

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen
(D) No distribution

**Datasheet for the decision
of 29 April 2010**

Case Number: T 1888/08 - 3.5.03

Application Number: 97902443.7

Publication Number: 0925698

IPC: H04Q 7/32

Language of the proceedings: EN

Title of invention:
Smart card with internal data compression

Patentee:
France Télécom

Opponent:
GIESECKE & DEVRIENT GmbH

Headword:
Smart card/FRANCE TELECOM

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step - main and first auxiliary requests (no)"
"Inventive step - second auxiliary request (yes)"

Decisions cited:
-

Catchword:
-

Case Number: T 1888/08 - 3.5.03

**DECISION
of the Technical Board of Appeal 3.5.03
of 29 April 2010**

Appellant: GIESECKE & DEVRIENT GmbH
(Opponent) Prinzregentenstrasse 159
D-81677 München (DE)

Representative: -

Respondent: France Télécom
(Patent Proprietor) 6 Place d'Alleray
F-75505 Paris Cedex 15 (FR)

Representative: Spaargaren, Jerome
Electronic Intellectual Property
Fairfax House
15 Fulwood Place
London WC1V 6HU (GB)

Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office
posted 21 July 2008 concerning maintenance
of European patent No. 0925698 in amended
form pursuant to Articles 101(3)(a) and
106(2) EPC.

Composition of the Board:

Chairman: A. S. Clelland
Members: T. Snell
R. Moufang

Summary of Facts and Submissions

I. This appeal was lodged by the opponent against the interlocutory decision of the opposition division according to which European patent No. EP 0925698 could be maintained in amended form (Articles 101(3)(a) and 106(2) EPC). The opposition division argued essentially that claim 1 of the main request then on file met the requirement of inventive step when starting out from the disclosure of the document

E1: EP 0 623 896 A

and making use of the teaching of GSM technical specification 11.11 (referred to hereinafter as "GSM 11.11"). A version of GSM 11.11 will be referred to in this decision as document

E4: GSM Technical Specification GSM 11.11, December 1995, Version 5.0.0, "Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) interface (GSM 11.11)"; ETSI, European Telecommunications Standards Institute; pages 1-91.

II. In the notice of appeal, the appellant requested that the impugned decision be set aside and the patent revoked.

III. In a response to the notice of appeal, the proprietor (respondent) requested that the patent be maintained as upheld by the impugned decision of the opposition division.

Both parties conditionally requested oral proceedings.

IV. In a communication accompanying a summons to attend oral proceedings, the board gave a preliminary opinion that, *inter alia*, the subject-matter of claims 1 and 11 did not involve an inventive step starting out from a SIM card based on GSM 11.11 when combined with the teaching of document E1.

V. In a response to the board's communication, the respondent filed claims of a main request and first to third auxiliary requests for the board's consideration. Supporting arguments were also submitted.

VI. In a fax letter dated 23 April 2010, the appellant provided an internet URL from which a version of GSM 11.11 (ie document E4 referred to above) could be downloaded.

VII. In a fax letter, received on 28 April 2010, the respondent submitted documentation registering a transfer of the patent in suit from Orange Personal Communications Services Ltd. to France Télécom SA.

VIII. Oral proceedings took place on 29 April 2010.

In the course of the oral proceedings, the respondent filed an amended first auxiliary request and maintained the previous first auxiliary request as a second auxiliary request, in addition to maintaining the existing main and third auxiliary requests.

Hence, the respondent requested that the patent be maintained in amended form in accordance with claims 1 to 13 of the main request filed with the letter dated 29 March 2010, or, in the alternative, claims 1-7 of the amended first auxiliary request filed at the oral proceedings, or claims 1 to 12 of the second auxiliary request filed with the letter dated 29 March 2010 as "First Auxiliary Request", or claims 1 to 10 of the third auxiliary request filed with the letter dated 29 March 2010.

The appellant requested that the decision under appeal be set aside and the patent revoked.

At the conclusion of the oral proceedings, after due deliberation, the board gave its decision.

IX. Claim 1 of the **main request** reads as follows:

"A smart card (34) comprising a GSM-type subscriber identity module associated with a mobile subscriber for a mobile station (8) comprising a mobile telephone used in a mobile communications system comprising a mobile telephone system, said card including:

an interface (35) for transferring data items from and to a mobile station;

a memory (38) for storing data items; and

a second data processor (36) adapted to interact with a first data processor (26) in a mobile station by receiving data items therefrom and transmitting data items thereto, in a predetermined coding format, such that said card is compatible with different mobile stations implementing the same GSM-type mobile station/smart card interfacing standard, and by storing and retrieving said data items to and from said memory,

wherein said second data processor is adapted to store and retrieve a data item which comprises information input by said mobile subscriber for retrieval,

characterised in that:

said second processor is adapted to convert said data item, when received via said interface, from said predetermined coding format to a compressed coding format and to store said data item in said memory in said compressed coding format,

said second processor is adapted to convert said data item, when retrieved from said memory, from said compressed coding format to said predetermined coding format before transmitting said data item via said interface in said predetermined coding format; and

the compression and decompression is performed on said smart card in order to reduce the amount of memory occupied by said data item on the smart card, without diverging from said GSM-type interfacing standard."

Independent claim 11 is a claim for a method of storing and retrieving a data item using a smart card with features essentially corresponding to those of claim 1.

X. Claim 1 of the **first auxiliary request** reads as follows:

"A smart card (34) comprising a GSM-type subscriber identity module associated with a mobile subscriber for a mobile station (8) comprising a mobile telephone used in a mobile communications system comprising a mobile telephone system, said card including:

an interface (35) for transferring data items from and to a mobile station;

a memory (38) for storing data items; and

a second data processor (36) adapted to interact with a first data processor (26) in a mobile station by receiving data items therefrom and transmitting data items thereto, in a predetermined coding format, such that said card is compatible with different mobile stations implementing the same GSM-type mobile station/smart card interfacing standard, and by storing and retrieving said data items to and from said memory,

wherein said second data processor is adapted to store and retrieve a data item which comprises data representing a dialing [sic] number and/or dialing [sic] number identifier input by said mobile subscriber for retrieval,

characterised in that:

said second processor is adapted to convert said data item, when received via said interface, from said predetermined coding format to a compressed coding format and to store said data item in said memory in said compressed coding format,

said second processor is adapted to convert said data item, when retrieved from said memory, from said compressed coding format to said predetermined coding format before transmitting said data item via said interface in said predetermined coding format; and

the compression and decompression is performed on said smart card in order to reduce the amount of memory occupied by said data item on the smart card, without diverging from said GSM-type interfacing standard,

further characterised in that said predetermined coding format is a fixed length coding format in which data items comprise a variable amount of padding data and a variable amount of non-padding data and said compressed coding format is a variable length coding format, and said second processor reduces the amount of padding data when converting to said variable length compressed coding format."

Independent claim 7 is a claim for a method of storing and retrieving a data item using a smart card with features essentially corresponding to those of claim 1.

XI. Claim 1 of the **second auxiliary request** reads as follows:

"A smart card (34) comprising a GSM-type subscriber identity module associated with a mobile subscriber for a mobile station (8) comprising a mobile telephone used in a mobile communications system comprising a mobile telephone system, said card including:

an interface (35) for transferring data items from and to a mobile station;

a memory (38) for storing data items; and

a second data processor (36) adapted to interact with a first data processor (26) in a mobile station by receiving data items therefrom and transmitting data items thereto, in a predetermined coding format, such that said card is compatible with different mobile stations implementing the same GSM-type mobile station/smart card interfacing standard, and by storing and retrieving said data items to and from said memory,

wherein said second data processor is adapted to store and retrieve a data item which comprises information input by said mobile subscriber for retrieval,

characterised in that:

said second processor is adapted to convert said data item, when received via said interface, from said predetermined coding format to a compressed coding format and to store said data item in said memory in said compressed coding format,

said second processor is adapted to convert said data item, when retrieved from said memory, from said compressed coding format to said predetermined coding format before transmitting said data item via said interface in said predetermined coding format; and

the compression and decompression is performed on said smart card in order to reduce the amount of memory occupied by said data item on the smart card, without diverging from said GSM-type interfacing standard,

further characterised in that:

said data item is stored in a data record in an allocated data file in said memory, said data file having an associated directory file storing an address for each said data record;

said second processor is adapted to delete a data record from said data file and to
(i) displace another data record to occupy memory space previously occupied by the deleted record, and
(ii) update said directory file; and
said second processor is adapted to perform (i) and (ii) in response to a command sent by the mobile telephone subsequent to said deletion."

Claim 10 of the **second auxiliary request** reads as follows:

"A method of storing and retrieving a data item using a smart card (34) comprising a GSM-type subscriber identity module associated with a mobile subscriber, the smart card communicating with a mobile station (8) via an interface (35), the mobile station comprising a mobile telephone of a mobile communications system and the mobile communications system comprising a mobile telephone system, said smart card and said mobile station each conforming with the same GSM-type mobile station/smart card interfacing standard defining a predetermined format of data coding for a data item when transmitted across said interface, said method comprising the steps of:

(i) processing a data item comprising information input by said mobile subscriber for retrieval, in said mobile station, to ensure said data item is in said predetermined format and transmitting said data item in said predetermined format to said smart card via said interface;

(ii) storing said data item in a memory (38) in said smart card; and

(iii) retrieving said data item from said memory, and transmitting said data item in said predetermined format from said smart card to said mobile station,

characterised in that the method further comprises the steps of:

in (ii) processing said data item in said smart card, to convert said data item to a compressed coding format and to

store said data item in said memory in said compressed coding format; and

in (iii) processing said data item in said smart card, to convert said data item from said compressed coding format to said predetermined coding format, the compression and decompression being performed on said smart card in order to reduce the amount of memory occupied by said data item on the smart card, without diverging from said GSM-type interfacing standard,

characterised in that the method further comprises the steps of:

said smart card storing said data item in a data record in an allocated data file in said memory, said data file having an associated directory file storing an address for each said data record;

said smart card deleting a data record from said data file and

(i) displacing another data record to occupy memory space previously occupied by the deleted record, and

(ii) updating said directory file; and

said smart card performing (i) and (ii) in response to a command sent by the mobile telephone subsequent to said deleting."

XII. In view of the board's decision, there is no need to reproduce the claims of the third auxiliary request.

Reasons for the decision

1. *Registration of a transfer*

The respondent registered a transfer which took effect on 28 April 2010, although the board became aware of this fact only after the oral proceedings, which were held on 29 April 2010. However, since the board is satisfied that no change in representation was intended at any stage, the only material effect on these proceedings is that the minutes of the oral proceedings erroneously indicate the previous proprietor.

2. *Claim 1, main request - inventive step*

2.1 The present invention concerns data storage on a subscriber identity module (SIM) memory card for use in mobile telephones operating in a "GSM-type" network. The meaning of the term "GSM-type" was discussed at the oral proceedings and the respondent indicated that this term effectively had

the same scope as "GSM". This is the meaning attributed to this term by the board.

- 2.2 Both parties considered that the correct starting point for the invention was a conventional SIM card designed in accordance with GSM Technical Specification 11.11, which is referred to in paragraphs 0001 - 0007 of the patent specification (cf. document E4). The board agrees. It was common ground between the parties that a SIM card designed in accordance with this standard would comprise all the features of the preamble of claim 1, namely:

an interface for transferring data items from and to a mobile station,
a memory for storing data items;
a second data processor adapted to interact with a first data processor in a mobile station by receiving data items therefrom and transmitting data items thereto, in a predetermined coding format, such that said card is compatible with different mobile stations implementing the same GSM-type mobile station/smart card interfacing standard, and by storing and retrieving said data items to and from said memory,
wherein said second data processor is adapted to store and retrieve a data item which comprises information input by said mobile subscriber for retrieval.

- 2.3 The subject-matter of claim 1 therefore differs from a SIM card based on GSM Technical Specification 11.11 in the features of the characterising part, namely:

said second processor is adapted to convert said data item, when received via said interface, from said predetermined coding format to a compressed coding format and to store said data item in said memory in said compressed coding format,

said second processor is adapted to convert said data item, when retrieved from said memory, from said compressed coding format to said predetermined coding format before transmitting said data item via said interface in said predetermined coding format; and

the compression and decompression is performed on said smart card in order to reduce the amount of memory occupied by said data item on the smart card, without diverging from said GSM-type interfacing standard.

- 2.4 The problem to which these distinguishing features relate is set out in paragraphs 0005-0008 of the patent specification. As described in paragraphs 0005 and 0006, a standard SIM card is able to store abbreviated dialling number records (ADN), or data relating to short messages (ie SMS messages) received by the subscriber. The memory capacity of the SIM is necessarily limited, primarily due to cost considerations.

Accordingly, the data records referred to above are limited in size and number in accordance with the memory capacity of the SIM, which can be a drawback. For example, some subscribers need greater storage capacity for ADN records. One known solution allocates more memory capacity for ADN records, which, for a fixed amount of total memory capacity available, must be compensated for by a reduction in the memory capacity allocated to other data records (paragraph 0008).

- 2.5 Hence the board considers that the technical problem to be solved starting out from a conventional SIM card designed in accordance with GSM Technical Specification 11.11 is to provide an increase in the overall number of data records that can be stored without increasing the total memory size.
- 2.6 In the view of the board, the posing of the problem does not involve an inventive step, since it represents a known need in the art, as set out in the patent specification.
- 2.7 In the board's view the skilled person would find it obvious to solve this problem by making use of the teaching of document E1.
- 2.8 Document E1 concerns a smart card for a radio receiver, although an additional use of the card as a bank card or a telephone card is mentioned. E1 mentions the ISO 7816 standard (cf. col. 1, lines 6-21) for smart cards with which, as stated in the patent in suit, certain types of SIM card also have to comply (cf. col. 5, lines 44-47 of the patent specification). Hence, if not from the same field, document E1 comes from a closely neighbouring field. Further, claim 1 of document E1 embraces any kind of chip card without reference to its field of application. Thus, in the board's view it is to be expected that the skilled person active in the field of SIM cards would take note of the teaching of document E1. Indeed, with regard to memory storage, the board is unable to recognise any fundamental differences between the techniques applicable to SIM card design and those concerning smart cards of the type used in document E1. In particular, as far as is known to the board, the ISO 7816 standard for smart cards mentioned in E1 in column 1 uses data structures and procedures similar to those defined in GSM 11.11.
- 2.9 In the introductory passage of E1, col. 1, lines 3-33, the general characteristics of chip cards (ie smart cards) are set out. In particular, data can either be read out from the card or written to the card (cf. lines 23-26). It is then stated that, inter alia, due to the dimensions of the card, there are limits set to the design of the memory (cf. lines 26-31). In particular, when a lot of data has to be stored, a limit is soon reached (cf. lines 31-33). In its most general form, a solution to this problem is given by claim 1 of E1, which, as already stated, embraces chip cards

in general, and requires that the data in the memory be stored in compressed form and that a decoding table be present in the memory enabling the microprocessor on the card to expand the data. The advantage of this solution is that for a given memory size, more data can be stored (cf. col. 1, lines 53-57). A further advantage is that the card behaves exactly as a known standard card, despite the increased storage capacity (cf. col. 2, lines 8-16). The possibility is also mentioned of encoding the data on the card in order to increase the write capacity (cf. col. 8, lines 49-57). The essential point is that when the coding table is present on the card, the user notices no difference in comparison with a normal card (cf. col. 8, line 57 - col. 9, line 2).

- 2.10 In the board's view, the skilled person would recognise from document E1 that the standard SIM card can be improved to solve the problem posed by implementing compression and decompression on the card. Furthermore, it follows from document E1 that there should be no change to the interface connecting the smart card with the external receiver. Thus all the elements of the characterising part of claim 1 are derivable from document E1. It follows that the skilled person starting out from a SIM card conforming to GSM Technical Specification 11.11 and having knowledge of document E1 would arrive at the subject-matter of claim 1 without the exercise of inventive skill.
- 2.11 The respondent argued that document E1 concerns an RDS receiving system and the stored data are not data input by a user of the device but are pre-stored traffic announcements; hence E1 was not relevant to the present invention. However, in the view of the board, given the introductory passage in E1, col. 1, lines 3-33, the clear reference to performing compression on the card in col. 8, lines 49-57, as well as the generality of claim 1 of E1, the skilled person would recognise that the teaching of E1 as regards using on-card data compression and decompression is relevant to GSM SIM cards, all the more so as this general concept is in principle a simple one and widely used in other forms of data storage to meet the aim of increasing the number of data items that can be stored.
- 2.12 The respondent's remaining arguments can be summarised as follows:
- (i) The success of GSM is due to the degree of standardisation. The flip side is that each operator finds it hard to differentiate from other operators. The proprietor of the patent however successfully differentiated from the competition by putting innovative design effort into the SIM card. GSM has a very tightly defined standard extending to the specification of the file structure of the SIM memory (cf. pages 22 and 23 of E4). Designers of GSM applications moreover assumed that the GSM 11.11 standard

represented the optimum solution. The invention however arose from the realisation that one could decouple from the file structure specified in 11.11. Thus a technical prejudice has been overcome.

(ii) An obvious solution for GSM mobile telephones already existed, namely that of storing the data records in the memory of the mobile telephone itself. A further solution also existed, namely to allocate more memory capacity of the SIM to abbreviated numbers and to reduce the memory capacity allocated to other data items.

(iii) If the skilled person were to consider document E1 in the context of a GSM system, E1 would at most be seen as relevant to the "cell broadcast" mode of GSM.

(iv) There is no clear reference in document E1 to carrying out compression on the card of data items input by the user.

2.13 The board was not convinced by these arguments for the following reasons.

Re (i): The board does not agree that the skilled person would regard GSM 11.11 as a final solution not capable of technical improvement. As pointed out by the respondent, a commercial advantage can be gained by differentiating technically from the basic specification. Hence the skilled person would seek to make technical improvements for this reason alone. Moreover, standard specifications are themselves often improved later. Thus there was no existing prejudice against improving a SIM card conforming to GSM 11.11 per se. In the board's view, the more relevant question to be answered is whether the specification of the data structures set out in GSM 11.11 (cf. eg E4, pages 22 and 23) would hinder the skilled person from applying the teaching of document E1. In the view of the board, it would not. In the first place, E1 sets out clearly the principle that data compression and decompression on the card is to be carried out in such a way that the card, seen externally, behaves as an existing card. In order to apply this principle, it is a well-known approach in the field of data communications, eg using an ISO-based model, to implement an external interface conforming to a standard which provides design freedom for the processing of the data internally. Thus in the board's view, applying this teaching to GSM 11.11, it would be a straightforward matter to design an interface which conforms to GSM 11.11 even if data is stored internally on the SIM in a different, compressed, format.

Re (ii): With regard to the other known solutions, in the board's view the skilled person would realise that these solutions are not satisfactory as neither allows an increased total number of data items to be stored on the card. Hence, the skilled person would not be discouraged by the knowledge of these inferior solutions from seeking a

better solution, eg one based on the disclosure of document E1.

Re (iii): The board disagrees for the reasons given in point 2.11 above that E1 has no further relevance to GSM apart from to "cell broadcast". In any case, cell broadcast concerns the reception and storage of text messages and is thus itself relevant to the claimed subject-matter.

Re (iv): The respondent argued that there was no clear suggestion in document E1 that data items are received from the radio receiver and compressed on the card. However, in the board's view this is clearly the impression that would be gained by the skilled person in view of the term "Schreibkapazität" in column 8, line 52, which apparently refers to writing data to the memory by the radio receiver (see also col. 1, lines 23-26). It also follows from the starting point of the invention (ie GSM 11.11) that the data stored concerns items input by the user.

Hence the board was not convinced by the respondent's arguments.

3. *Claim 1, first auxiliary request - inventive step*

3.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request in that:

(i) the data represents a dialling number/and or a dialling number identifier;

(ii) said predetermined coding format is a fixed length coding format in which data items comprise a variable amount of padding data and a variable amount of non-padding data;

(iii) said compressed coding format is a variable length coding format; and

(iv) said second processor [the SIM processor] reduces the amount of padding data when converting to said variable length compressed coding format.

With regard to inventive step, features (i) and (ii) are already features of the GSM 11.11 specification hence their inclusion here is deemed obvious.

Further, features (iii) and (iv) appear to be an inevitable consequence of performing compression by an entropy code, eg a Huffman code, as proposed by document E1 in col. 8, lines 47 and 48. Since in the encoding of abbreviated dialling numbers, the padding code would be the most frequently occurring code, this would be encoded with the lowest number of bits. It follows that the amount of padding will be reduced.

The respondent argued that even if the skilled person were to consider data compression, there is no hint in the prior art to change a fixed length to a variable length or to reduce padding data. The board however considers this for the above reasons to be a "one-way street situation" where the inclusion of these features is inevitable.

In consequence, the board concludes that the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step either (Articles 52(1) and 56 EPC).

4. *Second auxiliary request*

4.1 The appellant has raised no issues with respect to compliance of claims 1 to 12 of the second auxiliary request with Article 84 and Articles 123(2) and (3) EPC, and the board sees no reason to do so either.

4.2 Inventive step

4.2.1 Claim 1 of the second auxiliary request differs from the claim 1 of the main request in including the following features:

(a) said data item is stored in a data record in an allocated data file in said memory, said data file having an associated directory file storing an address for each said data record;

(b) said second processor is adapted to delete a data record from said data file and to

(i) displace another data record to occupy memory space previously occupied by the deleted record, and
(ii) update said directory file; and

said second processor is adapted to perform (i) and (ii) in response to a command sent by the mobile telephone subsequent to said deletion.

4.2.2 These features are aimed at solving the problem that deletion of records leads to variable length gaps in the memory. This problem is solved in accordance with the claim in that records are displaced to fill the gap left by the deleted record. In the description, the process is referred to as "defragmentation".

4.2.3 The appellant argued that defragmentation was a standard measure undertaken by the skilled person, eg in the field of hard disk storage. Its use in the case of a SIM card was therefore obvious.

4.2.4 The board however disagrees. Firstly, the board is not aware of any document proposing defragmentation of a SIM card or other type of smart card. Hence, a "one-way street" situation based on common general knowledge does not exist.

Secondly, the reason for performing defragmentation of a hard disk is to speed up access time because access to the memory requires the disk head to be moved mechanically. The same considerations do not apply to a solid state memory. Hence, on the basis of the prior art at the board's disposal, it cannot be seen as obvious to apply this measure, appropriate to a hard disk drive, to a solid state memory. Finally, claim 1 requires that the second processor (ie the SIM processor) "is adapted to perform [steps](i) and (ii) [ie defragmentation] in response to a command sent by the mobile telephone subsequent to said deletion". As explained by the respondent at the oral proceedings, this feature has the effect that data loss caused by the user switching off the mobile phone during defragmentation can be avoided. Thus even if for the sake of argument the skilled person were to contemplate defragmentation, he would still not arrive at the subject-matter of claim 1.

In view of the above, the board concludes that the subject-matter of claim 1 of the second auxiliary request involves an inventive step, Articles 52(1) and 56 EPC.

- 4.2.5 The same considerations apply, *mutatis mutandis*, to independent method claim 10.
- 4.2.6 As dependent claims 2-8, 11 and 12 as well as claim 9 (which is an independent claim for a mobile telephone comprising a smart card according to any preceding claim) incorporate all the features of either claim 1 or 10 by reference, they also meet the requirement of inventive step, Articles 52(1) and 56 EPC.
- 5. As the second auxiliary request is allowable, there is no need to consider the claims of the third auxiliary request.

Order

For these reasons it is decided that:

- 1. The decision under appeal is set aside.
- 2. The case is remitted to the department of first instance with the order to maintain the patent in amended form on the basis of claims 1 to 12 of the second auxiliary request, filed with the letter dated 29 March 2010 as "First Auxiliary Request", and a description still to be adapted.

The Registrar:

The Chairman:

D. Magliano

A. S. Clelland

