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Datasheet for the decision of 3 February 2025

Case Number: T 0663/23 - 3.5.06

Application Number: 18760807.0

Publication Number: 3572932

IPC: G06F8/656, H04L12/44

Language of the proceedings: EN

Title of invention:
COMMUNICATION PROCESSING DEVICE, INFORMATION PROCESSING DEVICE, AND COMMUNICATION PROCESSING DEVICE CONTROL METHOD

Applicant:
Nippon Telegraph and Telephone Corporation

Headword:
Firmware update/NTT

Relevant legal provisions:
EPC Art. 84
RPBA 2020 Art. 13(2)

Keyword:
Claims - clarity (no)

Decisions cited:

Catchword:

Europäisches Patentamt
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Boards of Appeal

Chambres de recours

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Case Number: T 0663/23 - 3.5.06

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 3 February 2025

Appellant: (Applicant)	Nippon Telegraph and Telephone Corporation 5-1, Otemachi 1-chome Chiyoda-ku Tokyo 100-8116 (JP)
Representative:	Brevalex Tour Trinity 1 B Place de la Défense 92400 Courbevoie (FR)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 26 October 2022 refusing European patent application No. 18760807.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. Müller
Members:	G. Zucka
	A. Jimenez

Summary of Facts and Submissions

I. The appeal is against the decision by the examining division, dispatched with reasons on 26 October 2022, to refuse European patent application 18760807.0, on the basis that both requests satisfied the conditions of neither Article 123(2) nor 56 EPC. For its reasoning on inventive step, the appealed decision made reference to the following documents:

D1: JP H09 62502 A;
D2: US 2003/084434 A1.

II. A notice of appeal was received on 21 December 2022, the appeal fee being paid on the same day. A statement of grounds of appeal was received on 20 February 2023.

III. The appellant requested that the decision under appeal be set aside and a patent granted on the basis of the claims of a main or one of two auxiliary requests filed with the statement of grounds of appeal.

IV. The board issued a summons to oral proceedings. In an annex to the summons, the board set out its preliminary opinion, according to which the appealed decision should be upheld.

V. On 21 January 2025, the appellant filed a letter in response to the summons, together with claims for three new requests replacing the previous requests.

VI. The appellant requests that the decision under appeal be set aside and a patent be granted on the basis of

the claims of the main request or one of two auxiliary requests as filed with the letter of 21 January 2025.

VII. Claim 1 of the main request reads as follows:

"A communication processing device comprising:

a memory (22) that stores first data relating to a pre-update firmware, and second data relating to a post-update firmware, and that stores a first reference destination address indicating a storage area of reference destination included in the first data in association with the reference destination;

a rewriting unit (27) configured to rewrite an address; and

a control unit (23) configured to refer to data on the basis of the rewritten address,

wherein the second data includes a first variable of at least one of variables commonly included in the first data and the second data, and a second variable that holds fourth reference destination address indicating a storage area storing the first variable,

the memory (22) stores the first data and the second data in a first storage area and a second storage area, respectively, and stores the fourth reference destination address indicating the first variable of the second data in the second storage area in association with the second variable of the second data in the second storage area,

the rewriting unit (27) rewrites, with respect to at least one target function of the pre-update firmware in the first storage area, the first reference destination address of the target function with a second reference destination address indicating the storage area of the reference destination of the target function of the post-update firmware, and rewrites, with respect to the second variable referred to in the

target function of the post-update firmware, the fourth reference destination address held by the second variable of the post-update firmware with first variable reference destination address of the first variable of the pre-update firmware, and

the control unit (23) refers, when referring to reference destination of the target function of the pre-update firmware, to the target function of the post-update firmware based on the second reference destination address after the rewriting, and refers, with respect to the second variable referred to in the target function of the post-update firmware, to the first variable of the pre-update firmware based on the first variable reference destination address held by the second variable after the rewriting."

VIII. Claim 1 of auxiliary request 1 reads as follows:

"A communication processing device comprising:

a memory (22) that stores first data relating to a pre-update firmware, and second data relating to a post-update firmware, and that stores a first reference destination address indicating a storage area of reference destination included in the first data in association with the reference destination;

a rewriting unit (27) configured to

refer to a flag, which is provided for each of at least one target function in the first data of the pre-update firmware stored in the memory (22) and indicates whether or not rewrite the first reference destination address of the target function,

rewrite the first reference destination address with second reference destination address indicating the storage area of the reference destination of the target function in the second data of the post-update

firmware when a value of the flag of the target function indicates rewriting, and

acquire the first reference destination address when the value of the flag does not indicate rewriting; and

a control unit (23) configured to, when referring to the reference destination of the target function in the first data of the pre-update firmware, refer to the target function in the second data of the post-update firmware or the target function in the first data of the pre-update firmware on the basis of the second reference destination address after rewriting or the first reference destination address stored in the memory (22),

wherein the value of the flag provided for each of the at least one target function, is dynamically updated."

IX. Claim 1 of auxiliary request 2 reads as follows:

"A communication processing device comprising:

a memory (22) that stores first data relating to a pre-update firmware, and second data relating to a post-update firmware, and that stores a first reference destination address indicating a storage area of reference destination included in the first data in association with the reference destination;

a rewriting unit (27) configured to

refer to a flag, which is provided for each of at least one target function in the first data of the pre-update firmware stored in the memory (22) and indicates whether or not add an offset value to the first reference destination address of the target function,

rewrite the first reference destination address with second reference destination address, which is obtained by adding the offset value to the first

reference destination address, indicating the storage area of the reference destination of the target function in the second data of the post-update firmware when a value of the flag of the target function indicates an addition of the offset value, and

acquire the first reference destination address when the value of the flag does not indicate the addition of the offset value; and

a control unit (23) configured to, when referring to the reference destination of the target function in the first data of the pre-update firmware, refer to the target function in the second data of the post-update firmware or the target function in the first data of the pre-update firmware on the basis of the second reference destination address after rewriting or the first reference destination address stored in the memory (22)."

X. Claims 10, 12 and 11 of respectively the main request and auxiliary requests 1 and 2 relate to a method having method features corresponding to the device features of claim 1 of the respective request.

XI. The further text on file is:

description pages
1 to 39 filed on 21 January 2025 (page 39 left blank);

drawing sheets
1 to 11 filed with entry into the regional phase before the EPO.

XII. At the end of the oral proceedings, the chairman announced the board's decision.

Reasons for the Decision

1. *The invention*

As set out below, none of the requests satisfies the clarity requirement of Article 84 EPC. The following is merely an attempt at understanding what might have been intended to be the general idea at the basis of the claims.

The application concerns a process of updating firmware in a communication processing device (description pars [0001] and [0002]).

The problem is that in case of a firmware update, a restart of the communication device may be required, causing an interruption of the communication service (par. [0003]).

To this end, according to the claim 1 of the main request, the device has a memory storing two types of data (see also fig. 1: 221 and 222), viz. "first data relating to a pre-update firmware" (which presumably refers to the firmware before the update, see par. [0006]), and "second data relating to a post-update firmware" (which presumably refers to the new firmware after an update, *loc. cit.*).

The memory also stores a "first reference destination address" (see fig. 1: 223) "indicating the storage area of reference destination included in the first data in association with the reference destination". From the description (par. [0033]), it appears that reference designation addresses may - but do not have to ("speci-

fically") - represent "entry points of the functions held inside the data area of the pre-update firmware".

The device further includes "a rewriting unit" which, inter alia, "rewrites the first reference destination address of the target function" of the pre-update firmware "with a second reference destination address indicating the storage area of the reference destination of the target function of the post-update firmware". This would appear to mean that this unit updates a pointer to a "target function" in the pre-update firmware to (the version of) the target function in the post-update firmware.

The device further includes "a control unit configured to, when referring to the reference destination in the first data, refer to the second data on the basis of the second reference destination address stored in the memory". This appears intended to mean that, when the device needs to use a certain reference destination from the pre-update firmware, the control unit will instead use the updated address to refer to the corresponding part in the post-update firmware (see also par. [0034] of the description, esp. page 14, lines 20 and 21).

This measure might contribute to the intended smooth transition between a pre-update and a post-update firmware by replacing individual functions in the process.

The memory is also claimed to contain a "first variable", said to be "commonly included" in the first data and the second data", and a "second variable" in the second data, the second variable holding "fourth reference destination address indicating a storage area storing the first variable". This seems to say that the

second variable in the post-update firmware points to the first variable.

The rewriting unit is then claimed, with respect to the "second variable referred to in the target function of the post-update firmware", to rewrite the "fourth reference destination address" with "first variable reference destination address of the first variable in the pre-update firmware". This seems to suggest that the target function in the post-update firmware points back to a variable in the pre-update firmware.

2. *Admittance of the requests; Article 13(2) RPBA*

The newly filed requests consist in a straightforward amendment of the previously existing requests, dealing with an objection that was raised for the first time in the board's summons (point 4.2). The board therefore admits the new requests under Article 13(2) RPBA.

3. *Main request - Clarity; Article 84 EPC*

3.1 In claim 1 of the main request, it is not clear in which sense the first and the second data merely "relate" to respectively a pre- and a post-update firmware.

According to the appellant (response to the summons, point 2.1, referring to pars. [0043], [0048], [0049] and [0085]), the description renders it clear to those skilled in the art that the first data relating to the pre-update firmware indicates the first data of the pre-update firmware, and the same applies to the second data.

Leaving aside whether in the present case it would in principle be justified to heal unclear claim wording by referring to passages of the description, it is noted that the passages cited by the appellant are themselves not clear. Those passages also mention data "relating to" or "representing" firmware. The description contains no firm statement, e.g. to the effect that the data is or could be the pre- or post-update firmware itself, or what exactly it represents or how it could relate to the pre- or post-update firmware. Statements in the description such as "The pre-update firmware 221 is one form of first data which represents a pre-update firmware" (par. [0048]) create additional confusion as to what exactly is intended.

3.2 It is not clear what is "a first reference destination address indicating a storage area of reference destination included in the first data in association with the reference destination".

According to the appellant (*ibid.* 2.3), par. [0036] of the description renders this clear, given that it specifies that the reference destination address "0x00001111" (=the first reference destination address) indicating the storage area of "function_1" is stored in association with "function_1" (=the reference destination).

Here the board notes that the claim language is not, in the cited passage, limited to functions but to unspecific "reference destinations". From this perspective, par. [0036] at best gives an example of what a "reference destination" could be and is insufficient to limit the claim to this example.

The claim also refers to "the first reference destination address of the [at least one] target function". Although suggesting that the address is one (or that) "of" the target function, the claim as a whole fails to make clear that the "reference destination" introduced earlier in claim 1 (which the "first reference destination address indicat[es]") actually is the target function; the target function might as well only comprise the reference destination in an undefined way.

The board also notes that the "association" in par. [0036] only exists by virtue of the indirect reference table 224, which is however not included in claim 1.

3.3 It is not clear in which sense the control unit "refers" to data, or what it means that this reference happens "on the basis of" the rewritten address.

The description passages cited by the appellant (*ibid.* 2.4, referring to pars. [0031], [0038] and [0043]) also do not define the meaning of the term "refers" and, just like the claim, they merely state that the reference takes place "on the basis of" the rewritten address, without explaining in which way the former is based on the latter.

3.4 It is not clear what it means for variables to be "commonly included" in first and second data.

The appellant (*ibid.* 2.5) cites passages in the description (pars. [0017], [56], [0067] and [0072]), according to which the term allegedly refers to variable names which are used in both the pre- and the post-update firmware. It is however noted that the claim does not refer to variable names, and variables

commonly included in "data" which merely "relates to" firmware also does not, in the board's judgment, clearly refers to variable names occurring in both the pre-update and post-update firmware.

The board also considers that the claim's reference to "the first variable of the pre-update firmware" does not imply that what is meant is a variable name used in the pre-update firmware.

3.5 The wording "stores the fourth reference destination address indicating the first variable of the second data in the second storage area in association with the second variable of the second data in the second storage area" is not clear.

The description passage cited by the appellant (*ibid.* 2.6, referring to par. [0059]) describes an example which is allegedly covered by this terminology. The terminology itself is however not defined in that passage.

3.6 It is not clear what is a "target function", and what is meant by its "reference destination address".

Neither the description passages cited by the appellant (*ibid.* 2.7, referring to pars. [0026], [0033] and [0034]) nor any other part of the application define the term "target function". The cited language refers to "functions whose destination addresses are rewrite targets" but this does not, in the board's judgment, define the term "target function" for functions the destination addresses of which are rewrite targets.

3.7 It is not clear in which sense the control unit "refers" to the reference destination or to the target function, or what it means that a reference happens "on the basis of" a reference destination address.

With regard to the appellant's response to this objection (*ibid.* 2.8, referring to par. [0051]), the same can be said as under 3.3 above.

3.8 Looking at claim 1 as a whole, it is not clear, even with the benefit of looking at the description and the figures, what is the precise difference between the subject-matter of the claim and any prior art, including common general knowledge. As a consequence, it is also not clear which effect, let alone which technical effect, the claimed invention could possibly achieve or aim to achieve compared to the prior art.

In particular, it is not clear why the features of the claimed device would achieve the effect mentioned by the appellant (*ibid.* 3.1.3), viz. "to suppress mixing of the reference destinations and the new reference destinations which occurs between the pre-update firmware and the post-update firmware". In fact, insofar as the claim language appears to suggest that one target function in the post-update firmware "refers to" one variable in the pre-update firmware but does not define what happens with other target functions and other variables, the claim rather appears to imply that such "mixing" may occur and is intended. It is added that the meaning of this wording ("mixing ... reference destinations") is also not clear.

3.9 Similar considerations apply to claim 10 of the main request.

3.10 The board therefore concludes that the main request does not satisfy the requirements of Article 84 EPC.

4. *Auxiliary requests*

4.1 For those features in claim 1 of auxiliary requests 1 and 2 which are also present in claim 1 of the main request, the same considerations apply as those given above for the main request.

4.2 In claims 1 and 12 of auxiliary request 1, it is further not clear in which sense, how, and according to which criteria the flag is "dynamically updated". Specifically, the claim does not state or imply any temporal dimension along which the skilled person might develop an understanding of "dynamically".

The board notes that in its response to the summons (point 2.12), the appellant makes reference to the update process during which it could be "controlled" when a reference address is to be rewritten and suggests that "each function" can be switched between one "for which the address is not rewritten" to a function "for which the address is rewritten." However, the claim does not specify an update process but only a rewriting unit operating on individual target functions and variables.

Even less does the claim specify how the "dynamic updating" of flags is controlled and exploited in the update process. The appellant's response does not answer these questions either.

4.3 In claims 1 and 11 of auxiliary request 2, it is not clear what is the "offset value" or how it is determined, and what it means that "a value of the flag

of the target function indicates an addition of the offset value".

According to the description passage cited by the appellant (*ibid.* 2.10, with reference to par. [0035]), the offset value is for example a value representing the difference between the start address value of the storage area of the pre-update firmware and the start address value of the storage area of the post-update firmware. On the other hand, the passage refers to the offset value having a value of "1" or "0" and thus as being the flag rather than a value to be added depending on a flag.

Hence, the description passage is ambiguous and unclear. Even if that could be resolved however, the fact remains that claim 1 of auxiliary request 2 introduces the term "an offset" and that it may be added or not to an address without defining the offset in any way. Offsets being a rather conventional concept in computing with a large number of applications, the board is of the opinion that a mere reference to an example in the description (apart from its own lack of clarity) cannot suitably limit the claimed term.

The board also notes that claim 1 of auxiliary request 2 does not specify that the flags are dynamically updated, and therefore lacks the corresponding clarity problems of claim 1 of auxiliary request 1. However, it also fails to explain the function and control of the flags within the context of updating the firmware.

4.4 The board therefore concludes that the auxiliary requests do not satisfy the requirements of Article 84 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Stridde M. Müller

Decision electronically authenticated