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Datasheet for the decision of 22 November 2007

Case Number: T 0790/05 - 3.4.01

Application Number: 95307279.0

Publication Number: 0733992

IPC: G06K 19/073

Language of the proceedings: EN

Title of invention:
Card-type storage medium

Patentee:
FUJITSU LIMITED

Opponent:
GIESECKE & DEVRIENT GmbH

Headword:
-

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 52(1), 54, 56

Keyword:
"Novelty (yes)"
"Inventive step (no: main request; yes: auxiliary request)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0790/05 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 22 November 2007

Appellant: (Opponent)
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Representative:
-

Respondent: (Patent Proprietor)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 20 April 2005 rejecting the opposition filed against European patent No. 0733992 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: B. Schachenmann
Members: F. Neumann
H. Wolfrum

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the opposition division, dispatched on 20 April 2005, rejecting the opposition against European patent No. 0733992.

The notice of appeal was received on 17 June 2005 and the prescribed fee was paid on the same day. The statement of the grounds of appeal was received on 19 August 2005.

II. In the contested decision, the opposition division was of the opinion that the subject matter of the claims was novel and comprised an inventive step.

During the opposition proceedings, the following citations were taken into account:

D5: Operating Systems, Design and Implementation; Andrew S. Tanenbaum; Prentice Hall, London et al.; 1987; pages 276-277

D6: Handbuch der Chipkarten; W. Rankl und W. Effing; Carl Hanser Verlag, München, Wien; 1. Auflage 1995; pages 3, 13, 14, 79-82, 159, 160.

III. In the statement of grounds of appeal, the appellant (opponent) filed additional pages 88-91, 112, 113, 122-124, 259-268 and 292 of D6. Moreover, page 164 was filed during the oral proceedings before the Board.

IV. Oral proceedings were held on 22 November 2007.

V. The appellant (opponent) requested that the decision be set aside and that the patent be revoked in its entirety.

VI. The respondent (proprietor) requested, as a main request, that the patent be maintained as granted. As an auxiliary request, the respondent (proprietor) requested that the patent be maintained on the basis of claims 1 to 6 filed at the oral proceedings, claim 1 being a combination of claims 1 and 2 as granted.

VII. Independent claim 1 of the respondent's **main request** reads as follows:

"*A card-type storage medium comprising storage means (1) for storing files, communication means (3) by which external communications can be effected with the medium, and file access means (4) for executing a command received from the communication means by controlling access to a file stored in the storage means (1), characterised in that:*
command receipt control means (5) are provided for allowing commands to be received in an asynchronous mode, in which mode a plurality of external applications can access said card-type storage medium simultaneously, and for producing sequential file access commands from such commands; and
the file access means (4) comprise exclusive access control means (6) arranged to manage the files stored in said storage means (1) by dividing the files into a plurality of file units, and to inhibit access to a file unit for a new command while that file unit is still an object of a previous command."

Claims 2 to 7 are dependent on claim 1.

Independent claim 1 of the respondent's **auxiliary request** reads as follows:

"*A card-type storage medium comprising storage means (1) for storing files, communication means (3) by which external communications can be effected with the medium and file access means (4) for executing a command received from the communication means by controlling access to a file stored in the storage means (1), characterised in that:*
command receipt control means (5) are provided for allowing commands to be received in an asynchronous mode, in which mode a plurality of external applications can access said card-type storage medium simultaneously, and for producing sequential file access commands from such commands; and
the file access means (4) comprise exclusive access control means (6) arranged to manage the files stored in said storage means (1) by dividing the files into a plurality of file units, and to inhibit access to a file unit for a new command while that file unit is still an object of a previous command,
wherein said command receipt control means (5) includes:
a command queuing table for storing a command received from said communication means (3);
an interruption processing unit, responsive to an interrupt due to a receipt of a command from said communication means (3), for accepting the command by queuing the command in said command queuing table; and

a command dispatch processing unit for watching said command queuing table and, when any command queues in said command queuing table, reading such command from said command queuing table and requesting said file access means (4) to execute the read command."

Claims 2-6 are dependent thereon.

VIII. The arguments of the parties, insofar as they are pertinent to the present decision, are set out below in the reasons for the decision.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. *Main request: novelty - Articles 52(1), 54 EPC*

2.1 Disclosure of D6

D6 is a general reference book which contains a comprehensive overview of Smart Card technology. In particular, the basic principles of a known Smart Card are described on pages 80 to 82 of D6, while a speculative future Smart Card is proposed on pages 159 and 160.

Pages 80 to 82 of D6 describe a multi-application Smart Card in which only a single task is performed at any one time. The third paragraph of page 81 makes clear that the multi-application card does not perform

multitasking and that operation is restricted to a single executed task.

Section 6.7 on pages 159 and 160 discusses a future multi-application Smart Card which is expected to accomplish simultaneous execution of up to four applications. The individual applications will be addressed over logical channels which will make it possible for up to four applications on one card to exchange data with a terminal in parallel with each other.

For the assessment of novelty, each of these two separate disclosures will be considered in turn.

2.2 The known Smart Card of pages 80 to 82 of D6

From Fig. 5.1, the last paragraph of page 81 and paragraphs 1-3 of page 82, it can be seen that D6 discloses a card-type storage medium comprising storage means (EEPROM) for storing files, communication means ("I/O Schnittstelle", "I/O Manager") by which external communications can be effected with the medium, and file access means ("Logical Channel Manager", "Zustandsautomat", "Anwendungsbefehl", "Dateiverwaltung" and "Speichermanager") for executing a command received from the communication means by controlling access to a file stored in the storage means (via the "Dateiverwaltung" and the "Speichermanager").

Moreover, command receipt control means (all elements from the "I/O Schnittstelle" up to the "Zustandsautomat") are also provided for allowing

commands to be received in an asynchronous mode (which is the standard transmission mode in Smart Cards - see page 112, section 6.2, paragraph 4), and for producing sequential file access commands from the received commands. The "Zustandsautomat" tests whether the command which was sent to the card is permitted with the parameters set to their current state; if so, the command will be directed to the "Anwendungsbefehl" for execution of the command with corresponding file access if necessary. Thus, the combination of the "Zustandsautomat" and the "Anwendungsbefehl" ultimately produces sequential file access commands.

In addition, the file access means of D6 comprises means arranged to manage the files stored in the storage means by dividing the files into a plurality of units (see section 5.6.1 on pages 89 to 91). Moreover, communication to the card is performed in accordance with a command-response protocol; this means that whilst one operation is being executed on the card, no other commands may be received at the I/O interface (see page 112, section 6.2, paragraph 1). This has the consequence that access to the file units (in fact access to the entire card) is inhibited for a new command - which will not even be accepted - whilst that file unit is still an object of a previous command. Thus, the file access means of D6 comprises an exclusive access control means since access to a file unit will - by virtue of the command-response protocol - be inhibited for a new command while that file unit is still an object of a previous command.

The appellant (opponent) argued that the purpose of the Logical Channel Manager in Fig 5.1 of D6 was to

manage simultaneously received commands: this was the *raison d'être* of a Logical Channel Manager. Thus, in the arrangement of Fig. 5.1 a plurality of external applications must be accessing the card simultaneously.

However, the Board is of the opinion that the arrangement of Fig 5.1 is presented in the context of only a single application being processed at any one time. Although pages 81 and 82 of D6 describe a multi-application chip card which can administrate several applications independently of each other, it is made clear in the third paragraph of page 81 that these cards do not perform multitasking. Taking into account what is said on page 159, i.e. that **future** cards will have the capability to enable up to four independent applications to exchange data with the terminal simultaneously, the disclosure on pages 81 and 82 can only be interpreted to mean that the known card of pages 81 and 82 only enables one external application to access the card at any one time. Not even the last three lines of page 81 can be used to support the interpretation that a plurality of applications access the card simultaneously: in the context of the previous paragraph of page 81 - which discusses the restriction to a single executed task - the final three lines of page 81 have to be interpreted to mean that the Logical Channel Manager is simply responsible for selecting the correct path to the appropriate application and not for managing simultaneous selection of different, parallel routines.

Thus in the opinion of the Board, the Logical Channel Manager in Fig. 5.1 of D6 only serves to route the commands from a single external application to the

correct file unit. In the opinion of the Board, pages 80-82 of D6 do not disclose simultaneous access to the card by other external applications.

Therefore, claim 1 of the main request is distinguished from the disclosure of pages 81 and 82 of D6 in that a plurality of external applications can access the card-type storage medium simultaneously. Claim 1 is therefore novel over the disclosure of the known card on pages 80-82 of D6.

2.3 The future Smart Card of section 6.7 of D6

2.3.1 The respondent (proprietor) submitted that the disclosure of section 6.7 only set out a speculative future Smart Card and lacked the details required to provide an enabling disclosure of this future concept. It was argued that section 6.7 not only represented a non-enabling disclosure, but also taught away from the proposed structure since it highlighted the significant problems arising from such an arrangement.

Section 6.7 of D6 clearly sets out that in future Smart Cards, the plurality of independent applications will be addressable via logical channels. In the view of the Board, this is a sufficient disclosure of the intended arrangement of such a multi-application Smart Card: the link to each separate application will be provided by a logical channel.

With respect to the submission that D6 actually led away from a multi-access arrangement, the Board notes that the final paragraph of section 6.7 of D6 explains that the administration of logical channels for multi-

access applications is problematic for the Smart Card operating system and it is only possible to cope with several sessions running in parallel with large and expensive microprocessors. Thus, D6 draws attention to the difficulties involved with the use of logical channels in Smart Cards but nevertheless indicates that logical channels can be operated in parallel, provided that the microprocessor is powerful enough. It is only with reference to Secure Messaging and the associated authentication elements that D6 indicates that the memories of currently available microprocessors are simply too small to accommodate such complexity.

Thus, the Board considers that section 6.7 of D6 - whilst clearly being directed to a future Smart Card - nevertheless contains an enabling disclosure of such a card and may therefore be considered to form part of the state of the art.

2.3.2 Section 6.7 of D6 discusses the arrangement of future multi-application Smart Cards which can accomplish simultaneous execution of up to four applications. The individual applications are addressed via logical channels which make it possible for up to four applications on one card to exchange data with a terminal in parallel with each other (see page 159, section 6.7, paragraph 2). Thus the command receipt control means of the future card of section 6.7 is configured to allow a plurality of external applications to access the card-type storage medium simultaneously.

The respondent (proprietor) contested this finding, stating that there was no enabling disclosure in D6 of how exactly more than one application could be executed at any one time. However, the Board notes that claim 1 of the contested patent does not define that a plurality of applications are actually **executed** in parallel: claim 1 only defines that a plurality of applications can **access** the card-type storage medium simultaneously.

Section 6.7 makes clear that via the logical channels a plurality of applications can run in parallel. As set out in section 6.7, only one serial interface is required, but at a logic level the applications can be addressed individually. Commands originating from different external applications carry a distinguishing code (two bits in the class byte) and can be identified once they pass the I/O interface.

As pointed out by the appellant (opponent), page 164 of D6 discusses the manner in which files are selected. Once a file has been selected, it remains open until a new file is selected (section 7.1, paragraph 3). From section 6.7, it can be seen that each logical channel can be visualised as an independent Smart Card. Thus, the implementation of a SELECT FILE command in one logical channel will open the corresponding file in the logical channel and this file will remain open until another SELECT FILE command is executed in the same logical channel. Consequently, as soon as one file is selected in one of the logical channels, this file remains open and "access" to the card by the corresponding external application is maintained until a further file is selected in this logical channel.

Similar commands originating from different external applications will result in further files being selected in the corresponding different logical channels. Each of the selected files will remain open until a new file is selected in that particular logical channel. The fact that the selected file remains open means that the external applications have access to the card. In this manner, up to four external applications can "access" the card simultaneously: a communication link is established which remains open whilst other commands are being executed on other channels.

Thus, the Board considers that section 6.7 of D6 discloses that, in future cards, a plurality of external applications can access the card-type storage medium simultaneously.

2.3.3 Concerning the final feature of claim 1, namely the exclusive access control means which inhibit access to a file unit for a new command whilst that file unit is still an object of a previous command, the Board concludes that D6 contains no direct and unambiguous disclosure of this feature. In arriving at this conclusion, the Board had to consider two different interpretations of section 6.7 of D6 which were put forward by the parties.

2.3.3.1 The appellant (opponent) submitted that the future card of section 6.7 of D6 would have the same lay-out as in Fig. 5.1, the Logical Channel Manager administrating the routing of the commands of the external applications to the various files. Commands specific to each of the external applications would be

input into the card in accordance with the command-response protocol. The input commands contained a code specifying the logical channel they should be sent to. The logical channel was simply a link to a particular Dedicated File (DF). Using logical channels, all four DFs could be open at the same time. However, by virtue of the command-response protocol, access to the DF would be inhibited along one logical channel for a new command whilst that DF is the subject of a previous command.

The Board notes that the extent of independence of the DFs is not discussed in D6. In particular, it is not clear whether it is possible to access the same DF from two different logical channels: it is conceivable that more than one logical channel may be opened to the same DF. In this configuration the command-response protocol is not sufficient to ensure that the access to a file unit representing one application is inhibited whilst that file unit is still an object of a previous command. The fact that up to four applications can proceed simultaneously in parallel means that up to four DFs can be open at the same time. If two of the logical channels provide a link to the same DF (which is not excluded in the disclosure of section 6.7 of D6), then the same DF could be addressed simultaneously by two separate external applications via two different logical channels.

Thus, in view of the fact that the second paragraph of section 6.7 clearly states that up to four sessions can proceed in parallel, and in the absence of any indication in D6 that each logical channel provides an exclusive link to its respective DF, D6 cannot be

considered to disclose that the file access means comprise exclusive access control means which inhibit access to a file unit for a new command while that file is still an object of a previous command.

Claim 1 is therefore novel over this interpretation of section 6.7 of D6.

2.3.3.2 The respondent (proprietor) relied on a different interpretation of section 6.7 of D6. The final paragraph of section 6.7 indicated that each logical channel was effectively a completely free-standing Smart Card. The respondent insisted that the future Smart Card of section 6.7 therefore effectively comprised four completely independent Smart Cards, one for each application. For ease of understanding these will be termed "equivalent Smart Card" in the following.

Applying this interpretation, the respondent (proprietor) submitted that a plurality of external applications could simultaneously access the card-type storage medium. Each of the four external applications would access its corresponding "equivalent Smart Card", each of which would have its own storage means and its own file access means and would operate in accordance with the command-response protocol. Because of the complete independence of the "equivalent Smart Cards", no memory or file access conflict could arise so that the problem addressed by the patent in suit did not occur.

The respondent (proprietor) further submitted that this arrangement did not comprise an exclusive access

control means which inhibited access to a file unit for a new command while that file unit was still an object of a previous command. Arguing as follows, the respondent insisted that the blocking of access to a **file unit** was to be distinguished from the blocking of commands. In D6 the command-response protocol ensured that further commands were blocked by the card until a response was received from the previous command. In contrast thereto, the patent in suit concerned a targeted blocking of a specific file unit which was currently being accessed. In other words, claim 1 of the patent in suit was distinguished from section 6.7 of D6 in that all external commands were accepted but the access to a particular file unit was blocked if this file unit had already been opened by a previous command. In D6, the command-response protocol prevented a command being executed, but it did not protect the file unit. Thus the file access inhibiting means of claim 1 of the patent in suit was not the same as the command-response mechanism of D6.

The Board acknowledges that the mechanism by which the file blocking occurs in D6 is not a targeted blocking of the file unit, but it is emphasised that the wording of claim 1 of the patent in suit is not limited to this (desired) interpretation: claim 1 is not specifically directed to the case of different applications demanding concurrent access to the same file unit. However, as acknowledged by the respondent (proprietor), the inevitable consequence of the command-response protocol of D6 together with the total independence of the individual "equivalent Smart Cards" - which implies a total isolation of the files corresponding to each application - is that each

command effectively causes a complete block on access to any files in that particular application whilst that command is being executed. Hence, access to a file unit is inhibited for a new command while that file unit is still an object of a previous command.

2.3.3.3 Thus, the respondent's (proprietor's) own interpretation of D6 would lead to the finding that all features of claim 1 are known from D6. However, due to the uncertainty with respect to the possible interpretations of D6, either in accordance with the submissions of the appellant (see point 2.3.3.1) or in accordance with those of the respondent (see point 2.3.3.2), a direct and **unambiguous** disclosure of all features of claim 1 cannot be considered to be contained in D6. It is not unambiguously clear from D6 that the future chip card may indeed be arranged as four completely independent "equivalent Smart Cards", as submitted by the respondent (proprietor). Therefore novelty of claim 1 must be acknowledged.

3. *Main request: inventive step - Articles 52(1), 56 EPC*

3.1 As discussed above, section 6.7 of D6 can be interpreted in two ways, each interpretation resulting in a different finding with respect to the novelty of claim 1. The critical issue is whether the logical channels of section 6.7 are completely independent of each other. The final paragraph of section 6.7 points to a complete independence, each logical channel providing a link to a self-contained application, but it is also plausible that the various logical channels share a common memory so that the file structure may be such that more than one logical channel can access

the same file. Both of these options are regarded as obvious and consequently neither can be considered to involve an inventive step.

In particular, it is noted that the preferred interpretation of the respondent (proprietor) is that of four self-contained, independent, stand-alone "equivalent Smart Cards", each corresponding to a separate application and each operating on a command-response basis. Here, as shown above, access to any files contained within one "equivalent Smart Card" will be blocked whilst a command is being executed and until a corresponding response is received: no inter-channel communication will occur since the "equivalent Smart Cards" are completely isolated from each other.

Although section 6.7 of D6 points out that a configuration which effectively comprises four completely self-contained, independent Smart Cards is only feasible with large and expensive microcontrollers, it does not rule out this arrangement; instead it simply draws attention to the more demanding processor requirements. Thus, D6 contains no teaching which would deter the skilled person from adopting this arrangement. In implementing the teaching of D6, the skilled person would therefore consider the configuration in which the four logical channels are completely isolated from each other and would thus arrive at a card-type storage medium falling under the terms of claim 1 of the patent as granted. Claim 1 therefore lacks an inventive step (Articles 52(1), 56 EPC).

4. *Auxiliary request*

4.1 Claim 1 of the auxiliary request contains all features of claims 1 and 2 as granted. The dependent claims as granted were renumbered accordingly.

4.2 The appellant (opponent) raised no objections against the claims of the auxiliary request.

4.3 However, in the opinion of the Board, a lack of objections from the appellant (opponent) is not sufficient reason for the Board to allow the respondent's (proprietor's) request since claim 1 is now directed towards fresh subject-matter which has not been examined before. This means that it has to be verified whether the auxiliary request meets the requirements of the EPC.

4.4 The Board notes that no objections under Articles 84 and 123(2),(3) EPC arise from the amendments made to the claims.

The features which distinguish claim 1 of the auxiliary request from claim 1 of the main request are to be found in claim 3 of the originally filed application. The subject-matter of claim 1 of the auxiliary request must, therefore, be considered to have been properly searched.

D6 does not disclose a command queuing table and the associated interruption and command dispatch processing units as currently defined in claim 1 of the auxiliary request. Therefore claim 1 is novel. Moreover, since none of the remaining citations on

file disclose these distinguishing features, claim 1 of the auxiliary request cannot be considered to be obvious.

Thus, the Board has no objections of its own with regard to the claims of the auxiliary request. Accordingly claims 1 to 6 of the auxiliary request are considered to be allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent in amended form based on claims 1 to 6 filed at the oral proceedings as auxiliary request, and the description to be adapted.

The Registrar The Chairman

R. Schumacher B. Schachenmann