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**Datasheet for the decision
of 6 July 2017**

Case Number: T 1692/14 - 3.5.06

Application Number: 09163744.7

Publication Number: 2159728

IPC: G06F21/00

Language of the proceedings: EN

Title of invention:

Method and system of upgrading firmware of a card reader

Applicant:

Feitian Technologies Co., Ltd.

Headword:

Upgrading card reader firmware/FEITIAN

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step - no (all requests)

Decisions cited:

T 1742/12

Catchword:



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Case Number: T 1692/14 - 3.5.06

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 6 July 2017

Appellant:
(Applicant)

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Decision under appeal:

**Decision of the Examining Division of the
European Patent Office posted on 16 December
2013 refusing European patent application No.
09163744.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman W. Sekretaruk
Members: M. Müller
S. Krischer

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division, with reasons dated 16 December 2013, to refuse European patent application No. 09 163 744.7 for lack of inventive step over documents

D1: EP 1 647 917 A2 and

D5: US 2007/104054 A1.

II. A notice of appeal was filed on 12 February 2014, the appeal fee being paid on the same day. A statement of grounds of appeal was received on 23 April 2014. The appellant requested that the decision be set aside and a patent granted on the basis of claims 1-13 as received on 23 September 2011 and on which the decision was based, in combination with the description pages 1-20 and the drawing sheets 1/5-5/5 as filed by letter of 21 December 2010. Alternatively, it requested that the case be remitted to the examining division, *inter alia* because it had received a detailed analysis of the claimed invention over D1 only with the written decision, or that a patent be granted on the basis of claims 1-13 according to an auxiliary request filed with the grounds of appeal.

III. In an annex to a summons to oral proceedings, the board informed the appellant of its preliminary opinion that the claimed invention lacked inventive step over D1, Article 56 EPC. Objections under Articles 84 and 123(2) EPC were also raised. Further, the board explained why it was not immediately remitting the case to the examining division for further prosecution, under Article 11 RPBA.

- IV. In response to the summons, by letter dated 27 April 2017, the appellant withdrew its main request, thus making the request for remittal its new main request, and inquired whether the oral proceedings would still have to be held under these circumstances. The board confirmed in writing that the oral proceedings would still take place on the date communicated.
- V. In a further letter of response, dated 29 May 2017, the appellant filed amended sets of claims 1-13 according to auxiliary requests II and III.
- VI. Claim 1 of the (first) auxiliary request reads as follows:

"A method of upgrading firmware of a card reader, comprising steps of:

establishing a connection between the card reader and Integrated Circuit, IC, card;

determining, by the card reader, whether the IC card is an IC card for upgrading in which files for upgrading are stored;

if the IC card is an IC card for upgrading, making, by the card reader, mutual authentication with the IC card; otherwise, operating, by the card reader, the IC card as normal;

acquiring, by the card reader, files for upgrading from the IC card after a successful mutual authentication between the card reader and the IC card, and upgrading firmware of the card reader by using the files for upgrading; wherein the IC card is a contacting IC card and the card reader is a contacting card reader, the step of determining by the card reader whether the IC card is an IC card for upgrading comprises:

sending, by the card reader, an inspection instruction to the IC card, reading an inspection answer returned by the IC card, and determining whether data in the inspection answer matches preset data, determining that the IC card is an IC card for upgrading if the data in the inspection answer matches the preset data; determining that the IC card is not an IC card for upgrading if the data in the inspection answer does not match the preset data; or

reading, by the card reader, feature information sent by the IC card, and determining whether the feature information matches preset feature information, determining that the IC card is an IC card for upgrading if the feature information matches the preset feature information, and determining that the IC card is not an IC card for upgrading if the feature information does not match the preset feature information."

Claim 1 of auxiliary request II is identical to claim 1 of the (first) auxiliary request, except that the following phrase has been added at the end:

"... wherein the feature information is an Answer-To-Reset [0061] or any other self-defined identification".

Claim 1 of auxiliary request III is identical to claim 1 of auxiliary request II, except that all occurrences of "an IC card" have been replaced by "one IC card".

All the requests also contain an independent system claim 8 which corresponds closely to the respective method claim 1.

VII. Oral proceedings were held on 6 July 2017, at the end of which the chairman announced the board's decision.

Reasons for the Decision

The invention

1. The invention relates to upgrading the firmware on an IC card reader from an IC card (see e.g. paragraphs 2 and 33 of the description).
- 1.1 According to the method of the invention, the IC card reader establishes a connection with an IC card in the normal way. Then it determines whether the detected card is one "for upgrading", i.e. one storing files for upgrading. If so, authentication is performed between the card reader and the card. It is disclosed that authentication could be mutual or one-way (see e.g. paragraphs 8 and 47 to 50 of the description), but only mutual authentication is claimed.
- 1.2 The description explains that the proposed method can be carried out with a contacting card or a contactless card (see e.g. paragraph 52). Only the former case is claimed. It is disclosed that contacting cards and readers have to comply with the "ISO 7816 protocol" (paragraph 56) which, however, is not discussed in any detail.
- 1.3 If the IC card is a contacting card, the description discloses two ways of determining whether it is "for upgrading". Either the reader sends an "inspection instruction" to the card and compares "data in the inspection answer" with "preset data", or the reader

receives "feature information" from the IC card and compares it with "preset feature information". In both cases a match is taken to mean that the card is "for upgrading". From the reader's perspective, the former can be characterised as a "pull" method and the latter as a "push" method. Claim 1 of all requests specifies these two methods as alternatives (see the "sending" and "reading" steps).

The prior art

2. D1 discloses a method of reprogramming an RFID reader from an "RFID administrator transponder" (see abstract and paragraphs 14, 16 and 43). It discloses that RFID transponders may be integrated into cards (see paragraph 2). Before reprogramming from a special transponder is allowed, the reader must authenticate the transponder using a "transponder key" (see paragraph 77).

Article 11 RPBA

3. The decision is based on claims filed on 23 September 2011. Then claim 1 had been amended by combining the features of original claims 1, 6 and 9. The appellant correctly observes that the examining division, in the European Search Report (ESR) and the only communication under Article 94(3) EPC, had substantiated its objection to original claims 6 and 9 in only very brief terms and without indicating any relevant disclosure in D1 (see the ESR, point 5.4, and the communication of 9 June 2011, point 2). According to the decision, however, the last sentence in paragraph 77 of D1 stating that "Reprogramming is permitted [...] only when the RFID reader authenticates the [...]"

transponder using the transponder key" anticipates the feature (of original claim 9) that "the IC card is [determined to be] an IC card for upgrading if [and only if] the returned identification matches the preset identification".

- 3.1 In the ESR and the communication, the examining division had made reference to paragraphs 27 to 77, and specifically to the last sentence in paragraph 77, as disclosing authentication between the card and the card reader (see the ESR, point 4.1, and the communication, point 1.1).
- 3.2 The appellant cannot therefore have been surprised that the examining division based its inventive-step objection *inter alia* on paragraph 77.
- 3.3 However, the last sentence of that paragraph does not state how the RFID reader is to "authenticate the [...] transponder using the transponder key". Specifically, this phrase does not imply that the transponder key itself is being compared with "preset information" so as to determine whether they match or not. The board therefore agrees with the appellant that it was difficult for it to anticipate that the sentence mentioned would be considered as anticipating the "matching" feature of original claim 9.
- 3.4 In the annex to the summons, the board expressed its preliminary opinion that this might constitute a fundamental deficiency within the meaning of Article 11 RPBA.
- 3.5 Even if that were the case, however, the board took the view that there were special reasons which spoke against remittal.

- 3.5.1 Firstly, the request for remittal was, at the time, only second to the request for grant of a patent on the basis of the main request (see grounds of appeal, requests 1 and 2). The appellant had thus requested that the board consider the substantive merits of at least the main request.
- 3.5.2 Secondly, and consistently with the previous point, the appellant had not seemed to expressly challenge the substantive assessment of the main request: point I of the grounds of appeal related exclusively to the examining procedure and point II only to the auxiliary request.
- 3.5.3 Thirdly, while the appellant may not have had an opportunity to comment on the examining division's interpretation of paragraph 77 of D1, it could have easily incorporated such comments into its grounds of appeal but did not.
- 3.6 In summary, the board decided not to remit the case to the examining division at that point.
- 3.7 When the appellant withdrew its main request (see point IV above), however, the board had already given its preliminary opinion on the appeal. It would then not have served any purpose to remit the case to the examining division for further prosecution without having discussed the board's objection at the scheduled oral proceedings.

"Closest prior art"

4. During the oral proceedings, the appellant pointed out that D1 related to a contactless scenario based on RFID chips, whereas all pending claims were limited to the

case of a contacting card. It also argued that RFID technology was substantially different from smart card technology, e.g. in terms of memory capacity, and was used in entirely different situations. The appellant concluded that the closest piece of prior art had to be one relating to contacting cards and that, hence, D1 was not a valid starting point for the assessment of inventive step. The board disagrees, considering that its inventive step argument starting from D1 cannot be rendered incorrect merely because there might be another document which is arguably "closer" than D1 to the claimed invention. It endorses its earlier position that the choice of the starting point for an inventive-step objection does not require any special justification (see T 1742/12, esp. reasons 6.6 and 10.3).

Inventive step, "auxiliary request"

5. Claim 1 of the (highest-ranking substantive request labelled as) "auxiliary request" differs from D1 in that

- (a) D1 is based on RFID technology whereas the claimed invention is limited to contacting IC cards,
- (b) the transponder key in D1 is used only for authentication but not for determining whether the IC card is one for upgrading (see grounds of appeal, page 5, last paragraph), and
- (c) D1 does not disclose mutual authentication.

5.1 The appellant argues that the claimed invention has a number of advantages which the description sets out in paragraph 33, such as a "short cycle for development, lower cost, convenience of operation, high efficiency for upgrading, and a higher security" (grounds of

appeal, page 7, paragraph 2). The board is unable to see how the specifically claimed methods help to solve any of these problems, and the description does not discuss them in any detail either.

5.2 According to difference (a), the invention as now claimed makes the "reprogramming" method of D1 available for a different type of hardware. By contrast, differences (b) and (c) contribute to making the reprogramming in D1 more secure.

5.3 In the board's judgement, these problems are separate and distinct, so their inventive merit may be assessed separately.

6. As regards difference (a), the appellant argued that the skilled person, although he *could* have changed the contactless scenario of D1 into a contacting scenario as claimed, *would* not have had any occasion to do so.

6.1 However, the appellant has not explained in any more detail the differences between these scenarios and how they would have affected the skilled person's reasoning. Claim 1 (any request) does not specify any relevant hardware feature of the claimed contacting card, nor the application scenario in which it is to be used, and the description discloses the "two types of IC cards" side by side as alternatives and - although disclosing, without explanation, one-way authentication for contactless cards and mutual authentication for contacting cards - does not bring out the relevance of any differences between them (see paragraph 52).

6.2 D1, on the other hand, specifically discloses that the RFID transponder could be integrated into a card and used to identify of a "person or article" (see

paragraph 2). The board takes the view that the skilled person familiar with IC cards is, in principle, also familiar with RFID technology. Therefore, on the level of generality of the present claims, the board cannot see what would keep the skilled person from considering a contacting scenario as an alternative to a contactless one.

6.3 *A fortiori*, the board agrees with the decision under appeal (reasons 11) that it would have been obvious for the skilled person to adapt the method of reprogramming an RFID reader in D1 to one of reprogramming a "contacting" card reader.

7. As regards difference (b), the board notes that claim 1 of all three requests does indeed distinguish between two operations, specifying that authentication occurs "if the IC card is" - i.e. has been determined to be - "an IC card for upgrading", whereas D1 discloses the use of the "transponder key" only for authentication and does not disclose a step of determining whether a transponder is "for upgrading".

7.1 However, it is known from D1 (see paragraph 43) that reprogramming of the reader is separate from and secondary to the primary function of the transponders. The board therefore considers it to be evident that the reader must distinguish, one way or other, which function a given transponder is meant to carry out. The board considers it to be an obvious option for the special transponder to produce some sort of identifier in order to identify itself as "for reprogramming".

7.2 Moreover, D1 does not disclose in detail how authentication "using the transponder key" is meant to work. In particular, D1 does not disclose that the

"transponder key" must be a cryptographic key. Rather, the transponder key could also merely be a token which the transponder has to produce in order to establish its authentication. Based on D1, the board thus considers it to be an obvious implementation of "authenticat[ion ...] using a transponder key" to compare it with a predetermined key (which qualifies both as "preset data" and as "preset feature information" as claimed, respectively, in the sending and reading steps). Whether the transponder key is produced on the reader's request ("pull") or unsolicited ("push") appears to be marginal in this respect because both push and pull are well-known patterns of communication.

- 7.3 In the board's judgement, it would also be obvious to the skilled person that the transponder already implicitly identifies the special transponder key as "for reprogramming". In other words, it would be obvious to him that a transponder is "for reprogramming" (or "for upgrading") if it produces a transponder key for authentication.
- 7.4 As regards difference (c), the examining division held that the use of mutual (as opposed to one-way) authentication is obvious from common knowledge in the field and also disclosed in D5 (see the decision, reasons 9.6, and D5, abstract, figure 5 and corresponding description). The appellant accepts that D5 discloses mutual authentication and does not dispute that difference (c) does not give rise to an inventive step over D1 in view of D5 (see the grounds of appeal, page 6, paragraph 4).

- 7.5 In summary, the board concludes that none of the differences (a) to (c) is sufficient to render the claimed invention inventive over D1, Article 56 EPC.

Inventive step, "auxiliary request II"

8. Claim 1 of auxiliary request II adds to claim 1 of the (first) auxiliary request that "the feature information" to be matched "is an Answer-to-Reset [0006] or any other self-defined identification".
- 8.1 In the board's judgement, the narrow alternative "Answer-to-Reset [0006]" is immaterial for the scope of the claim in view of the broad alternative "any other self-defined identification".
- 8.2 Moreover, since in the assessment of the main request it was found to be obvious that the "transponder key" may be used to identify the special transponder as such, the inventive-step assessment of the main request applies immediately to claim 1 of this auxiliary request as well.

Inventive step, "auxiliary request III"

9. In claim 1 of auxiliary request III, all occurrences of "an IC card" have been replaced by "one IC card".
- 9.1 According to the appellant (see the letter of 29 May 2017, page 2, penultimate paragraph), this was done in order to establish a difference over D1, which disclosed the use of several transponders for reprogramming the reader (see e.g. figure 3 and paragraph 39).

- 9.2 Paragraph 39 of D1 (see the first and last sentences) discloses that "In most cases, the memory storage capacity of a reader is significantly greater than the memory storage capacity of a transponder IC". It is further disclosed (second sentence) that "therefore" several transponders may be needed "if" the "old reader programming [...] utilizes the entire memory capacity of RFID reader" and thus, obviously, may not fit on a single transponder.
- 9.3 Hence, this passage does not disclose the unconditional use of several transponders. Rather, it would be obvious to the skilled person that a single transponder might suffice if its memory capacity happens to be large enough to hold the entire new software - and he would, then, obviously use only a single transponder.
- 9.4 Accordingly, the amendment to claim 1 of auxiliary request III is also insufficient to give rise to an inventive step over D1 and common knowledge in the art, Article 56 EPC.

Reimbursement of the appeal fee

10. Since the appeal is not allowed, the appeal fee cannot be reimbursed, Rule 103(1)(a) EPC. Whether the above-mentioned deficiency of the first-instance proceedings (see point 3.3) amounts to a substantial procedural violation and, if so, whether it would have made reimbursement of the appeal fee equitable, can therefore be remain unanswered.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



B. Atienza Vivancos

W. Sekretaruk

Decision electronically authenticated