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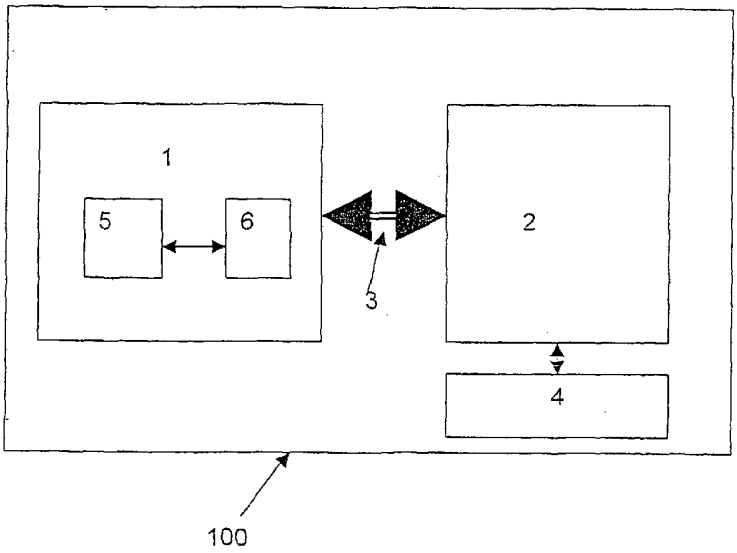
(54) Title: METHOD AND APPARATUS FOR THE RETRIEVAL AND TRANSMISSION OF CELLULAR RADIO TELEPHONE DATA



(57) Abstract: A data transmission and retrieval device (100) comprising a processing means including a microprocessor (5) and memory (6), and a cellular radio telephone transceiver (2) including a memory, and coupled to the processing means, the transceiver being operable to receive instructions from an external source, and to extract control data carried in a signal received thereby from at least one fixed remote transceiver of a cellular radio telephone network, the processing means being operable to determine the receipt of an instruction, and, in response thereto, to provide a command to the transceiver, whereby the transceiver is operable, in response to the command, to assemble the extracted control data into a text message and to forward the text message to a remote receiving unit.

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"Method and Apparatus for the Retrieval and Transmission of Cellular Radio Telephone Data"

Field of the Invention

The present invention relates to a method and apparatus for the retrieval and transmission of cellular radiotelephone data, particularly, although not exclusively, data relating to the position of cellular radio telephone device.

Background Art

The use of cellular radiotelephone devices is widespread. Typically, these devices transmit audio, video, and text data, but, in addition, each transmission includes extra data, such as information regarding the device itself, and data regarding the base station with which the device is in communication with. This information is required for correct operation of the cellular radiotelephone system, and provides for such features as handoff, and correct location of a cellular radiotelephone device within the network so as to transmit data to the device.

This additional data is not always accessible by external devices/ parties, as it purely used by the network and the device operating within the network. In particular, the additional data is not accessible remotely. However, some of the additional data may have other applications outside of its usual uses. However, unless this data is remotely accessible, these other applications are not capable.

Disclosure of the Invention

According to the present invention, there is provided a data transmission and retrieval device comprising a processing means including a microprocessor and memory, and a cellular radio telephone transceiver including a memory, and coupled to the processing means, the transceiver being operable to receive instructions from an external source, and to extract control data carried in a signal received thereby from at least one fixed remote transceiver of a cellular radio telephone network, the processing means being operable to determine the receipt

of an instruction, and, in response thereto, to provide a command to the transceiver, whereby the transceiver is operable, in response to the command, to assemble the extracted control data into a text message and to forward the text message to a remote receiving unit.

The control data may comprise first and second control data, the transceiver being operable to assemble the first control data in a first text message, and the second control data in a second text message.

The control data may be received and extracted by the transceiver and stored in transceiver memory, whereby the processing means is operable to copy the control data to the processing means memory, and to then assemble the control data into the text message from the processing means memory.

The instruction may be in the form of a text message or a telephone call.

According to another aspect of the present invention, there is provided a method of data transmission and retrieval, the method comprising the steps of:

instructing a transceiver from an external source;

determining the receipt, by the transceiver, of the instruction;

extracting control data from a signal received by the transceiver;

instructing the transceiver, upon determination of receipt of the instruction, to assemble the extracted control data into a text message; and

to forward the text message to a remote receiving unit.

Thus, the present invention provides a device and a method for extracting control data that can then be forwarded to a remote receiving unit, which can then be used, for example, to determine the location of the data transmission and retrieval unit. This unit, could, for example, be located in a vehicle, thus enabling the

location of the vehicle to be determined. This has the advantage of providing a location device that utilises existing cellular radiotelephone networks.

Brief Description of the Drawings

The invention will now be described, by way of example only, with reference to the accompanying drawings of which:

Figure 1 is a block diagram of a data retrieval and transmission device in accordance with the present invention; and

Figure 2 is a schematic illustration of a cellular radio telephone network in which the device of Figure 1 is used.

Best Mode(s) for Carrying Out the Invention

Throughout the specification, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

A data transmission and reception device 100 comprises a data transmission and retrieval module 1 coupled to a cellular radiotelephone transceiver 2.

The data transmission and retrieval module 1 comprises a microprocessor 5 and memory 6, and other associated circuitry (not shown), whose operation will be described in more detail below. The data transmission and retrieval module 1 will be hereinafter referred to as "the module 1". The microprocessor 5 and memory 6 can be of any suitable, known, type, which will be configured and programmed to operate as will be described in more detail below. Similarly, the associated circuitry will be of any suitable configuration to provide for the described operation.

In the embodiment described herein, the transceiver 2 is a standard TC35 GSM module operating in accordance with the GSM cellular radiotelephone standard,

and manufactured by Siemans ™. The transceiver 2 includes microprocessor, memory and other suitable circuitry (not shown) – as is well known. However, other GSM modules may be used, or modules operating in accordance with other cellular radiotelephone standards such as CDMA could be used. However, in this case, suitable commands would have to be used.

The operation of such modules is well known to persons skilled in the art, and, as such, need not be described in any further detail herein – except as is relevant to the present invention.

The data transmission and retrieval device 100 also includes a Subscriber Identification Module (SIM) card 4, coupled to the transceiver 2. The use of SIM cards in GSM devices is well known and, as such, need not be described in any further detail herein - except as is relevant to the present invention.

The module 1 and the transceiver 2 are coupled via a standard RS232 connection 3 with preferred settings of 9600, 8, N, 1, although any standard serial connection will accommodate transfer.

The module 1 and the transceiver 2 communicate in a manner analogous to that between a personal computer and a modem using the standard ASCII AT command set. The AT^MONI and AT^MONP commands referred to below are specific to the TC35 module used in this embodiment. Further details of the AT commands are to be found in the technical manual for the TC35 module, produced by Siemens – Doc ID:TC35-ATC01-V02.00.

In use, the data transmission and retrieval device 100 operates within a cellular radiotelephone network 101 – in the embodiment described herein a network operating in accordance with the GSM standard. The data transmission and retrieval device 100 can be a mobile unit located, for example, in a vehicle.

The cellular radiotelephone network 101 is illustrated schematically in Figure 2. As is well known in the art, cellular radiotelephone networks comprise a plurality of cells 102. Each cell 102 includes a base station 103 that can communicate

with mobile units 104 located within its cell 102, as well as (usually) mobile units 104 located in other nearby cells. Both the base stations 103 and the mobile units 104 include GSM modules that allow for communication between them. Each base station 103 is also in communication with a switching centre 105. The switching centre 105 may also include a short message service (SMS) centre 106 for handling SMS text messages. The arrangement of cellular radiotelephone networks, and the transmission of audio, visual and text messages therein is well known to persons skilled in the art, and insofar as it is not relevant to the present invention, need not be described in any further detail herein.

Communications between any two mobile units 104a, 104b is via nearby base stations 103a, 103b (usually in the same cell as the mobile unit), and the switching centre 105 – as is well known. In addition to audio and other multimedia data communications, communications may also be in the form of SMS text messages in which a text message, of no more than 26 characters in length, is sent to another mobile unit, or other suitable receiver.

As mentioned in the preamble, when mobile and base stations are in communication, control data is transmitted, which allows for functioning of the network, base stations and mobile units. Such control data includes cell ID, channel ID, colour code, the timing advance, and the dB rating of the base stations, and is transmitted over a control channel – as is well known to person skilled in the art. This control data is required by the base stations, and mobile units, to ensure, for example, that signals are transmitted correctly between mobile units and base stations, that mobile units can be located, and that calls can be handed off when mobile units move from one cell to another.

In the present invention, the data transmission and retrieval device 100 can receive text messages or – in a second embodiment - conventional telephone calls, from a remote unit 200 – which can be mobile, or fixed, but includes a GSM module, and which is operable to instruct the data transmission and retrieval device 100, to extract, and send, control data to a remote location centre 107 for the purpose of which will be mentioned below.

The data transmission and retrieval device 100 is operable, in response to the instruction from the remote unit 200, to transmit SMS messages to the remote location centre 107, the SMS messages containing the control data, from the data transmission and retrieval device 100, as will be described in further detail below.

The operation of the data transmission and retrieval device 100 will now be described by way of an example of its use.

Consider that the location of the data transmission and retrieval device 100 - within the network 101 - is required to be known. The location of the data transmission and retrieval device 100 can be deduced from the control data mentioned above – such as the cell ID, the channel ID, the colour code, the timing advance, and the dB rating of nearby base stations.

In use, therefore, if a person requires to find the location of the data transmission and retrieval device 100, then the control data must be acquired and appropriate calculations made, using this control data, to deduce the location of the data transmission and reception device 100. These calculations are made at the remote location centre 107, and can be carried out in a number of ways. As this is not relevant to the present invention, it need not be described in any further detail herein. The present invention is concerned with extracting the control data from control channel data, and transmitting the relevant control data to the remote location centre 107 – as will described below.

Briefly, the data transmission and retrieval device 100 is operable to extract relevant control data that is received, by the transceiver 2 and stored in memory, from control channel transmissions, and to embed it into two SMS text messages that are then sent to the remote location centre 107.

The extraction of the control data from the control channel transmissions is already performed as a standard operation of the transceiver 2.

The communications between the data transmission and retrieval device 100, and the remote location centre 107, and the remote unit 200, use the cellular radiotelephone network 101 in the conventional manner.

The first step in this process is to instruct the data transmission and retrieval device 100 to begin the process of extracting and transmitting the control data. This instruction can be in the form of a text message (in the first embodiment), or a conventional telephone call (in the second embodiment), that is sent to the data transmission and retrieval device 100, from the remote unit 200.

However, before this step, the data transmission and reception device 100 must have completed an Initialisation sequence.

The initialisation sequence comprises three steps:

1. Ping and wait for response.

2. Transceiver Setup.

3. SMS deletion.

1) Ping and wait for response.

The first step involves the module 1 sending a simple AT command, at regular intervals, to the transceiver 2, and waiting for response from the transceiver 2 in response thereto. This is done because the transceiver 2 takes a longer time to wake up than the module 1. Once an OK is received, in response to the simple AT command, then the module 1 knows that the transceiver 2 is ready for operation.

The AT command is like a null command. It simply responds with an OK, which makes it a good way to test connection.

2) Transceiver Setup

The second step involves setting up the transceiver 2 for the application of the present invention. In this step, a sequence of AT commands are sent to ensure the modes set in the transceiver 2 are set to that needed by the module 1. Once an AT command is sent, the module 1 waits for an OK response from the transceiver 2 otherwise it will re-poll every second for 60 second and then report an error visually by flashing LED's (not shown), provided on the data transmission and retrieval device 100, in sequence.

The setup strings are listed below.

ATE0 This turns echoing of commands back to the module 1 off.

AT+CMEE=2 This sets the Report Mobile Equipment Error mode to verbose, so that all error responses coming from the transceiver 2 will be in legible text form.

AT+CR=1 This allows an intermediate result code, transmitted at the point during connect negotiation when the transceiver 2 has determined the speed and quality of service, to be used, before any error control or data compression reports are transmitted, and before any final result code is transmitted.

AT+CRC=0 This sets Cellular Report code for incoming call indication to extended mode

AT+FCLASS=0 This sets Fax Class to data mode

AT+CBST=0 This sets Bearer Service Type to auto bauding.

AT+CNMI=3,1,0,2,1 This sets New SMS Message Indications to the following;

- Forward unsolicited result codes directly to the transceiver 2. The transceiver 2 - SIM card 4 link specific inband technique is used to embed result codes and data when the transceiver 2 is in on-line data mode.

- If SMS-DELIVER is stored in transceiver memory, the indication of the memory location is routed to the SIM card 4.

- No CBM indications are routed to the SIM card.

- If SMS-STATUS-REPORT is routed into the transceiver memory, the indication of the memory location is routed to the SIM card 4.

- A transceiver buffer of unsolicited result codes defined within this command is cleared.

AT+CSCA="+61415011501",145 This sets the SMS Service number and the service centre address format. The SMS service number is the number of the telecommunications provider that the data transmission and retrieval device 100 is registered with. This number will vary depending upon the SMS service used and the one given here is for example only.

AT+CMGF=1 This sets the SMS message format to text mode.

3) SMS Deletion.

This step a precautionary step to ensure that there are plenty of empty SMS spaces on the SIM card 4 for the application of the present invention. The same AT command, AT+ CMGD, is used to delete the first 15 SMS spaces. Once again, the module 1 always waits for an OK response from the transceiver 2 after each command is sent. Thus:

AT+CMGD=1

.

.

.

AT+CMGD=15

Once the initialisation sequence is completed, the module 1 sits in an idle state until it the transceiver 2 receives either an instructing SMS text message, or a telephone call, from the remote unit 200.

In the first embodiment described herein, the use of a text message as the instruction will be described.

The instructing SMS text message is sent to the data transmission and retrieval device 100 in the same way as conventional text messages are sent. They are sent to the data transmission and retrieval device 100 using it's unique identifier number. As is well known, SMS text messages includes a header which includes the destination address i.e. the unique identifier number of the data transmission and retrieval device 100, a footer indicating the unique identifier number of the sending device – in this case, the remote unit 200, and the text of the message itself. The text message also contains commands or functions for the data transmission and retrieval device 100, such as – respond back, turn on siren, disable car etc. This will be discussed in further detail below. Usually these instructions will be encrypted. The mode of encryption can be of any suitable known type. The use of encryption is well known, and, as such, need not be described in any further detail herein. The incoming SMS text messages will only be accepted from authorized senders (the details of which are stored in memory of the data transmission and retrieval device 100), and then it must also be encrypted correctly. The encryption would, in general, be specified by the insurance company or other body.

Upon receipt of an SMS, the module 1 determines if the SMS has been sent from the remote unit 200, i.e. that it is determined as coming from an authorised sender. Thus, the unique identifier of the sender must match an authorized number.

The contents of the incoming text message (which are encrypted as discussed above), is decrypted in a manner known to persons skilled in the art. The

decrypted text message will include command data and check data. The command data are packed commands which will instruct the data transmission and retrieval device 100 to perform certain functions such as unlock the vehicle, and locate the data transmission and retrieval device 100. The use of command data to provide, and carry out, instructions in this manner, is already known to persons skilled in the art, and, as such, need not be described in any further detail herein.

The check data is data that identifies the message as being intended for the correct data transmission and retrieval device 100. The check data is compared to check data stored in memory, and, if a match is found, then the SMS message is determined as intended for the receiving data transmission and retrieval device, and commands will be acted upon, and the following process carried out. In this embodiment, the serial number of the data transmission and retrieval device is used as the check data. In this way, if the SMS message is sent to the wrong device, it will not accept the SMS message as being correct even though it is encrypted correctly because the device you send the message to will have a different serial number to the unit the message was intended for.

A first parser (not shown) provided in the microprocessor 5, decrypts the incoming SMS text message, and ensures that it contains valid check data, then parses the command data for commands such as unlock, locate etc.

Once a valid instructing text message is received, then the following sequence is invoked:

An AT^MONI command is sent to the transceiver 2 from the module 1. This command is used to output serving/dedicated cell information – that is a first set of control data. This first set of control data will be copied into a first SMS text message and sent to the location centre 107.

A second set of control data will be copied into a second SMS text message in response to a second command – as will be seen below.

The response (from the transceiver 2) to this AT^MONI command is displayed as such:

Serving Cell I Dedicated channel

chann rs dBm PLMN LAC cell NCC BCC PWR RXLev C1 I chann TS timAdv PWR dBm Q ChMod

102 43 -67 26201 3006 6060 3 2 5 -102 35 I No connection

OK

It should be noted that the "No connection" is displayed because an SMS instruction has been sent, and so the transceiver 2 is not in active mode. In the second embodiment where the transceiver 2 is in active mode, dedicated channel information can be displayed – see below.

When a normal phone call is used, rather than an SMS message, then the response to the AT^MONI command would be:

Serving Cell I Dedicated channel

chann rs dBm PLMN LAC cell NCC BCC PWR RXLev C1 I chann TS timAdv PWR dBm Q ChMod

102 33 -77 26201 3006 6060 3 0 5 -102 25 I 102 4 1 5 -76 2 S_EFR

OK

Dedicated channel information can be obtained when the unit is rung (as opposed to an SMS being used).

The response from the transceiver 2 is scanned for the marker ChMod. When this marker is detected, the copying of data from the transceiver 2 is started. In

response to the AT^MONI command, the control data is temporarily copied to the module memory 6.

The response from the MONI command contains a lot of headers, so a second parser (not shown) provided in the microprocessor 5, waits until it reads the last header ChMod, before it actually begins to commit data to the memory 6. It is while it is stored in the module memory 6, that headers are stripped from the control data. The second parser sends and receives commands to and from the transceiver 2. It ensures that outgoing commands are accepted correctly and that incoming events to the transceiver (such as text message received and phone ring) trigger an appropriate response from the module 1.

After detection of the ChMod marker, then all incoming control data is copied from the transceiver 2 to the module memory 6, until the end marker OK is reached. When the OK is reached, the module 1 stops copying control data to the memory 6.

When the module 1 has stopped copying control data into memory 6, then it sends the hangup string ATH to the transceiver 2. The hangup command ensures that the connection is closed. This is important when the application has been invoked from a telephone call – as opposed to an SMS message – because the device will still be ringing at this point. However, the hangup string is sent even when the instruction is an SMS text message. The hangup command ensures that, if the transceiver is "ringing" – because it has been instructed by a call – that it is not answered. The transceiver 2 does not have to answer the call in order for the relevant control data to be obtained. This has the advantage that – from the point of view of the user of the remote 200 - a call is never made – and, as such, is not paid for.

In response to the hangup command, the transceiver 2 sends an OK command to the module 1.

Once the OK command has been received, then the module 1 sends the SMS string AT+CMGS="number to send SMS to" to the transceiver 2 which initiates the transceiver 2 to generate, and send, the first SMS text message, with the first set of control data stored therein. Once initiated, the transceiver 2 responds with a ">" character to prompt for text to be written into the first SMS text message, and the module waits for this ">" marker to begin writing the first SMS text message.

A small three-character header is placed before the actual data in the outgoing SMS text message. The three-character header provides the remote location centre 107 an identification of the control data that they are receiving. The module 1 is therefore operable at this stage to send the header data to the transceiver 2 for inclusion in the first SMS text message.

Once the header has been sent, then the module 1 sends the command to the transceiver 2 to assemble the first control data stored in the module memory 6 into to the first text SMS message.

Once the control data has been assembled into the first SMS text message, then the module 1 sends an SMS end character. This end character - (^Z) - lets the transceiver 2 know that the SMS text message is finished and that it is to be sent.

Once the first SMS text message has been sent, then the transceiver 2 responds with an OK command.

The data transmission and retrieval device 100 is then operable to generate, and send, a second SMS text message containing further control data – in this case, neighbouring cell information. This is achieved in a similar manner as for the previous first SMS text message.

In this case, an AT^MONP command is sent to the transceiver 2 from the module 1. The transceiver 2 is now in passive mode – having being hung up during the previous part of the process described above in respect of the first SMS text message. The AT^MONP command works while the transceiver 2 is in passive

mode. The response, to the AT^MONP command, by the transceiver 2 is displayed in such a manner:

Chann rs dBm PLMN BCC C1 C2

29 22 -70 26201 2 33 33

31 21 -72 26201 2 31 31

27 19 -75 26201 0 28 28

47 19 -76 26201 2 27 27

32 18 -77 26201 7 26 26

124 17 -79 26201 2 24 24

OK

The module 1 scans the response from the transceiver 2 for the marker C2. When the C2 marker is detected, then the module 1 starts copying control data to the module memory 6. As before, the response from the MONI command contains a lot of headers, so the parser waits until it reads the last header C2, before it actually begins to commit data to memory.

Once the C2 marker is detected, then all incoming control data from the transceiver 2 is copied to module memory 6 until the end marker OK is reached.

The length of the incoming control data will vary depending on how many neighbouring cells respond with. Because there is this uncertainty in length, all incoming control data past a certain point is truncated. This is done when the control data is stored in the module memory 6. Similarly, headers are also stripped from the data at this point. The control data must be truncated because the SMS text message can only fit 160 characters. In the embodiment described herein, control data is truncated to 140 characters.

There is no need to hangup the transceiver 2 at this point as it is already in passive mode.

The following steps are the same as for the first SMS text message, that is:

The module 1 sends the SMS string AT+CMGS="number to send SMS to" to the transceiver 2 which initiates the transceiver 2 to generate and send the second SMS text message. Once initiated, the transceiver 2 responds with a ">" character to prompt for text to be written into the second SMS text message, and the module waits for this ">" marker to begin writing the second SMS text message.

As before, a small three-character header is placed before the actual data in the outgoing SMS text message. The module 1 is therefore operable at this stage to send the header data to the transceiver 2 for inclusion in the second SMS text message.

Once the header has been sent, then the module 1 sends the command to the transceiver 2 to assemble the second control data into to the second text SMS message from the module memory 6.

Once the control data has been assembled into the second SMS text message, then the module 1 sends an SMS end character. This end character - (^Z) - lets the transceiver 2 know that the SMS text message is finished and that it is to be sent.

Once the second SMS text message has been sent, then the transceiver responds with an OK command.

The data transmission and retrieval device 100 then returns to the idle state.

Thus, the control data is retrieved and transmitted to the location centre 107 (in the form of an SMS text message), which can then use this data to determine the location of the device 100. The location centre 107 is able to extract the relevant

control data from the SMS text message, and perform the appropriate calculations.

It will be obvious to persons skilled in the art that modifications are possible within the scope of the present invention.

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The Claims Defining the Invention are as Follows

1. A data transmission and retrieval device comprising a processing means including a microprocessor and memory, and a cellular radio telephone transceiver including a memory, and coupled to the processing means, the transceiver being operable to receive instructions from an external source, and to extract control data carried in a signal received thereby from at least one fixed remote transceiver of a cellular radio telephone network, the processing means being operable to determine the receipt of an instruction, and, in response thereto, to provide a command to the transceiver, whereby the transceiver is operable, in response to the command, to assemble the extracted control data into a text message and to forward the text message to a remote receiving unit.

2. A data transmission and retrieval device according to claim 1, wherein the control data comprises first and second control data, the transceiver being operable to assemble the first control data in a first text message, and the second control data in a second text message.

3. A data transmission and retrieval device according to claim 1 or 2, wherein the control data is received and extracted by the transceiver and stored in transceiver memory, whereby the processing means is operable to copy the control data to the processing means memory, and to then assemble the control data into the text message from the processing means memory.

4. A data transmission and retrieval device according to any preceding claim, wherein the instruction is in the form of a text message or a telephone call.

5. A method of data transmission and retrieval, the method comprising the steps of:

instructing a transceiver from an external source;

determining the receipt, by the transceiver, of the instruction;

extracting control data from a signal received by the transceiver;

instructing the transceiver, upon determination of receipt of the instruction, to assemble the extracted control data into a text message; and

to forward the text message to a remote receiving unit.

6. A data transmission and retrieval device substantially as hereinbefore described with reference to the accompanying drawings.

7. A method of data transmission and retrieval substantially as hereinbefore described with reference to the accompanying drawings.

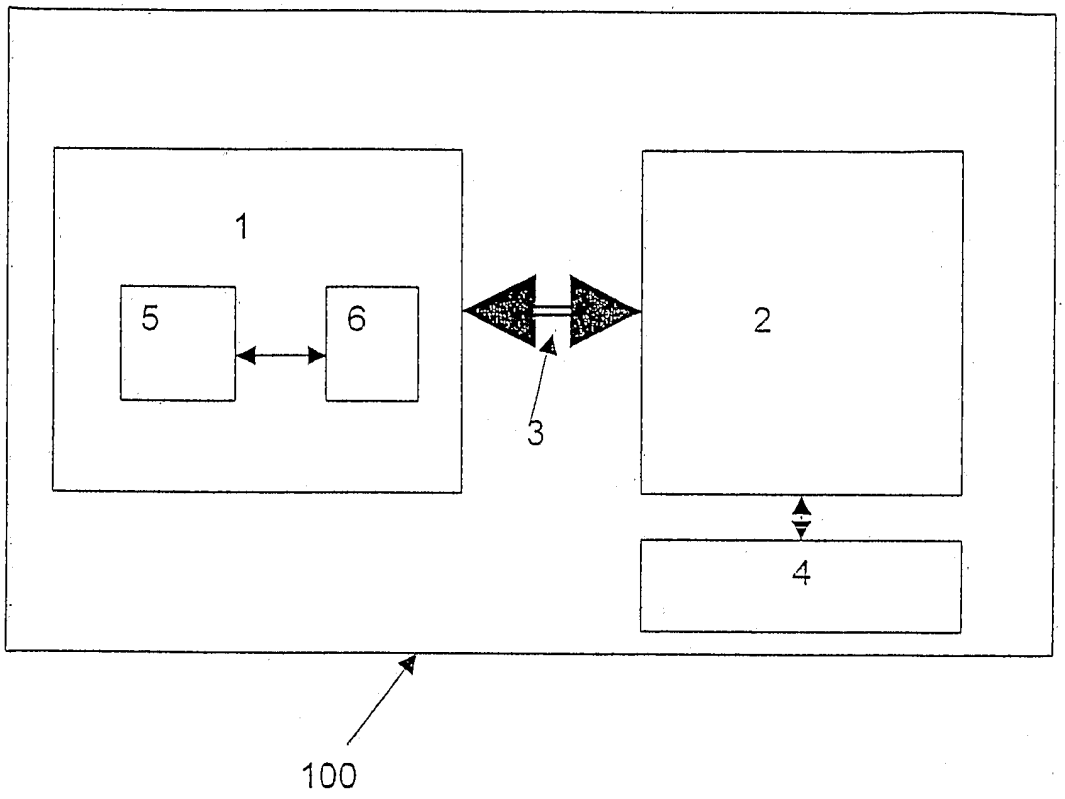

Figure 1

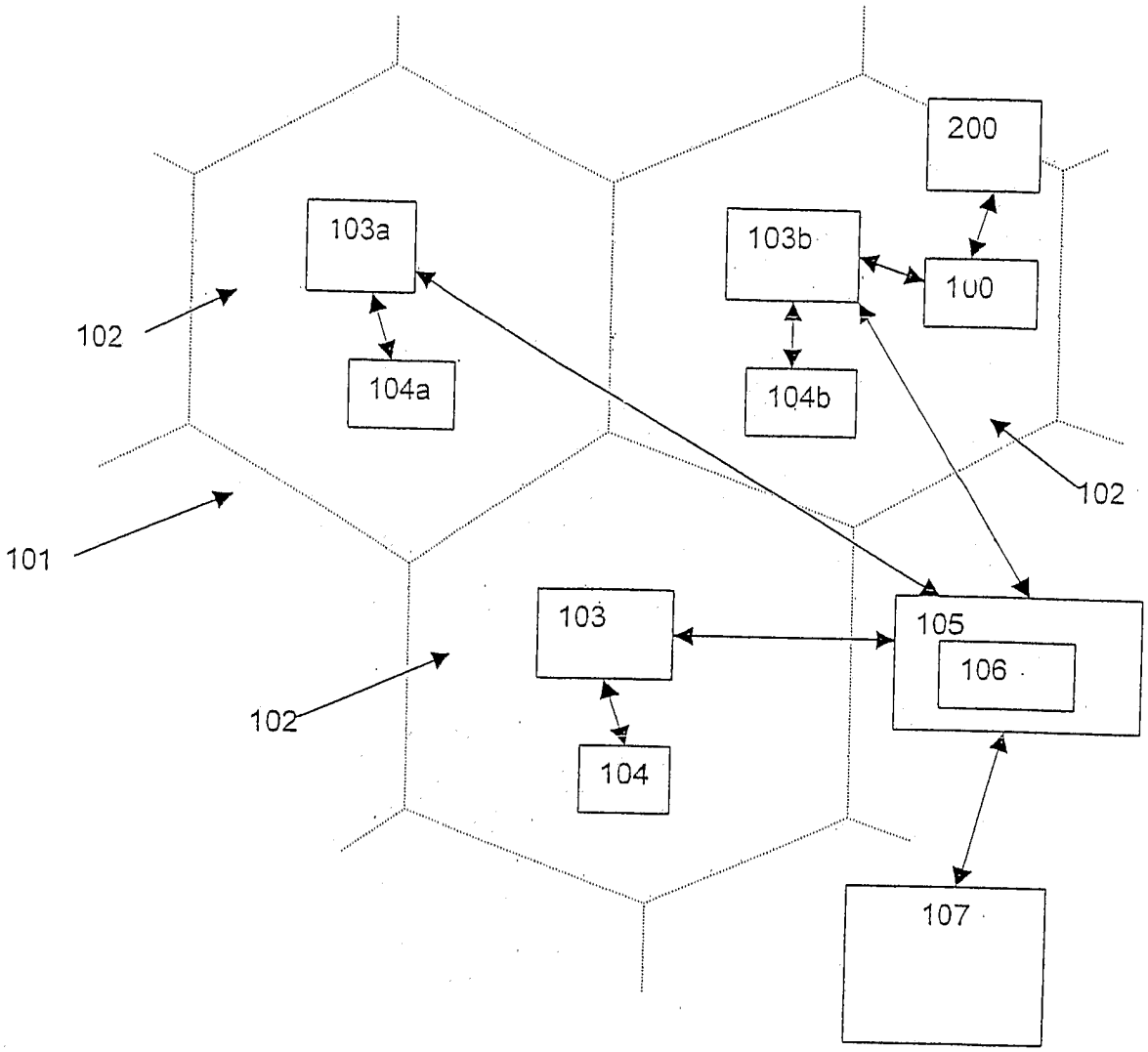

Figure 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU03/01422

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: H04Q 7/06, H04B 7/204

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)

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 practicable, search terms used)
WPAT, ESP@CE, USPTO and Keywords (mobile, telecommunication, control, data, text message, extract) and similar terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E, A	US 6650948 B1 (Atkinson et al.) 18 November 2003 See whole document	1 - 7
P, A	US 2003/0027594 A1 (Pfoertner) 6 February 2003 See whole document	1 - 7
P, A	US 6490519 B1 (Lapidot et al.) 3 December 2002 See whole document	1 - 7

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:
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Date of the actual completion of the international search	Date of mailing of the international search report
27 November 2003	09 DEC 2003
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **R.W.J. FINZI** Telephone No : (02) 6283 2213

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU03/01422

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 01/19097 A2 (TELEFONAKTIEBOLAGET LM ERICSON (PUBL)) 15 March 2001 See whole document	1 - 7
A	US 6249245 B1 (Watters et al.) 19 June 2001 See whole document	1 - 7
A	US 5999124 A (Sheynblat) 7 December 1999 See whole document	1 - 7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU03/01422

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Patent Document Cited in Search Report		Patent Family Member					
US	6650948						
US	2003027594	DE	10134098	EP	1278385		
US	6490519	AU	75513/00	AU	94153/01	CA	2390352
		EP	1177508	US	6341255	US	2003069683
		WO	0123835	WO	0225617		
WO	0119097	AU	74397/00	EP	1228650		
US	6249245	EP	0957370				
US	5999124	AU	36402/99	BR	9909783	CA	2329619
		EP	1073913	FI	20002318	WO	9954752

END OF ANNEX