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**Datasheet for the decision  
of 16 November 2020**

**Case Number:** T 1866/17 - 3.5.07

**Application Number:** 13158933.5

**Publication Number:** 2642411

**IPC:** G06F17/30

**Language of the proceedings:** EN

**Title of invention:**

IC card and command processing method for IC card

**Applicant:**

Kabushiki Kaisha Toshiba

**Headword:**

IC card command processing/Toshiba

**Relevant legal provisions:**

EPC Art. 56, 84, 123(2)

EPC R. 43(2)

**Keyword:**

Inventive step - after amendment (yes)

Claims - clarity after amendment (yes)

Amendments - added subject-matter - after amendment (no)



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Case Number: T 1866/17 - 3.5.07

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.07**  
**of 16 November 2020**

**Appellant:** Kabushiki Kaisha Toshiba  
(Applicant) 1-1, Shibaura 1-Chome  
Minato-Ku  
Tokyo 105-8001 (JP)

**Representative:** Hoffmann Eitle  
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**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 9 February 2017  
refusing European patent application  
No. 13158933.5 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chair** P. San-Bento Furtado  
**Members:** C. Barel-Faucheux  
C. Almberg

## **Summary of Facts and Submissions**

- I. The applicant (appellant) appealed against the examining division's decision refusing the European patent application No. 13158933.5.
- II. The documents cited in the contested decision included:  
D1: US 2011/0066761 A1, published on 17 March 2011;  
D2: Oracle, "Warnings and Errors", 18 February 2012, pages 1 to 117, retrieved from [http://web.archive.org/web/20120218060126/http://docs.oracle.com/cd/E11882\\_01/timesten.112/e21646/error.htm](http://web.archive.org/web/20120218060126/http://docs.oracle.com/cd/E11882_01/timesten.112/e21646/error.htm).
- III. The examining division decided that the subject-matter of claim 1 of the main and of the first to fourth auxiliary requests did not involve an inventive step within the meaning of Article 56 EPC having regard to document D1 in combination with the common general knowledge of the skilled person or document D2, and that the subject-matter of claim 1 of the first auxiliary request did not meet the requirements of Article 84 EPC due to lack of clarity and lack of support.
- IV. With its statement of grounds of appeal, the appellant filed a main request and first and second auxiliary requests to replace the previous requests on file, with the main and first auxiliary requests corresponding to the main and fourth auxiliary requests considered in the decision under appeal. It requested that the contested decision be set aside and a patent be granted on the basis of the main request or the first or second auxiliary request.

V. In a communication pursuant to Article 15(1) RPBA 2020 accompanying the summons to oral proceedings, the board cited the following documents:

D4: ISO/IEC 7816-4, second edition, "Identification cards – Integrated circuit cards – Part 4: Organization, security and commands for interchange", published on 15 January 2005;

D5: ISO/IEC 7816-3, third edition, "Identification cards – Integrated circuit cards – Part 3: Cards with contacts – Electrical interface and transmission protocols", published on 1 November 2006.

The board expressed its preliminary opinion that, among other things, the subject-matter of claim 1 of the main request did not appear to meet the requirements of Articles 84 and 123(2) EPC or to be inventive (Article 56 EPC) in view of document D1, and that claim 1 of the first and second auxiliary requests did not seem to fulfil the requirements of Articles 84 and 123(2) EPC.

VI. By letter of 13 October 2020, the appellant submitted a main request and first to third auxiliary requests replacing all previous requests.

VII. Oral proceedings were held as scheduled and the appellant was heard on the relevant issues. The appellant filed a new main request replacing all previous requests on file. At the end of the oral proceedings, the Chair announced the board's decision.

VIII. The appellant's final request was that the decision under appeal be set aside and a patent be granted on the basis of the new main request submitted during the oral proceedings (the sole request).

IX. Claim 1 of the sole request reads as follows:

"A portable electronic apparatus (2), comprising:

    a communication unit (25) for performing data communication with an external device (1);

    a controller (21) for performing the data communication of the communication unit by using a logical channel selected from a plurality of logical channels; and

    a data storage unit (22) for storing data in units of data as a target to access, according to a command from the external device, at least some of the units of data being un-shareable; and

    a command processor (21) for performing access to a unit of data specified by the command received by the communication unit, on a logical channel specified by the command,

    characterized by further being configured to output to the external device in response to the command, a response message comprising: (i) a data part including first information (DATA1) storing data read as a result of successfully executing the command, second information (DATA2) indicating an identifier of an un-shareable unit of data and third information (DATA3) indicating an identifier of a logical channel used for accessing the un-shareable unit of data indicated by the second information or indicating an unused state of the un-shareable unit of data indicated by the second information; and (ii) a status part including information representing an execution result of the command,

    wherein, in a case where the unit of data specified by the command is an un-shareable unit of data to which access on the logical channel specified by the command cannot be successfully performed because the unit of data specified by the command is being

accessed using a logical channel other than the logical channel specified by the command, the second information indicates an identifier of the unit of data specified by the command, the third information indicates an identifier of the logical channel other than the logical channel specified by the command, and the execution result of the command indicates that the command is abnormally terminated because the unit of data specified by the command is being accessed using a logical channel other than the logical channel specified by the command."

X. Independent claim 9 reads as follows:  
"System comprising the portable electronic apparatus (2) according to one of claims 1 to 8 further comprising the external device (1), the external device (1) being adapted to read the response message."

XI. Independent claim 10 reads as follows:  
"A command processing method for an IC Card (2), comprising:  
receiving a command from an external device (1) specifying a unit of data to be accessed by using a logical channel selected from a plurality of logical channels (S70);  
storing, in a data storage unit (22) of the IC Card (2), data in units of data as a target to access, according to a command from the external device, at least some of the units of data being un-shareable; and  
in a case where the unit of data specified by the command is accessible, performing (S76) access to the unit of data specified by the command on a logical channel specified by the command, characterized by further comprising:  
outputting to the external device in response to the command, a response message comprising: (i) a

data part including first information (DATA1) storing data read as a result of successfully executing the command, second information (DATA2) indicating an identifier of an un-shareable unit of data and third information (DATA3) indicating an identifier of a logical channel used for accessing the un-shareable unit of data indicated by the second information or indicating an unused state of the un-shareable unit of data indicated by the second information; and (ii) a status part including information representing an execution result of the command (S88, S89, S81),

wherein, in a case where the unit of data specified by the command is an un-shareable unit of data to which access on the logical channel specified by the command cannot be successfully performed because the unit of data specified by the command is being accessed using a logical channel other than the logical channel specified by the command, the second information indicates an identifier of the unit of data specified by the command, the third information indicates an identifier of the logical channel other than the logical channel specified by the command, and the execution result of the command indicates that the command is abnormally terminated because the unit of data specified by the command is being accessed using a logical channel other than the logical channel specified by the command."

### **Reasons for the Decision**

1. The appeal complies with the provisions referred to in Rule 101 EPC and is therefore admissible.

*Application*

2. The invention concerns an IC card. When an IC card communicates with multiple communicating systems, a logical channel is conventionally assigned to each communicating system and the IC card performs continuous processing for each of the plurality of channels. Files in an IC card with a logical channel function can be shareable or unshareable. When a command is received to access an unshareable file on a specified logical channel but that file is already being used by another logical channel, the IC card cannot access the file.

In that case, the command necessitating access via a specified channel to the unshareable file being used on another logical channel is usually retried repeatedly until the command is successfully processed (description as originally filed, page 1, lines 8 to 19).

3. The invention is based on the modification that, if data to be accessed by such a command is inaccessible because the data is being used on a channel other than the logical channel of the command, the response unit outputs a response message indicating that the specified data is inaccessible because the data is being used on another logical channel (page 3, line 36 to page 4, line 9).
4. A use status table stores information indicating whether each (elementary) file (EF) is used or unused, as well as information indicating a logical channel number using a corresponding EF (Figure 6; page 8, lines 19 to 23; page 10, lines 14 to 22).

For each logical channel, an access status table stores the logical channel number, an identifier of a file to access on the logical channel and a status indicating success or failure in accessing the file on said logical channel number. In the event of failure, the status field stores the logical channel number of the logical channel using the file (Figure 7; page 11, lines 10 to 23).

- 5. Figure 8 reproduced below shows an example configuration of a data format of a response message output from the IC card in response to a read command. The data format of a response message may comply with the Application Protocol Data Unit (ADPU) defined under ISO/IEC 7816-3 12.1 (page 12, lines 29 to 37). Document D5 corresponds to the specification of that standard.

Response data field			Response trailer	
Data1	Data2	Data3	SW1	SW2
Read data	EFID notified to be used in response	Use/non-use and logical channel number using EF	Status bytes	

The response message is configured by a response data field and a response trailer. The field "Data1" is used to store an execution result of a read command (data read as result of processing the command), "Data2" stores an identifier (EFID) of a specified file, "Data3" is used to store a status, containing either a logical channel number using the specified file or "unused" (description, page 13, lines 11 to 22).

The response trailer (status word [SW1, SW2] or status part) stores information showing an execution result of a command (description, page 13, line 23 to page 14, line 16).

*Admission*

6. In its communication, the board raised for the first time new objections for lack of clarity and added subject-matter against the requests submitted with the grounds of appeal, including the two requests considered in the decision under appeal, and left open the question of inventive step for the then auxiliary requests. In reaction to that preliminary opinion, the appellant submitted (on 13 October 2020) new requests addressing the issues of clarity and added subject-matter.

At the oral proceedings, the claims of the sole request were filed after discussions on inventive step, clarity and added subject-matter and, for the first time, on the number of independent claims in the same category. The claims of the sole request are based on claims submitted on 13 October 2020, i.e. before the oral proceedings, and the independent claims specify subject-matter which had been recited, in part in an unclear manner, in the independent claims of the requests submitted with the grounds of appeal (in particular, the response message and how it is used when a unit of data cannot be accessed on a logical channel) but with regard to which the board had not given its preliminary opinion on inventive step. Since the independent claims of the sole request indeed overcome the issues raised without giving rise to new objections, admitting the request into the proceedings does not contravene procedural economy. The amendment to the appellant's case constituted by the filing of the sole request took place under circumstances which in the board's view justify admission under

Article 13(2) RPBA 2020. The board thus admits the sole request into the appeal proceedings.

*Number of independent claims in the same category*

7. The claims of the sole request include three independent claims, namely claims 1, 9 and 10 directed to an apparatus, a system and a method, and therefore comply with Rule 43(2) EPC.

*Clarity and added subject-matter - claim 1*

8. Claim 1 combines claim 10 as originally filed with the features specifying that at least some of the units of data are unshareable (disclosed for instance on page 1, lines 10 to 15, and page 9, lines 22 to 37) and the features of the response message, which are illustrated by Figure 8 for the general case and by Figure 9 for the particular case where a command is abnormally terminated because the unshareable unit of data specified by the command is being accessed using a logical channel other than the logical channel specified by the command. These features are disclosed in the application as filed, in particular on page 13, line 6, to page 14, line 35, with reference to Figures 8 and 9. Therefore, claim 1 satisfies the requirements of Article 123(2) EPC.

The objection under Article 84 EPC of the decision under appeal is no longer valid because the text "data which has been made inaccessible" has been removed from claim 1. The objections raised by the board for lack of clarity and the number of independent claims were overcome by amendment. Claim 1 now clearly defines the response message in light of the description and specifies how it is used when the unit of data cannot

be accessed. The amendments made to claim 1 help clarifying the purpose of the invention, as explained in the inventive-step assessment below, and are supported by the description. Therefore, the board is satisfied that claim 1 complies with Article 84 EPC.

*Clarity and added subject-matter - independent claims 9 and 10*

9. Claim 9 is based on the system illustrated by Figure 1 as filed (IC card 2 and IC card processor 1) and the passages cited above as basis for claim 1. Claim 10 is based on claim 11 as originally filed and the passages and figures indicated above for claim 1.

Therefore, the board is satisfied that claims 9 and 10 comply with Articles 84 and 123(2) EPC.

*Inventive step*

10. Document D1 discloses (Figures 1 and 2; paragraphs [0024] to [0037]) an IC card comprising a communication unit ("UART" 14) in communication with an external device ("IC card processing apparatus" 2) and a controller ("CPU (Central processing unit)" 11). A data storage unit of the IC card ("nonvolatile memory" 16) stores data as a target to access, according to a command from an external apparatus.
- 10.1 The IC card operating system (OS) supports a logical channel managing function in addition to a function for controlling each item of hardware in the H/W layer for implementing the basic operations of the IC card 1 (paragraph [0044]). The logical channel managing function 42 controls the opening/closing of logical channels, assigns the logical channels to the application programs and uses a channel management

table 42a to manage the order in which each logical channel accesses a file or an application (paragraph [0045]).

- 10.2 Data specified by a command received by the communication unit is accessed by a command processor on a logical channel specified by the command (paragraphs [0050], [0051] and [0084]).
- 10.3 The command and response messages of the IC card of document D1, which are illustrated in Figure 4, follow the standard ISO/IEC 7816. This is the same standard as considered in the application (see description of the application as originally filed, from page 12, line 32 to page 13, line 5).
- 10.4 The response messages illustrated in Figure 4 of document D1 include a data section and a status section (paragraphs [0052] to [0055]).
- 10.5 In the IC card in document D1, when the processing of a command is interrupted, the IC card's CPU 11 creates additional information indicating a detailed reason for the interrupted command processing. An example of additional information is "the logical channel 'Ch. 0' is accessing file A1 and so writing failed in the logical channel 'Ch. 1'". The additional information thus created is stored in the RAM 13 or the non-volatile memory 16 by the CPU 11 (paragraphs [0085], [0133] and [0203]; Figure 6, steps S35 and S36).
- 10.6 The IC card's CPU 11 then creates a response in which the status word indicating the code information "writing error" and "with additional information" is set (Figure 6, step S36-5), transmits the created response to the IC card processing apparatus 2

(Figure 6, step S37) and terminates the processing for the writing command (paragraph [0086]).

- 10.7 After receiving the response indicating the presence of additional information, the IC card processing apparatus 2 may transmit a special command for acquiring the additional information (paragraphs [0087], [0088], [0135], [0136] and [0186]). The IC card's CPU 11 processes the special command by reading the additional information and transmitting it to the IC card processing apparatus 2 in a second response message (paragraphs [0089], [0137] and [0188]).
11. The portable electronic apparatus of claim 1 of the sole request therefore differs from the IC card of document D1 by its characterising part.
12. In the grounds of appeal, the appellant argued that the distinguishing features solved the problem of increasing the processing efficiency at the IC card because additional messages between the IC card and the IC card processing apparatus were no longer necessary.

In its communication and at the oral proceedings, the board expressed the opinion that the description of the response message in claim 1 of previous requests was so broad that such a technical effect could not be recognised. That objection no longer applies, since claim 1 was amended to clearly describe the response message, in particular the fields DATA2 and DATA3, and explain its use in processing a read command. The way the characterising features work can be illustrated by the example of Figure 9, described on page 14, lines 19 to 35, of the application as originally filed. In that example, the response message generated in response to

an access command to read data from unshareable file EF 1 (e.g. in channel 0) includes DATA2 = 0x0001 (EFID 1), DATA3 = 0x01 (logical channel 1) and the status = 0x69FF. That response message indicates that the command to access file EF 1 (indicated by DATA2) could not be executed (indicated by the status value 0x69FF) because the unshareable file EF 1 was already being used in logical channel 1 (indicated by DATA3). The IC card processing apparatus can then immediately direct the next access command to logical channel 1, whereas in D1 a command to read additional information has to be performed first in order to obtain the information about which logical channel to use. The purpose of reducing processing by avoiding additional commands is also mentioned on page 1, lines 15 to 19, of the original description.

The board therefore agrees that the objective technical problem formulated by the appellant over document D1 is solved by the distinguishing features.

13. Starting from D1, the skilled person would not have been prompted to modify the portable electronic apparatus of claim 1 in the manner described in the distinguishing features since, according to D1, in order to add information indicating the detailed content of the error other than by using the "status word" (corresponding to the "status part" in claim 1) of the response format (which complies with the standard ISO/IEC 7816), the very format of the response to the command needs to be changed, meaning that the entire command system needs to be largely changed (paragraph [0006]). Changing the entire command in this way would not have seemed practical. Document D1 therefore does not encourage the skilled person to send

additional information in the response message, or even discourages from it.

Starting from document D1 and faced with the problem stated above, the skilled person would thus not have tried to send additional information in the response message at all. In the portable electronic apparatus of claim 1, the standard structure of the message was kept but the data part was divided into DATA2 and DATA3.

None of the other prior art cited in the proceedings discloses the distinguishing features or anything equivalent. Even though it is common general knowledge to use fields in messages to convey information, the board is not convinced that the skilled person starting from document D1 would have arrived at the particular solution claimed without a hint in that direction. Document D2 does not provide such a hint. Furthermore, since it is about returning messages by a database system, the board doubts that the skilled person would have taken D2 into account to solve a problem of returning information by the hardware component of D1 which uses a fixed message format.

14. Therefore, the board considers the subject-matter of claim 1 inventive (Article 56 EPC) over the cited prior art. For similar reasons, the subject-matter of independent claims 9 and 10 is considered to be inventive.

*Remittal*

15. In view of the above, the board has no objections against the independent claims. The decision under appeal is thus to be set aside. However, the dependent claims, the description and drawings may still need

adapting. Since this is a matter that is more appropriately dealt with by the examining division than by the board as part of a judicial review of the contested decision (Article 12(2) RPBA 2020), special reasons for remittal present themselves (Article 11 RPBA 2020).

16. Hence, the case is to be remitted to the examining division for further prosecution with respect to the dependent claims (2-8) of the sole request filed during the oral proceedings before the board, the description and the drawings.

## **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 for further prosecution.**

The Registrar:

The Chair:



S. Lichtenvort

P. San-Bento Furtado

Decision electronically authenticated