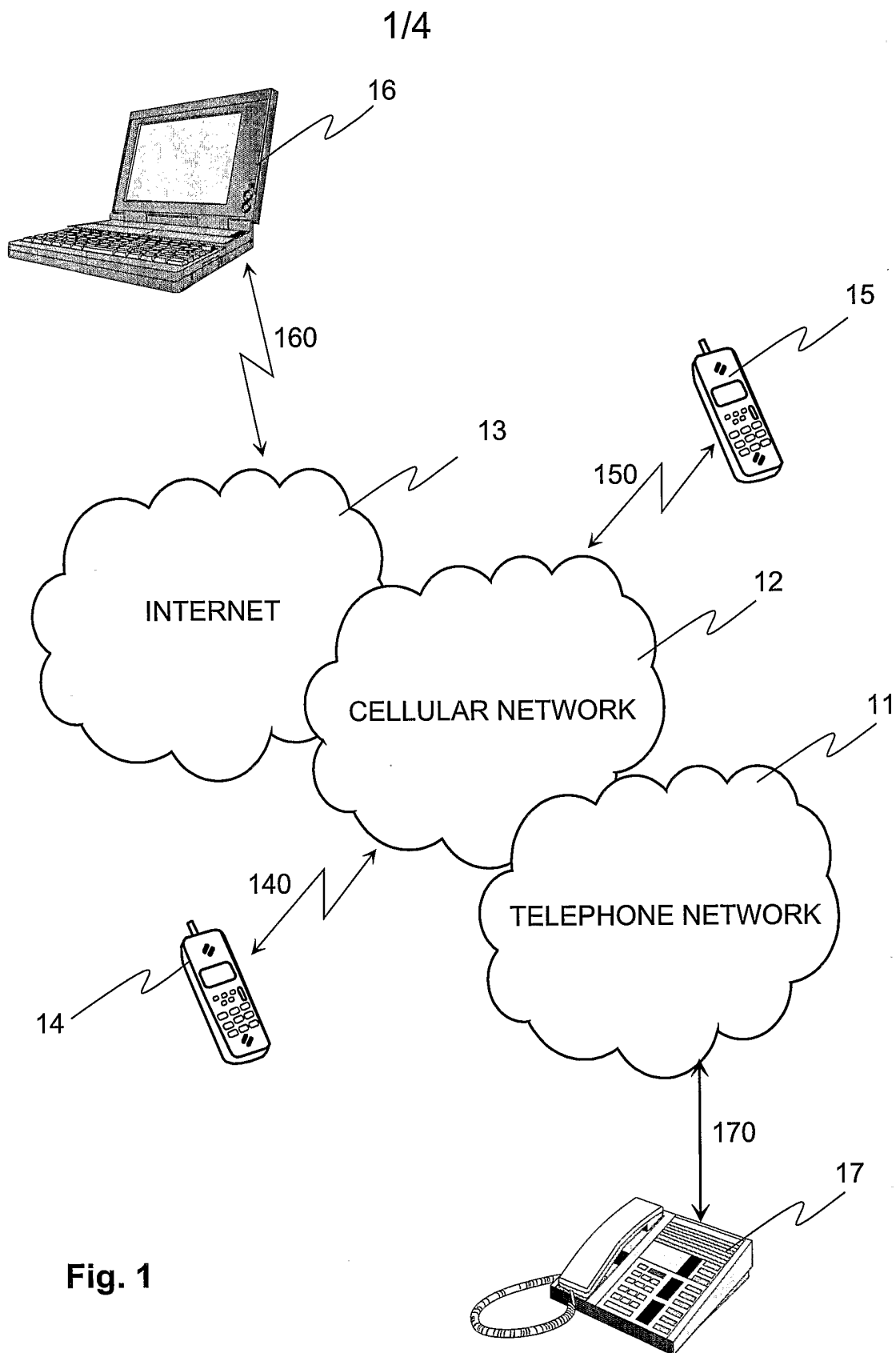
- software means for receiving the session initiation information transmitted by the second terminal device,

characterized in that it also comprises software means for exchanging session initiation information between terminal devices (14, 15) if a data communications
15 session has been initiated using the SIP protocol.

15. The software application according to Claim 13, **characterized** in that it also comprises software means for exchanging session initiation information between the terminal devices during a session initiation.
20

16. The software application according to Claim 15, **characterized** in that it also comprises software means for saving the received session initiation information always if previous session initiation information that concerns the second terminal device but differs from it is found in the memory (45) of the terminal device (14,
25 15, 40).

17. The software application according to Claim 15, **characterized** in that it also comprises software means for saving the received session initiation information only with the permission of a user of the terminal device (14, 15, 40) if no previous
30 session initiation information concerning the second terminal device is found in the memory (45) of the terminal device.



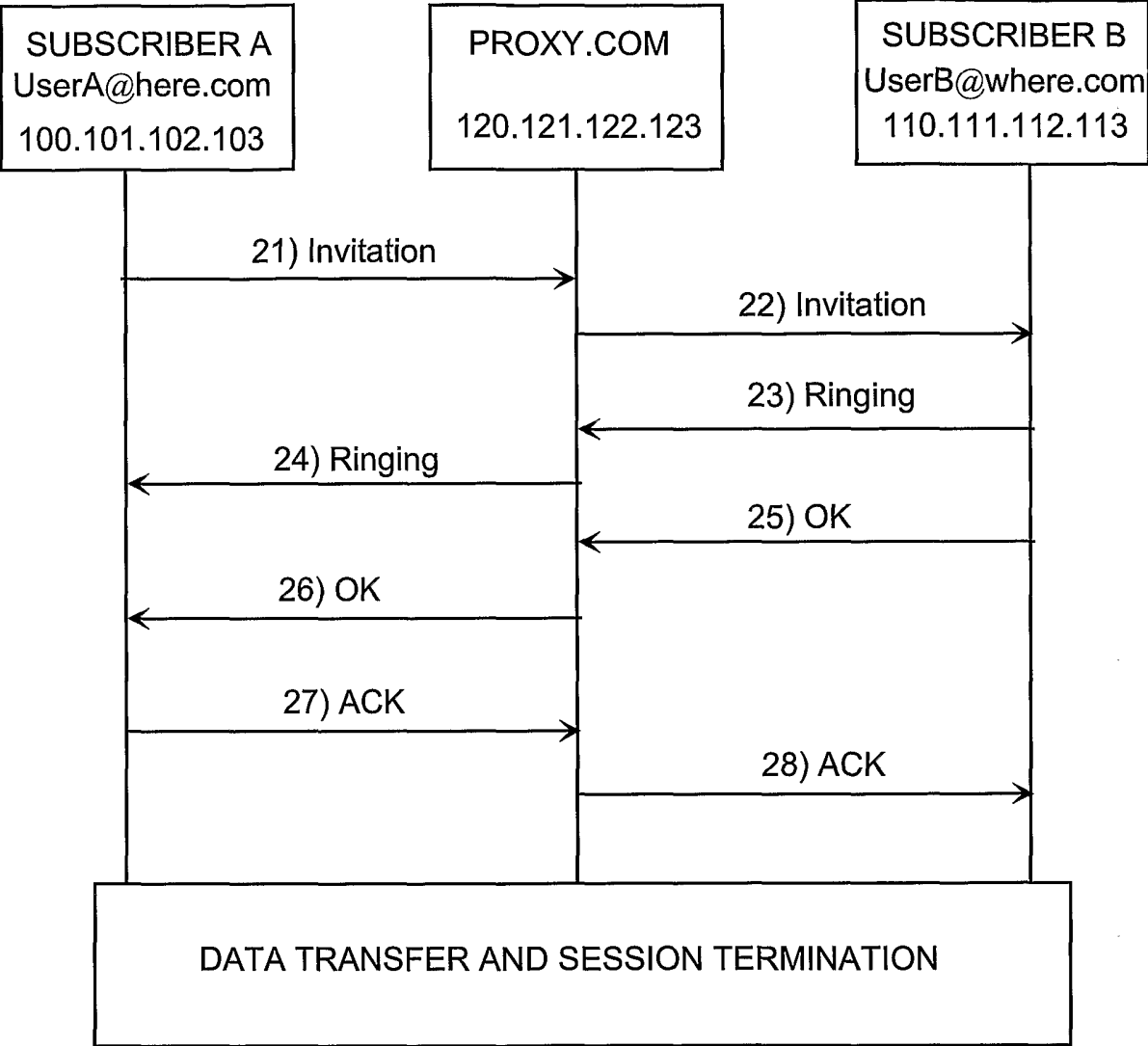


Fig. 2

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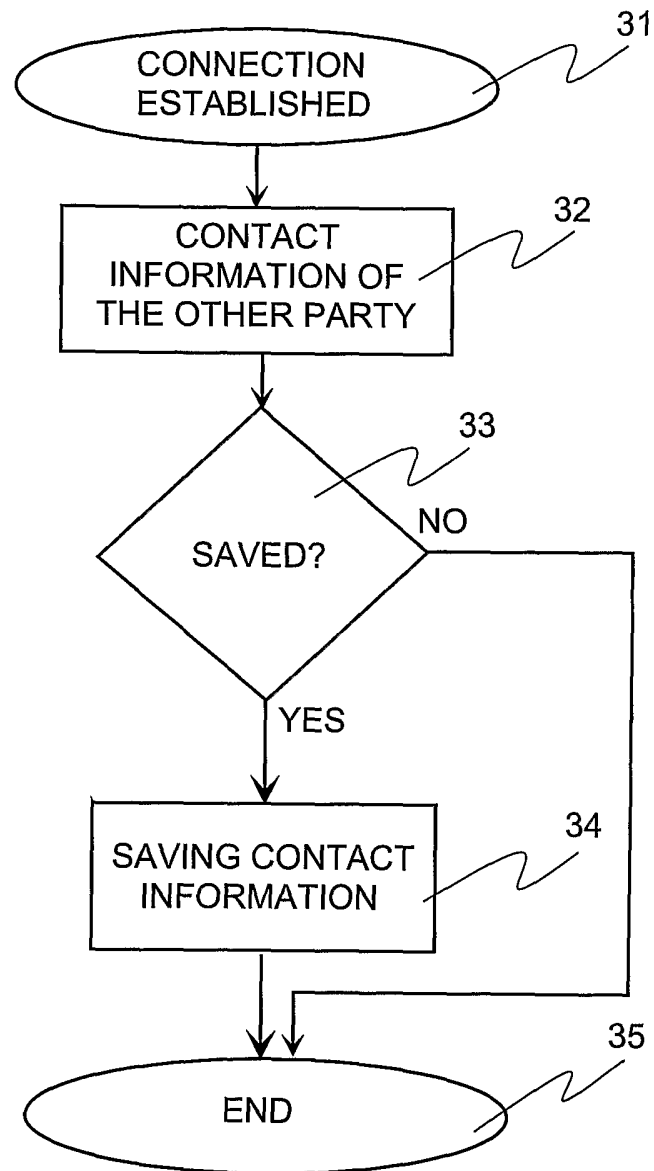


Fig. 3

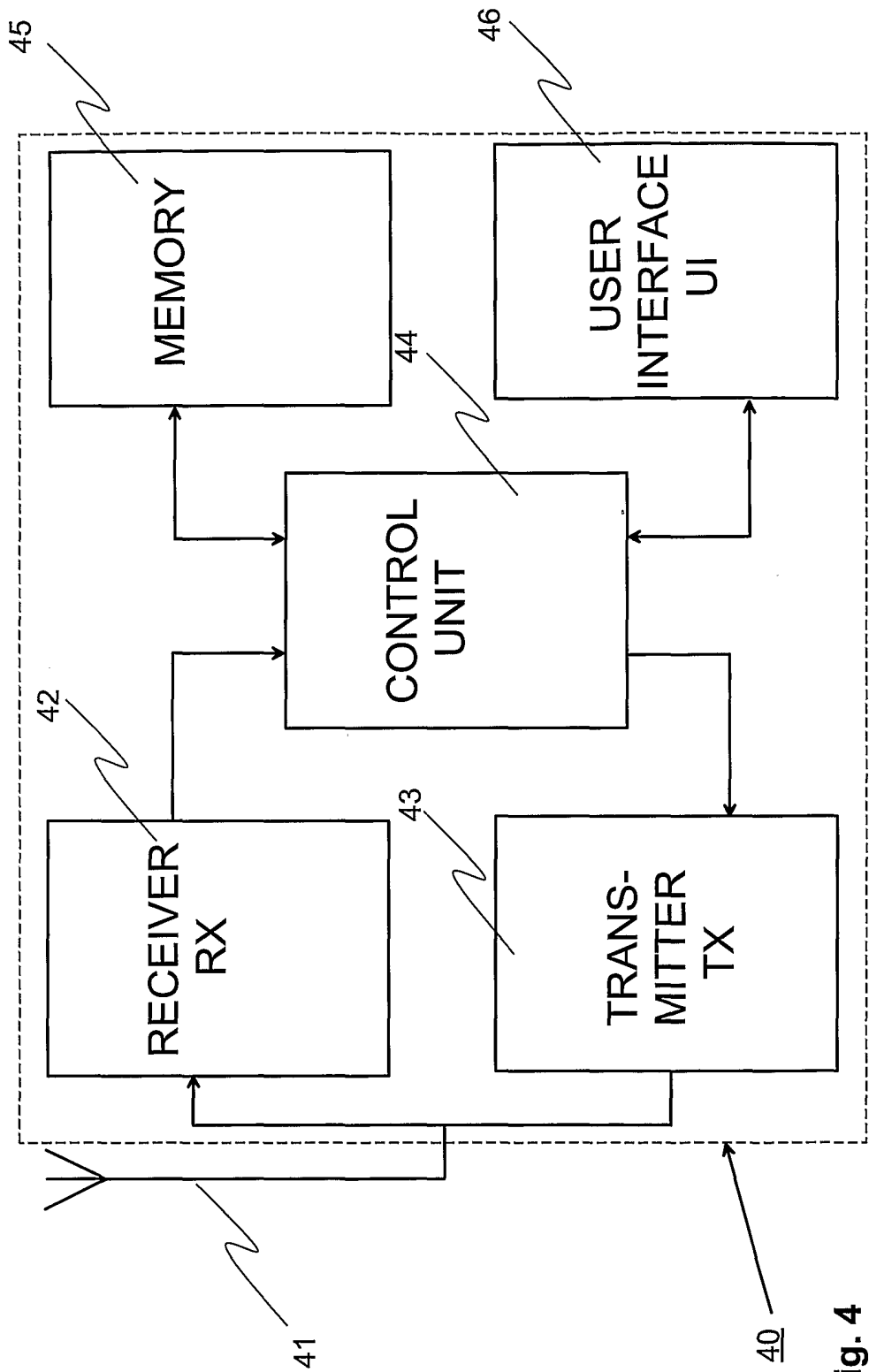


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 29/06, H04Q 7/32

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)

IPC7: H04L, H04Q, G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

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

EPO-INTERNAL, WPI DATA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1100250 A2 (NORTEL NETWORKS LTD), 16 May 2001 (16.05.2001), paragraphs [0025]-[0028]; [0041] --	1-17
A	US 6154528 A (BENNETT, III, R W ET AL), 28 November 2000 (28.11.2000), abstract --	1-17
A	WO 03021387 A2 (EMERSON, III, H E), 13 March 2003 (13.03.2003), abstract -- -----	1-17

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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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EP	1100250	A2	16/05/2001	CA	2323395 A	09/05/2001
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