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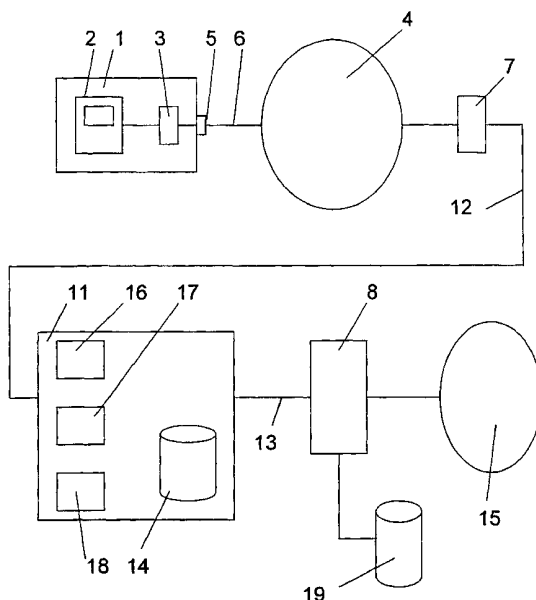
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- (71) Applicant (for all designated States except US): **DIRECT2INTERNET AB** [SE/SE]; Berghemsvägen 41, S-133 37 Saltsjöbaden (SE).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **CLAESSON, Jens** [SE/SE]; Berghemsvägen 41, S-133 37 Saltsjöbaden (SE).
- (74) Agents: **BERGLUND, Stefan** et al.; Bjerkéns Patentbyrå KB, Östermalmsgatan 58, S-114 50 Stockholm (SE).
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(54) Title: A DEVICE AND A METHOD FOR ESTABLISHING A DIGITAL TELECOMMUNICATION CONNECTION



(57) Abstract: The invention concerns a device and a method for establishing a digital telecommunication connection between a calling party (1) and a called party (8). A connecting processor (11) has input means (12) arranged to be connected to a connecting member (3) of the calling party (1) and an output connection (13) connecting the connecting processor to the called party (8). The connecting processor (11) identifies the calling party (1) by a unique name. A database (14) stores the unique name of each individual calling party (1) together with the associated parameters. The connecting processor (11) receives, upon said identification of the unique name, the parameters associated with the calling party from the database if the calling party is present in the database (14, 19) and then establishes said connection.



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**A device and a method for establishing a digital
telecommunication connection**

10 THE BACKGROUND OF THE INVENTION AND PRIOR ART

The present invention refers to a device for establishing a digital telecommunication connection between a calling party and a called party. The present invention also refers to a method for establishing a digital telecommunication connection between a calling party and a called party.

Such digital telecommunication connections frequently comprises a connecting member in the form of a modem of the calling party, a connecting line via a public switched network, and a connecting member in the form of a modem of the called party. The calling party may be a normal PC to be connected, by a user, to the called party. The called party can be PC or any other computer, an Internet supplier or a gateway to any other public or private network. The connection involves a modem synchronisation by a so-called handshaking between the modems, wherein modem-specific parameters are transferred from the modem of the calling party to the modem of the called party. The synchronisation comprises a frequency modulation for establishing contact between the calling modem and the called modem. Normally, the connecting or handshaking procedure is completed within a time period of about 15-45 seconds. Consequently, the time for connecting a PC to the Internet is considerable. This time period is inconvenient for the user. Furthermore, costs would be saved if the connecting time is reduced, since the

time period of using the public switched network would be shortened.

5 A further time-consuming procedure to be performed to have access to the Internet or any other network is the authentication.

10 A further problem refers to the fact that a set of modems and connecting adapters is required at the Internet supplier. For each such modem or other connecting adapter a specific, individual telephone number is required. Consequently, the calling party has to have the corresponding knowledge about which specific telephone number of the Internet supplier he is to use. If the calling party replaces his modem by a modem of another type, it
15 therefore might be necessary for him to dial another telephone number to reach the Internet supplier. This causes a lot of trouble for the Internet suppliers.

20 US-A-5 301 246 discloses a method of accessing a computer facility by the use of Calling Party Directory Number (CPDN). A data communication equipment is provided to store the CPDN of a calling party in a database. Upon receiving a telephone call from the calling party the data communication
25 equipment takes one of a number of courses of action depending on the CPDN of the calling party: answer the telephone call, refuse to answer the telephone call or return the telephone call to the calling party depending on information about the calling party identified by the CPDN.
30 Consequently, the object of the method disclosed in this document is to reduce the accessibility of computer systems to intruders.

35 WO89/11183 refers to a multi mode modem to be provided at the calling party and for communicating with a variety of modem types employing differing initial hand shake signals.

US-A-5 835 578 discloses a modem which comprises a ring detector arranged to detect the type of a calling modem. Moreover, the modem comprises a controller for configuring a datapump of the modem in accordance with the detected type of modem.

SUMMARY OF THE INVENTION

10 The object of the present invention is to reduce the time required for establishing a digital telecommunication connection between a calling party and a called party.

According to the present invention this object is obtained by the device initially defined, which comprises:

15 a connecting processor having input means arranged to be connected to a connecting member of the calling party and an output connection arranged to connect the connecting processor to the called party, wherein the connecting processor is arranged to identify the calling party by a unique name, to receive a number of parameters, which are associated with the calling party, and to establish, by means of the parameters, said connection between the connecting member of the calling party and the called party;

20 and

25 a database arranged to store the unique name of each individual calling party together with the associated parameters,

30 wherein the connecting processor is arranged to receive, upon said identification of the unique name, the parameters associated with the calling party from the database if the calling party is present in the database.

By such a device the connection of the connecting member, such as a modem or an ISDN-adapter, of the calling party to the connecting member of the called party is substantially

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faster when the calling party is stored in the database than according to prior connecting procedures. By storing essentially all parameters required for the connection in a database, these may essentially be available to establish
5 the connection to the called party as soon as the calling party is identified.

According to an embodiment of the invention, the connecting processor may be adaptable to different types of connecting
10 members of the calling party. Hence, a connection may be performed by dialling one single number for each called party, since the connecting processor may includes several connecting units for different types of connecting members of the calling party.

15 According to a further embodiment of the present invention, the parameters are associated with the connecting member of the calling party. Thereby, the connecting member of the calling party may include a modem. Said number of parameters
20 may include parameters regarding the structure, the function and/or the quality of the connecting member of the calling party. The structure and function of the connecting member varies among different products available on the market. For instance, said number of parameters may include at least one
25 of data transmission speed, data compression type and error correction manner of the connecting member of the calling party. Moreover, the parameters may include modem transmission speed, modulation function variables modem manufacturing information, slip/PPP information etc.

30 According to a further embodiment of the present invention, the connecting processor includes a modem member and is arranged to adapt the modem member to the modem of the calling party by means of said parameters. The modem member
35 is preferably adaptable to essentially all available types of modems of the calling party. For instance, the modem

member may include a set of different modems each being adapted to one or several different types of modems of the calling party. Thereby, the connecting processor may be arranged to select a proper modem of the modem member in response the parameters loaded from the database and to perform the so-called handshaking procedure.

According to a further embodiment of the invention the parameters include authentication parameters, such as a user-ID and a logon, of the user of the calling party, which are required to give access to the called party. Thereby, the connecting processor may be arranged to load the authentication parameters from the database substantially immediately upon said identification of the unique name, and to transfer the authentication parameters to the called party. In addition, the connecting processor may be arranged to transfer the authentication parameters during said adapting of the modem member. Hence, authentication may be performed during the handshaking procedure.

According to a further embodiment of the present invention, the connecting processor is arranged to receive the parameters associated with the calling party from the calling party if the calling party is not present in the database, and thereby transfer the unique name of the calling party together with the associated parameters to the database. Thus, in case the calling party is not yet present in the database the connection is performed according to previous technique. However, in this case connecting processor will transfer the unique name of the calling party together with the associated parameters to the database, and consequently, at the next call from the calling party, the parameters will be available in the database.

According to an advantageous application of the present invention, the called party includes an Internet supplier.

Thus, the time period for connection to an Internet supplier may be substantially reduced, making Internet more attractive to the users.

5 According to a further embodiment of the present invention, the connecting processor is arranged to receive, from the calling party via the input means, a calling signal including an identification signal identifying the calling party by said unique name, and wherein the connecting
10 processor comprises means arranged to identify the calling party by said identification signal. The input means may be arranged to be connected to the connecting member of the calling party via a network having means for delivering said identification signal. The identification signal may be
15 realised by the so-called Calling Party Directory Number (CPDN) which is provided by public switched networks.

According to the present invention, the object is also obtained by the method initially defined by means of a
20 connecting device having a database for storing a unique name of a calling party together with a number of parameters, which are associated with the calling party, wherein the method comprises the steps of:

receiving by the connecting device a calling signal
25 from the calling party, said signal including the unique name of the calling party;

identifying the calling party by the unique name;

searching the unique name of the calling party in the
database;

30 loading said parameters associated with the calling party; and

establishing said connection between the calling party and the called party by means of the parameters.

35 Preferred embodiments of the method are defined in the dependent claims 17 to 23.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is now to be explained by the
5 description of different embodiments, disclosed by way of
example, and with reference to the drawings attached, in
which

- Fig 1 discloses schematically a connecting device
according to the present invention, and
10 Fig 2 discloses a flow chart illustrating a connecting
method according to the present invention.

DETAILED DESCRIPTION OF DIFFERENT EMBODIMENTS

15 Fig 1 discloses a digital telecommunication arrangement. In
Fig 1, a calling party 1 is illustrated by a computer 2, for
instance a PC, and a connecting member in the form of a
modem 3. The modem 3 may be of any arbitrary type, for
instance a V.90, V.34 etc, and of any arbitrary modem
20 manufacturer. The modem 3 is connectable to a public
switched network 4 via the telephone jack 5 and a line 6. At
the end of the public switched network 4 there is a public
switch 7 to which a called party 8 is connected via a
connecting line to be explained more closely below. In the
25 embodiment disclosed, the called party 8 is an Internet
supplier.

According to the present invention, a connecting processor
11 is provided between the public switch 7 and the called
30 party 8. More specifically, the calling party 8 is connected
to the public switch 7 via a first line 12 forming input
means to the connecting processor 11, the connecting
processor 11 and a second line 13 forming output means from
the connecting processor 11. The connecting processor 11 may
35 be realised by a computer having a storing member 14, such
as a hard disc or any other suitable computer memory,

arranged to store a database. From the called party 8, i.e. the Internet supplier, the Internet 15 is available.

The public switched network 4 and the public switch 7 are arranged to provide a calling signal when the calling party rings the telephone number of the called party 8. The calling signal includes a ring signal and an identification signal forming a unique name of the calling party 1 by which the calling party 1 is identified. The identifying signal may be a so-called Calling Party Directory Number (CPDN) which is normally delivered by public switched networks.

The connecting processor 11 includes identifying means 16, in the form of software, which identifies the calling party 1 by means of the CPDN. Furthermore, the connecting processor 11 comprises receiving means 17 arranged to receive a number of parameters, which are associated with the calling party 1 and which are required for establishing a connecting line between the calling party 1 and the called party 8. These parameters includes for instance the type of the modem and the modem transmission speed, such as V.90, V.34 etc, error correction protocol, such as V.42 LAPM, MNP2-4, MNP10, and data compression protocol, such as MNP5, V.42''. The parameters may also include the quality of the line 6. Furthermore, in accordance with the present invention the parameters may include authentication parameters, such as the user-ID and the logon of the user of the calling party 1 for entering the called party 8. The parameters received by the receiving means 17 of the connecting processor 11 are stored in the database of the storing member 14 together with the CPDN of the calling party 1. Consequently, upon the next call from the calling party 1, the parameters are already known to the connecting processor 11.

The connecting processor 11 is, in the embodiment disclosed, directly connected to the called party 8 by means of the second line 13, for instance formed by an optical fibre cable. The connecting processor 11 also includes a modem member 18, which is adaptable or configurable to be connected to the modem 3 of the calling party 1. The modems 3 may be of different types, for instance V.90, V.34, or an ISDN-adaptor. The modem member 18 may include a set of modem units, each of which being adapted to be connected with one or several modems 3 of different types.

The connecting processor 11 is arranged to perform the handshaking procedure between the modem 3 of the calling party and the modem member 18 by means of the parameters stored in the database of the storing member 14.

Furthermore, the connecting processor 11 is arranged to transfer the authentication parameters to the called party substantially immediately upon said identification of the unique name, i.e. during said handshaking procedure or adapting of the modem member 18 to the modem 3. Thereby the authentication may be completed when the handshaking procedure is finished. The authentication parameters, e.g. the user-ID and the logon, may be stored in a general database 19, a so-called RADIUS, which is connected to the called party 8 and which contains the user-ID and the logon of all users having access to the Internet 15 via the called party 8. The authentication parameters are hence loaded from the database 19 by the connecting processor 11 immediately after identification of a calling party 1. In the case that several users are associated with the calling party 1, the connecting processor 11 may be arranged to receive the authentication parameters of all these users. Consequently, authentication for any one of these users may be completed before the handshaking procedure is finished.

Fig 2 discloses a flow chart illustrating the process of connecting a calling party 1 to the called party 8.

Box A represents the start of the connecting process.

5

Box B represents the idle mode of the connecting processor 11 during which it is prepared to receive a calling signal from the calling party 1.

10 Box C represents the identification of the calling party 1 by the CPDN. It is to be noted that the identifying signal may precede the ring signal from the calling party 1, i.e. the public switch 7 knows the identity of the calling party 1 before the calling party 1 dials the ring number.

15

Box D represents searching in the database of storing member 14 for the CPDN of the calling party 1. If the CPDN of the calling party 1 is found in the database, the parameters of the calling party 1 are loaded from the database.

20

Box E represents a check if the parameters stored in the database of the storing member 14 are still valid. In case one or more parameters are changed the connecting process continues to box K. If all parameters are still valid the
25 connecting process continues to box G.

Box F represents the adaptation of the modem member 18 to the modem 3, in response to the parameters, for the establishment of a connecting line between the modem 3 of
30 the calling party 1 and the called party 8.

Box G represents the possibility of saving in the database of the storing member 14 any new parameters or other information, which was registered during the connection
35 process.

Box H represents searching in the database 19 for the CPDN of the calling party 1. If the CPDN of the calling party 1 is found in the database 19, the authentication parameters of the calling party 1 are loaded from the database 19.

5

Box J represents a check if the authentication parameters stored in the database 19 are still valid. In case one or more authentication parameters are changed the connecting process continues to box J. If the authentication parameters are found, the authentication is completed.

10

Box K represents the establishment of the connection between the user of the calling party 1 and the called party 8.

15 If the CPDN of the calling party 1 is not found in the database of the storing member 14, the parameters required for the connection is loaded from modem 3 of the calling party 1 according to conventional technique. Thereafter, the connecting line is established as represented by box K.

20

Box L represents the saving in the database of the storing member 14 of the parameters required for establishing a connecting line between the modem 3 and the called party 8 so that, at the next call from the calling party 1, the parameters may be loaded from the database of the storing member 14.

25

The present invention is not limited to the embodiments disclosed above but may be modified and varied within the scope of the following claims.

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In particular, it is pointed out that the invention is not only applicable to the connection of a modem to a Internet supplier but also to connecting modems of facsimile devices to each other and to other digital equipment. The invention

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may also be applied to the connecting process involving mobile cellular telephones.

5 The connecting processor 11 is closely connected to the called party 8 and may form an integrated part of an Internet supplying unit. It is also possible within the scope of the invention to arrange one common connecting processor 11 for more the one called party 8.

10 Although Fig 1 only discloses one calling party 1 it is of course understood that a great number of calling parties 1 may be included in the connecting arrangement and the connecting processor 11 and the storing member 14 may store and handle the CPDN and the parameters regarding a large
15 number of connecting members 3.

Claims

1. A device for establishing a digital telecommunication connection between a calling party (1) and a called party (8), the device comprising:
- 5 (8), the device comprising:
- a connecting processor (11) having input means (12) arranged to be connected to a connecting member (3) of the calling party (1) and an output connection (13) arranged to connect the connecting processor to the called party (8),
- 10 wherein the connecting processor (11) is arranged to identify the calling party (1) by a unique name, to receive a number of parameters, which are associated with the calling party (1), and to establish, by means of the parameters, said connection between the connecting member
- 15 (3) of the calling party and the called party; and
- a database (14, 19) arranged to store the unique name of each individual calling party (1) together with the associated parameters,
- wherein the connecting processor (11) is arranged to
- 20 receive, upon said identification of the unique name, the parameters associated with the calling party from the database if the calling party is present in the database (14, 19).
- 25 2. A device according to claim 1, wherein the connecting processor (11) is adaptable to different types of connecting members (3) of the calling party (1).
3. A device according to claim 2, wherein the parameters
- 30 are associated with the connecting member of the calling party (1).
4. A device according to claim 3, wherein the connecting member (3) of the calling party (1) includes a modem.

5. A device according to claim 4, wherein said number of parameters includes parameters regarding the structure, the function and/or the quality of the connecting member (3) of the calling party (1).

5

6. A device according to claim 5, wherein said number of parameters includes at least one of data transmission speed, data compression type and error correction manner of the connecting member (3) of the calling party (1).

10

7. A device according to any one of claims 4 to 6, wherein the connecting processor (11) includes a modem member (18) and is arranged to adapt the modem member (18) to the modem (3) of the calling party (1) by means the parameters.

15

8. A device according to any one of the preceding claims, wherein the parameters include authentication parameters, which are required to give access to the called party (8).

20

9. A device according to claim 8, wherein the connecting processor (11) is arranged to load the authentication parameters from the database (19) substantially immediately upon said identification of the unique name, and to transfer the authentication parameters to the called party (8).

25

10. A device according to claim 9, wherein the connecting processor (11) is arranged to transfer the authentication parameters during said adapting of the modem member (18).

30

11. A device according to any one of claims 8 to 11, wherein the authentication parameters include a user-ID and a logon of user of the calling party (1).

35

12. A device according to any one of the preceding claims, wherein the connecting processor (11) is arranged to receive the parameters associated with the calling party from the

calling party if the calling party (1) is not present in the database (14), and thereby transfer the unique name of the calling party (1) together with the associated parameters to the database (14, 19).

5

13. A device according to any one of the preceding claims, wherein the called party (8) includes an Internet supplier (9).

10

14. A device according to any one of the preceding claims, wherein the connecting processor (11) is arranged to receive, from the calling party (1) via the input means (12), a calling signal including an identification signal identifying the calling party (1) by said unique name, and
15 wherein the connecting processor (11) comprises means (16) arranged to identify the calling party (1) by said identification signal.

20

15. A device according to any one of the preceding claims, wherein the input means (12) is arranged to be connected to the connecting member (3) of the calling party via a network (4) having means (7) for delivering said identification signal.

25

16. A method for establishing a digital telecommunication connection between a calling party and a called party by means of a connecting device having a database for storing a unique name of a calling party together with a number of parameters, which are associated with the calling party,
30 wherein the method comprises the steps of:

receiving by the connecting device a calling signal from the calling party, said signal including the unique name of the calling party;

identifying the calling party by the unique name;

35

searching the unique name of the calling party in the database;

loading said parameters associated with the calling party; and

establishing said connection between the calling party and the called party by means of the parameters.

5

17. A method according to claim 16, wherein said establishing includes adapting the connecting device to a connecting member of the calling party (1) by means of the parameters.

10

18. A method according to any one of claims 16 and 17, wherein the parameters include authentication parameters, which are required to give access to the called party.

15

19. A method according to claim 18, including the steps of: loading the authentication parameters from the database substantially immediately upon said identification of the unique name, and transferring the authentication parameters to the called party.

20

20. A method according to claim 19, wherein the authentication parameters are transferred during said adapting of the connecting device.

25

21. A method according to any one of claims 18 to 20, wherein the authentication parameters include a user-ID and a logon of the user of the calling party.

30

22. A method according to any one of claims 16 and 21, including the step of loading said parameters associated with the calling party from the database if the calling party is present in the database.

35

23. A method according to any one of claims 16 to 22, including the further step of transferring said parameters

associated with the calling party from the calling party to the database if the calling party is not present in the database.

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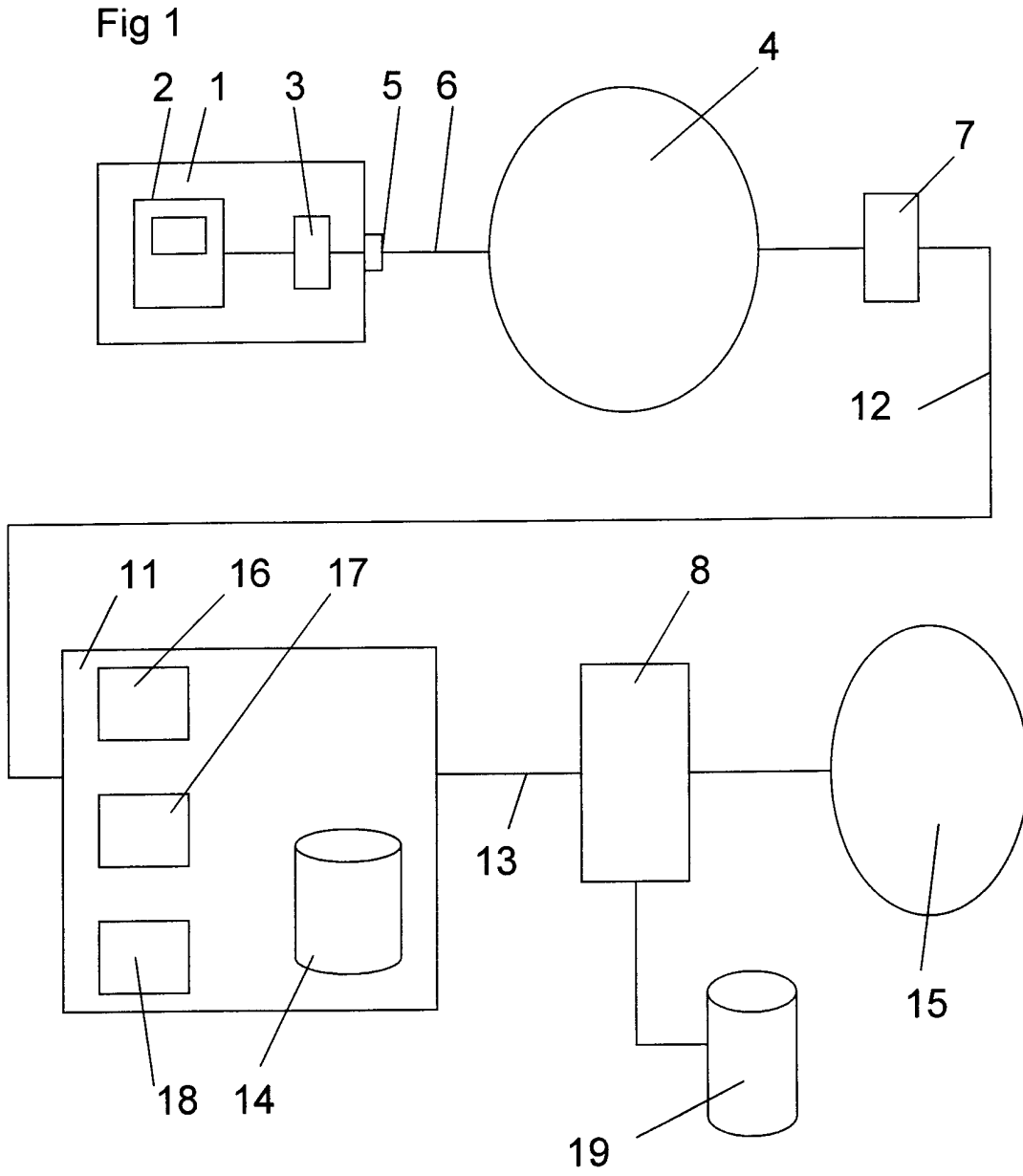


Fig 2

