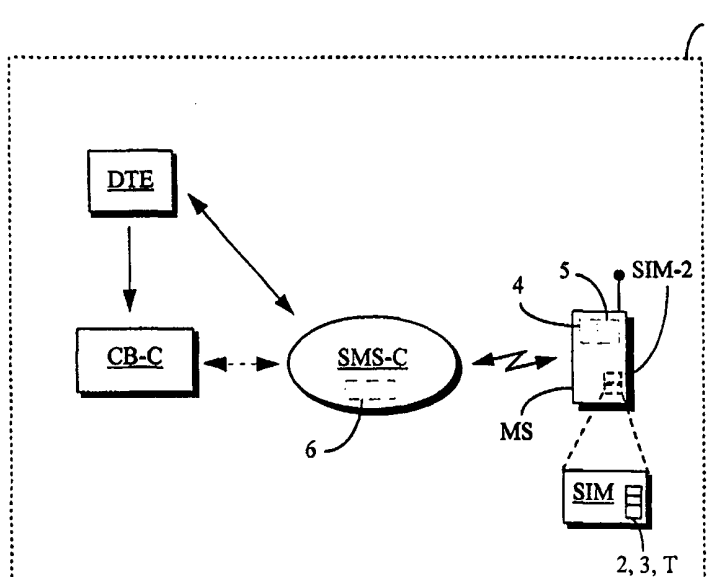




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04Q 7/22	A2	(11) International Publication Number: WO 99/66745 (43) International Publication Date: 23 December 1999 (23.12.99)
(21) International Application Number: PCT/FI99/00513 (22) International Filing Date: 11 June 1999 (11.06.99) (30) Priority Data: 981368 12 June 1998 (12.06.98) FI (71) Applicant (for all designated States except US): SONERA OYJ [FI/FI]; Teollisuuskatu 15, FIN-00510 Helsinki (FI). (72) Inventor; and (75) Inventor/Applicant (for US only): LEHTO, Mariette [FI/FI]; Fleminginkatu 12 BA 2, FIN-00530 Helsinki (FI). (74) Agent: PAPULA REIN LAHTELA OY; Fredrikinkatu 61 A, P.O. Box 981, FIN-00101 Helsinki (FI).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>In English translation (filed in Finnish). Without international search report and to be republished upon receipt of that report.</i>

(54) Title: PROCEDURE AND SYSTEM FOR SENDING A SHORT MESSAGE



(57) Abstract

Procedure and system for replying to an area-specific short message in a telecommunication system comprising a telecommunication network (1), a short-message service centre (SMS-C), a cell broadcast centre (CB-C) and a telecommunication terminal (MS) with a subscriber identity module (SIM) connected to it, said subscriber identity module being provided with storage areas (2, 3) for the storage of subscriber/telephone network information. According to the invention, the identifiers of the transmission channels for area-specific short messages and the corresponding response data are stored in a table (T) so that when the telecommunication terminal (MS) receives an area-specific short message, it is identified by the channel identifier and the response data corresponding to the channel is retrieved from the table (T), which data is used by the short-message service centre (SMS-C) to route the reply sent by the telecommunication terminal (MS) to the correct address.

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PROCEDURE AND SYSTEM FOR SENDING A SHORT MESSAGE

FIELD OF THE INVENTION

The present invention concerns a procedure as
5 defined in the preamble of claim 1 and to a system as
defined in the preamble of claim 5 for sending a reply
to an area-specific short message.

BACKGROUND OF THE INVENTION

10 In mobile communication systems, a known
practice is to send messages in the form of text. One
of the text message types is a message intended for a
given telecommunication terminal, sent from or termi-
nating at a given mobile station. Another type is the
15 so-called cell broadcast message, which is sent to all
mobile stations within a given area. Hereinafter,
'short message' refers to all messages sent in the
form of text in a telecommunication network. These in-
clude messages in e.g. USSD (Unstructured Supplemen-
20 tary Service Data) and SMS (Short Message Service)
formats.

Furthermore, in prior art, area-specific
short messages are sent using a certain transmission
channel. Different transmission channels are used for
25 sending different information. As a main rule, a mo-
bile subscriber can select the channels from which
he/she wants to receive area-specific broadcast mes-
sages. In other words, the subscriber can select the
type of information he/she wishes to receive on
30 his/her mobile station.

A problem with the above-mentioned method is
that a subscriber who has received an area-specific
broadcast message on his/her terminal cannot send a
reply to the message without knowing the number from
35 which the message has been sent. A further problem

with this method is that, even if the number should be known, replying to the message is still laborious.

BRIEF DESCRIPTION OF THE INVENTION

5 The object of the present invention is to eliminate the drawbacks described above or at least to significantly alleviate them.

 A specific object of the present invention is to disclose a new type of procedure and system for re-
10 plying to an area-specific broadcast message.

 As for the features characteristic of the present invention, reference is made to the claims.

 In the method of the invention, a reply to an area-specific short message is sent in a telecommuni-
15 cation system. The telecommunication system comprises a telecommunication network, a short-message service centre, a cell broadcast centre and a telecommunica-
 tion terminal with a subscriber identity module or equivalent connected to it, containing storage areas
20 for the storage of subscriber/telephone network information.

 According to the invention, the identifiers of the transmission channels for area-specific short messages and the corresponding response data are
25 stored in a table. Further, according to the invention, when a telecommunication terminal receives an area-specific short message, it is identified by the channel identifier, and the response data correspond-
 ing to the channel is retrieved from the table. Using
30 the response data, the short-message service centre routes the reply formed on and sent from the telecommunication terminal to the correct address. The response data of the invention may consist of e.g. reply numbers or function codes, which may also be used to
35 carry other information besides message routing information.

In an embodiment of the procedure, the table is placed in the telecommunication terminal, in the subscriber identity module or in an external smart card. The table can also be placed in distributed form
5 in all or some of the above-mentioned locations. An external smart card functions as a parallel subscriber identity module.

In an embodiment of the procedure, the response data is retrieved from the table either when an
10 area-specific short message is being received, when it is being read or when the terminal is sending a reply.

In an embodiment of the procedure, the reply to the short message is routed on the basis of the response data to the party having sent the area-specific
15 short message via the cell broadcast centre. The routing in the short-message service centre is effected e.g. directly on the basis of the reply number or e.g. on the basis of routing data given in a function code.

The system of the invention for sending a reply to an area-specific short message in a telecommunication system comprises a telecommunication network, a short-message service centre, a cell broadcast centre and a telecommunication terminal with a subscriber identity module or equivalent connected to it, containing storage areas for the storage of subscriber/telephone network information.
20

According to the invention, the telecommunication terminal comprises means for storing the identifies of the transmission channels for area-specific
30 short messages as well as the response data corresponding to the identifies in a table provided for this purpose. Furthermore the system of the invention comprises means for identifying an area-specific short message received by the telecommunication terminal on
35 the basis of the channel identifier and means for retrieving corresponding response data from the table. Based on the response data, the short-message service

centre routes the reply generated and sent by the telecommunication terminal to the right address.

In an embodiment of the system, the system comprises means for maintaining the table. Further,
5 the system comprises means for retrieving the response data from the table.

In an embodiment of the system, the short-message service centre comprises means for routing the reply to a short message on the basis of the response
10 data to the party having sent the area-specific short message via the cell broadcast centre.

The invention makes it easier to reply to area-specific short messages. The user of the telecommunication terminal need not know the original address
15 of the sender of an area-specific short message received.

The invention makes it possible to implement a service network between the subscriber's terminal, the telecommunication network and the provider of
20 telecommunication services. Furthermore, the invention gives telecommunication service providers better chances to produce e.g. commercial applications.

BRIEF DESCRIPTION OF ILLUSTRATIONS

25 In the following, the invention will be described in detail by the aid of a few examples of its embodiments, wherein

Fig. 1 presents an embodiment of the system of the invention, and

30 Fig. 2 presents an operating diagram for the embodiment in Fig. 1.

DETAILED DESCRIPTION OF THE INVENTION

The telecommunication system illustrated in
35 Fig. 1 comprises a telecommunication network 1, which in the case of this example is a mobile communication

network 1. In addition, the system presented in Fig. 1 comprises a short-message service centre SMS-C, a cell broadcast centre CB-C and a data terminal equipment DTE generating cell broadcast messages. Moreover, the system according to Fig. 1 comprises a telecommunication terminal MS with a subscriber identity module SIM or equivalent connected to it, said subscriber identity module being provided with storage areas 2, 3 for the storage of subscriber/telephone network information. In the storage areas 2, 3 on the subscriber identity module SIM, a space for a table T is provided. In addition, an external smart card SIM-2 is connected to the telecommunication terminal MS.

In an embodiment according to Fig. 1, the data terminal equipment DTE sends an area-specific short message to all mobile stations located in a certain area. The data terminal equipment DTE sends the short message to the cell broadcast centre CB-C. The cell broadcast centre CB-C further directs the message to all telecommunication terminals MS located in the area of the cell concerned that are capable of receiving short messages in text form over the channel defined in the transmission. In the present example, the transmission of area-specific short messages is effected using a cell-specific cell broadcast channel (CBCH).

The mobile subscriber receives the short message on his/her telecommunication terminal MS and reads its contents from the display of the terminal. The terminal MS comprises means 5 for performing a search to find response data corresponding to the cell broadcast channel. These means are implemented in a manner known to the skilled person. In the case of the example, the search for the response data is performed immediately upon receiving the area-specific message.

In the case of the example, the response data are stored in a table T, which is located in the sub-

scriber identity module SIM. The telecommunication terminal MS comprises means 4 for storing information in the table. These means 4 are implemented in a manner known in itself and they will therefore not be described in detail. The table T is stored e.g. before the subscriber buys his/her mobile station or before he/she is registered as a client of a mobile communications operator. The table T can be updated any time when the subscriber so desires. The table may also be updated automatically via the telecommunication network 1, utilising e.g. SMS (short-message service) or USSD (Unstructured Supplementary Service Data).

The mobile subscriber wants to send a reply the short message. Replying is effected e.g. by pressing a "Reply" button on the telecommunication terminal MS. After this, the mobile subscriber enters the reply message and confirms it. The actions to be performed on the telecommunication terminal MS can be implemented in many ways known to the skilled person, depending on the terminal type and its user interface.

The telecommunication terminal MS converts the reply into a required form appropriate for the mobile communication network 1 and sends it to the short-message service centre SMS-C of the network. The short-message service centre SMS-C routes the short message reply to the right address in accordance with the response data retrieved from the table T. The response data may consist of e.g. reply numbers or function codes which are to be appended to the short message reply and which can also be used to carry other information besides message routing information.

The short-message service centre SMS-C needs to be provided with means 6 for finding the right response data in a short message and means for executing the right functions. In the case of the example, these means 6 are implemented as software applications.

The actions in the above example can be presented in a functional diagram as shown in Fig. 2.

The procedure illustrated in Fig. 2 is started when the short-message service centre SMS-C
5 sends over the cell broadcast channel an area-specific short message AREA-SMS it has received from the cell broadcast centre CB-C to the mobile subscriber's telecommunication terminal MS. The terminal MS receives the message and stores the channel number corresponding
10 ing to it in memory or retrieves the response data corresponding to the channel number immediately from the table T. The terminal MS gives the subscriber an indication of a message received (MESSAGE RECEIVED).

The mobile subscriber reads the area-specific
15 short message on the display of his/her telecommunication terminal MS and indicates that he/she wishes to reply to the message (REPLY ADVICE). This is done e.g. by pressing a "Reply" button.

The telecommunication terminal MS activates a
20 message input state (MESSAGE INPUT STATE), and the subscriber enters a desired reply message. Having entered the message, the subscriber confirms it and then presses a "Send" button (REPLY TEXT) on his/her telecommunication terminal MS.

25 The terminal MS converts the reply text into a required form appropriate for the mobile communication network and appends to it the response data retrieved from the table T. Finally, the terminal sends the information as a short message to the short-
30 message service centre SMS-C (REPLY SMS), which routes the reply further to the address indicated by the response data.

In a system according to this example, the short-message service centre SMS-C may also communicate with other systems connected to the mobile communication network 1.
35

In a system as illustrated in the example, the telecommunication connection between the [cell broadcast centre] short-message service centre SMS-C and the cell broadcast centre CB-C may also be routed
5 via a network application. This is to say that the telecommunication connections mentioned in the example need not be direct connections.

The invention is not restricted to the examples of its embodiments described above, but many
10 variations are possible within the scope of the inventive idea defined in the claims

CLAIMS

1. Procedure for replying to an area-specific short message in a telecommunication system comprising a telecommunication network (1), a short-message service centre (SMS-C), a cell broadcast centre (CB-C) and a telecommunication terminal (MS) with a subscriber identity module (SIM) connected to it, said subscriber identity module being provided with storage areas (2, 3) for the storage of subscriber/telephone network information, characterised in that the identifiers of the transmission channels for area-specific short messages and the corresponding response data are stored in a table (T) so that when the telecommunication terminal (MS) receives the area-specific short message, it is identified by the channel identifier and the response data corresponding to the channel is retrieved from the table (T), which data is used by the short-message service centre (SMS-C) to route the reply sent by the telecommunication terminal (MS) to the correct address.

2. Procedure as defined in claim 1, characterised in that the table (T) is placed in the telecommunication terminal (MS), in the subscriber identity module (SIM), on an external smart card (SIM-2) or the table (T) is distributed in all or some of the locations mentioned.

3. Procedure as defined in claim 1 or 2, characterised in that the response data is retrieved from the table (T) either when the area-specific short message is being received, when it is being read or when the telecommunication terminal (MS) is sending a reply.

4. Procedure as defined in any one of claims 1 - 3, characterised in that the short message is routed on the basis of the response data via the short-message service centre (SMS-C) to the party

having sent the area-specific short message via the cell broadcast centre (CB-C).

5 5. System for replying to an area-specific short message in a telecommunication system comprising a telecommunication network (1), a short-message service centre (SMS-C), a cell broadcast centre (CB-C) and a telecommunication terminal (MS) with a subscriber identity module (SIM) connected to it, said subscriber identity module being provided with storage areas (2, 10 3) for the storage of subscriber/telephone network information, characterised in that the telecommunication terminal (MS) comprises means (4) for storing the identifiers of the transmission channels for area-specific short messages and the corresponding response data in a table (T) so that when the telecommunication terminal (MS) receives the area-specific short message, it is identified by the channel identifier and the response data corresponding to the channel is retrieved from the table (T), which data is 15 used by the short-message service centre (SMS-C) to route the reply sent by the telecommunication terminal (MS) to the correct address.

6. System as defined in claim 5, characterised in that the system comprises means 25 (SIM, SIM-2, MS) for maintaining the data in the table (T).

7. System as defined in claim 5 or 6, characterised in that the system comprises means (5) for retrieving response data from the table 30 (T).

8. System as defined in any one of claims 5 - 7, characterised in that the short-message service centre (SMS-C) comprises means (6) for routing the short message reply on the basis of the response data to the party having sent the area-specific short 35 message via the cell broadcast centre (CB-C).

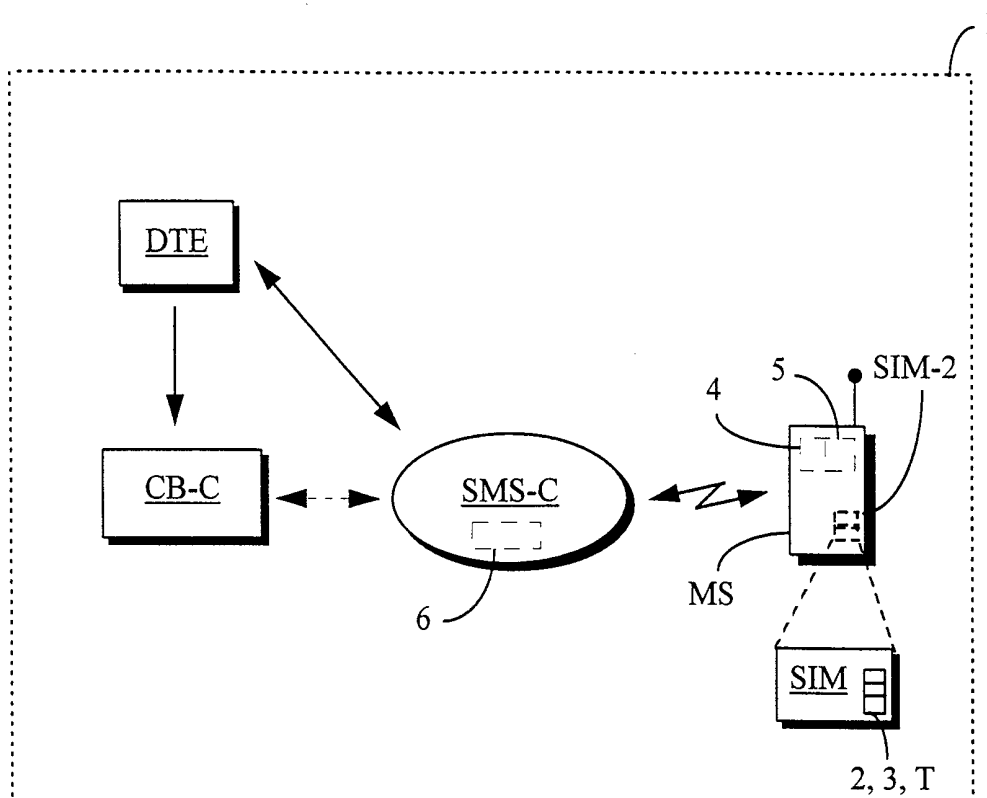


Fig. 1

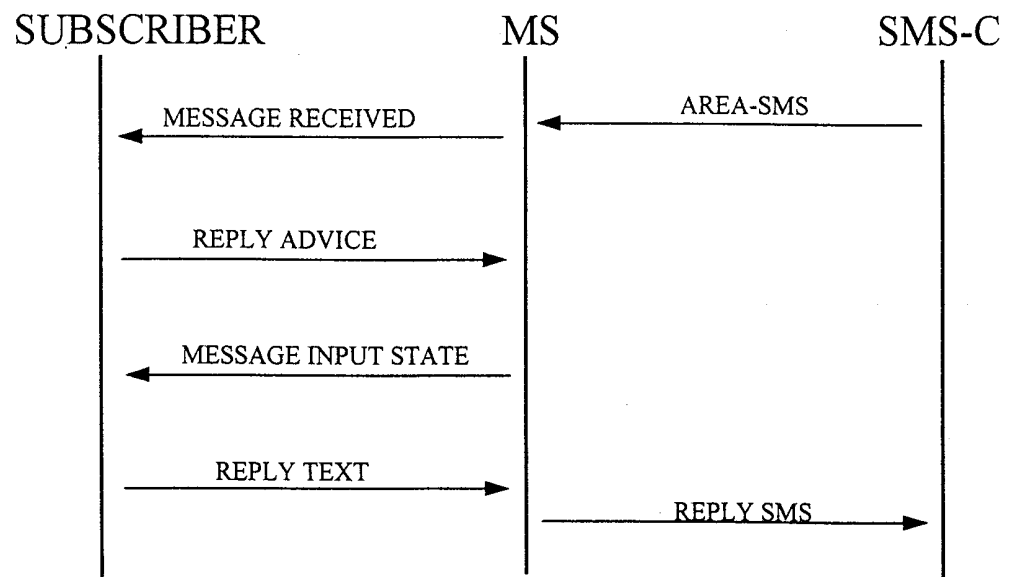


Fig. 2