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Datasheet for the decision of 14 March 2025

Case Number: T 1883/23 - 3.5.07

Application Number: 19754451.3

Publication Number: 3739466

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Language of the proceedings: EN

Title of invention:
Information management device, information management method, and information management program

Applicant:
NIPPON TELEGRAPH AND TELEPHONE CORPORATION

Relevant legal provisions:
EPC Art. 123(2), 84
RPBA 2020 Art. 12(4), 12(6), 13(2)

Keyword:

Amendments - added subject-matter (yes) - main request and auxiliary requests 1, 2, 4, 6-8; alternate main request and alternate auxiliary requests 1, 2, 4, 6-8
Claims - clarity (no) - main request and auxiliary requests 1, 2, 4, 6-8; alternate main request and alternate auxiliary requests 1, 2, 4, 6-8
Amendment to appeal case - taken into account (no) - auxiliary requests 3 and 5
Amendment after summons - exceptional circumstances (yes) - alternate main request and alternate auxiliary requests 1, 2, 4, 6-8 - exceptional circumstances (no) - alternate auxiliary request 2A

Decisions cited:

G 0001/04, G 0002/10, T 2214/15

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Case Number: T 1883/23 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 14 March 2025

Appellant: (Applicant)	NIPPON TELEGRAPH AND TELEPHONE CORPORATION 5-1, Otemachi 1-chome, Chiyoda-ku, Tokyo 100-8116 (JP)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 18 July 2023 refusing European patent application No. 19754451.3 pursuant to Article 97(2) EPC**

Composition of the Board:

Chair	J. Geschwind
Members:	M. Jaedicke
	P. San-Bento Furtado

Summary of Facts and Submissions

I. The appellant (applicant) appealed against the examining division's decision refusing European patent application No. 19754451.3.

II. The examining division refused the application on the grounds that the subject-matter of independent claim 1 of the main request and of each of the auxiliary requests 1 to 6 infringed Articles 84 and 83 EPC.

III. In its statement of grounds of appeal, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of a main request or on the basis of one of auxiliary requests 1 to 8 filed with the grounds of appeal, the main request corresponding to the main request considered in the decision under appeal, auxiliary requests 1, 2, 4 and 6 to 8 corresponding to auxiliary requests 1 to 6 considered in the decision under appeal, and auxiliary requests 3 and 5 corresponding to the "new" auxiliary requests 3 and 4 filed on 19 June 2023.

In case the board considered refusing the application for any reason that was not in the decision under appeal, the appellant requested that the case be remitted under Article 11 RPBA, as this would constitute a special reason (statement of grounds of appeal, page 2). Furthermore, the appellant requested that the appeal fee be reimbursed "in case it is considered that the Decision refused the application due to a lack of clarity arising from the wording alone", since the decision under appeal failed "to provide any reasoning for such an objection", which

amounted to a substantial procedural violation (see statement of grounds of appeal, page 14).

IV. In a communication under Article 15(1) RPBA, the board expressed, among other things, its provisional opinion that auxiliary requests 3 and 5 were not admissible and that claim 1 of the main request and auxiliary requests 1 to 8 did not meet the requirements of Articles 83, 84 and 123(2) EPC.

V. By letter of 7 January 2025, the appellant submitted new, additional claim requests: an alternate main request and alternate auxiliary requests 1, 2, 4 and 6 to 8.

VI. At the oral proceedings, held as scheduled, the appellant filed a new "alternate auxiliary request 2A". At the end of the oral proceedings, the Chair announced the board's decision.

VII. The appellant's final requests were that the decision under appeal be set aside and that a patent be granted on the basis of one of

- the main request and auxiliary requests 1 to 8 submitted with the statement of grounds of appeal,
- the alternate main request and alternate auxiliary requests 1, 2, 2A, 4 and 6 to 8.

The requests were placed in an order in an interleaved sequence of the requests submitted with the statement of grounds of appeal and their respective alternate requests. Alternate auxiliary request 2A came immediately after alternate auxiliary request 2 in the order.

VIII. Claim 1 of the main request reads as follows (itemisation of the features has been added by the board):

"A An information management device (220) configured to manage spatio-temporal information including time information and position information as well as associated data associated with the spatio-temporal information by distributing the spatio-temporal information and associated data across a plurality of nodes that are key-value stores and operate as a cluster structure, the device (220) comprising:

B a storage unit (224) including:

B1 a first conversion unit (242) configured to convert said spatio-temporal information in storage object information into a first one-dimensional bit string using a three-dimensional Z curve,

B2 a first splitting unit (243) configured to split the first one-dimensional bit string into a first upper bit string and a first lower bit string,

B3 a label calculating unit (2245) configured to calculate a label number that is to be stored in a key with the first upper bit string,

B4 a key setting unit (246) configured to configure a setting for storing the first upper bit string and the label number in a key in a storage target node which is one of a plurality of nodes operating as said cluster structure,

B5 a value setting unit (247) configured to configure a setting for storing the first lower bit string and said associated data in a value of the key set by the key setting unit among keys in said storage target node, and

B6 a storage instruction unit (248) configured to cause said storage target node to store data in

accordance with the settings configured by said key setting unit and said value setting unit; and

C a search unit (225) including:

C1 a second conversion unit (252) configured to convert a range condition of spatio-temporal information of an object to be retrieved into a second one-dimensional bit string using a three-dimensional Z curve,

C2 a second splitting unit (253) configured to split the second one-dimensional bit string into a second upper bit string and a second lower bit string,

C3 a label deriving unit (2255) configured to derive a label number of the object to be retrieved,

C4 a key retrieval unit (2256) configured to retrieve a second key that matches the second upper bit string and the label number by searching the plurality of nodes operating as said cluster structure for the second key,

C5 a lower bit string retrieval unit (257) configured to retrieve a value having a prefix match with the second lower bit string from values of the second key retrieved by said key retrieval unit, and

C6 an output unit (258) configured to output associated data contained in the value retrieved by said lower bit string retrieval unit as a search result."

IX. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that it inserts the text "wherein the label calculating unit (2245) is configured to calculate the label number based on a modulo of a random number by a number of distribution destination nodes of the plurality of nodes," at the end of feature B3 and the text "wherein the label deriving

unit (2255) is configured to derive the label number based [on] the number of distribution destination nodes," at the end of feature C3.

X. Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that it inserts the text "wherein the second upper bit string has a same number of bits as the first upper bit string," at the end of feature C2.

XI. Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 1 in that it inserts the text "wherein the key-value store has secondary index portions," after the text "as a cluster structure," in feature A, replaces the text "storing the first lower bit string and said associated data in a value of the key set" in feature B5 with the text "storing the first lower bit string in the secondary index portion and said associated data in a data portion of a value of the key set" and the text "retrieve a value" in feature C5 with the text "to search for a secondary index portion".

XII. Claim 1 of auxiliary request 4 adds the amendment made to claim 1 of auxiliary request 2 to claim 1 of auxiliary request 3.

XIII. Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 3 in that it inserts the text "using the formula: L = rand() % D, where L is the label number, rand() is the random number and D is the number of distribution destination nodes," at the end of feature B3 of auxiliary request 3.

XIV. Auxiliary request 6 adds the amendment made to claim 1 of auxiliary request 2 to claim 1 of auxiliary request 5.

XV. Claim 1 of auxiliary request 7 differs from claim 1 of auxiliary request 4 in that it adds the text "wherein the second upper bit string is a 45-bit string," after the text "wherein the second upper bit string has a same number of bits as the first upper bit string," at the end of feature C2 of auxiliary request 4.

XVI. Auxiliary request 8 adds the amendment made to claim 1 of auxiliary request 7 to claim 1 of auxiliary request 6.

XVII. Claim 1 of the alternate main request differs from claim 1 of the main request as follows:

- it amends "a three-dimensional Z curve" to "the three-dimensional Z curve" in feature C1;
- it adds the text "from a number of distribution destination nodes defined when data was stored" after the text "to be retrieved" in feature C3;
- it amends feature C4 to read "a key retrieval unit (2256) configured to retrieve a number of second keys that matches the second upper bit string and the label number by searching the plurality of nodes operating as said cluster structure for each second key, wherein the number of second keys is equal to the number of distribution destination nodes,";
- it amends the text "the second key" to "each second key" in feature C5.

XVIII. Claim 1 of each of alternate auxiliary requests 1, 2, 4 and 6 to 8 differs from claim 1 of auxiliary requests 1, 2, 4 and 6 to 8, respectively, on account of the

amendments made to the alternate main request. In addition, auxiliary requests 7 and 8 add the text "wherein the first upper bit string is a 45-bit string and the first lower bit string is a 51 bit string," at the end of feature B2, and replace the text "wherein the second upper bit string has a same number of bits as the first upper bit string, wherein the second upper bit string is a 45-bit string," in feature C2 with the text "wherein the second upper bit string is a 45-bit string and the second lower bit string is a 15-bit string,".

XIX. Claim 1 of alternate auxiliary request 2A differs from claim 1 of alternate auxiliary request 2 in that it amends the text "a key retrieval unit (2256) configured to [...] for each second key," in feature C4 to the text "a key retrieval unit (2256) configured to retrieve a key that matches the second upper bit string and the label number by searching the plurality of nodes operating as said cluster structure for each of a number of second keys," and the text "values of each second key" in feature C5 to the text "values of the key".

XX. The appellant's arguments, where relevant to the present decision, are discussed in detail below.

Reasons for the Decision

1. The application relates to enabling distribution and storage of a large amount of data including spatio-temporal information, as well as efficient and high-speed data search through use of spatio-temporal information (see paragraphs [0006] to [0009] of the description as filed).

Admissibility of all claim requests with the exception of alternate auxiliary request 2A

2. According to Article 12(4) RPBA any part of a party's appeal case which does not meet the requirements in Article 12(2) RPBA is to be regarded as an amendment, unless the party demonstrates that this part was admissibly raised and maintained in the proceedings leading to the decision under appeal. Any such amendment may be admitted only at the discretion of the board. The board will exercise its discretion in view of, *inter alia*, the complexity of the amendment, the suitability of the amendment to address the issues which led to the decision under appeal, and the need for procedural economy.

3. Article 12(6) RPBA stipulates that the board will not admit requests, facts, objections or evidence which should have been submitted, or which were no longer maintained, in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance.

4. With its statement of grounds of appeal, the appellant filed a main request and auxiliary requests 1 to 8. The main request and auxiliary requests 1, 2, 4 and 6 to 8 correspond to the main request and auxiliary requests 1 to 6 considered in the decision under appeal. It follows that the main request and auxiliary requests 1, 2, 4 and 6 to 8 are in the appeal proceedings under Article 12(1) and (2) RPBA.

4.1 The appellant submitted auxiliary requests 3 and 5 in hand for the first time by letter dated 19 June 2023 as "new" auxiliary requests 3 and 4, but stated the following in this letter: "Conditional upon the

Examining Division confirming this preliminary opinion [that auxiliary request 2 infringes Article 123(2) EPC] during the oral proceedings, the new Auxiliary Requests 3 and 4 are introduced to replace Auxiliary Requests 3 and 4 filed on May 31, 2023, respectively."

4.1.1 According to points 1, 3.2 and 4.1 of the minutes of the oral proceedings before the examining division, these "new Auxiliary Requests 3 and 4" were never introduced in the first-instance proceedings, however. Consequently, the examining division could not decide on these requests.

4.2 In its statement of grounds of appeal, the appellant did not provide arguments as to why auxiliary requests 3 and 5 were to be admitted under Article 12(4) or (6) RPBA. In reply to the board's communication, the appellant argued that the examining division only issued a preliminary opinion, but did not formally raise its objection under Article 123(2) EPC at any point during the first-instance oral proceedings. Consequently, the appellant did not have any opportunity to discuss this objection during the first-instance oral proceedings and the grounds of appeal constituted the first occasion for the formal submission of auxiliary requests 3 and 5.

4.3 Auxiliary requests 3 and 5 were formally filed for the first time with the statement of grounds of appeal. Consequently, these requests are an amendment and may be admitted only at the board's discretion under Article 12(4) RPBA.

4.4 In view of the course of action in the first-instance proceedings, the board considers that the appellant could and should have already introduced auxiliary

requests 3 and 5 during the first-instance proceedings. The fact that the examining division did not see a need to discuss a specific objection during the oral proceedings does not mean that the appellant was precluded from filing auxiliary requests 3 and 5 during the first-instance proceedings, since it was aware of the objection and it is the appellant's sole responsibility to file new claim requests when it considers that such requests are necessary in order to overcome an objection raised by the examining division. Consequently, the board does not admit auxiliary requests 3 and 5 into the appeal proceedings under Article 12(4) and (6) RPBA.

5. Article 13(2) RPBA stipulates that any amendment to a party's appeal case made after the expiry of a period specified by the board in a communication under Rule 100(2) EPC or, where such a communication is not issued, after notification of a communication under Article 15(1) RPBA shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

6. The alternate main request and alternate auxiliary requests 1, 2, 4 and 6 to 8 were filed with the appellant's written reply to the board's communication. Since these requests were filed at the earliest possible opportunity in response to fresh objections raised by the board in its communication, the board considers that there are exceptional circumstances as required by Article 13(2) RPBA and admits these requests into the appeal proceedings.

Main request and auxiliary requests 1, 2, 4 and 6 to 8 - clarity and added subject-matter

7. Features C3 and C4 of claim 1 of the main request concern the search unit (feature C) of the information management device. This search unit includes a conversion unit (feature C1), which is configured to convert a (three-dimensional) range condition of a spatio-temporal query into a one-dimensional bit string. This conversion is achieved by computing, by means of a three-dimensional Z curve, a mathematical transformation of the range condition into the bit string.

The search unit also includes a splitting unit (feature C2), which splits the obtained bit string representing the range condition of the query into an upper and lower bit string. Feature C3 adds a label deriving unit configured to derive a label number of "the object to be retrieved". Feature C4 specifies a key retrieval unit configured to retrieve "a second key that matches the second upper bit string and the label number by searching the plurality of nodes operating as said cluster structure for the second key".

8. *Main request - clarity*

8.1 In point 10.5 of its communication, the board preliminarily considered that it was unclear how the label number was derived in feature C3 of claim 1. It was also unclear how a label number of "the object to be retrieved" could be derived, since this object was unavailable to the label deriving unit when the label needed to be derived.

8.2 The appellant argued that the skilled person would understand from the claims that the label number was indeed derived before the object was actually retrieved. For example, the label number could be determined based on information received by the search unit relating to the object to be retrieved other than the spatio-temporal information, or deriving the label number could include deriving a number of possible values of the label number and searching for keys including each possible value. Neither of these alternatives would require the knowledge of the object to be retrieved. Consequently, the fact that the object to be retrieved was not yet known when the label number was derived would not result in a lack of clarity for the skilled person.

Moreover, Figure 27 of the application disclosed searching for all three possible label numbers if the variable D had the value 3. Regarding the allegedly inconsistent use of the variable D in the second embodiment on which claim 1 was based, the appellant argued that paragraph [0114] included the sentence: "the value of D, which is the number of nodes, is a variable, and already defined when data is stored". This sentence merely indicated that the value of the variable D used in the equation in paragraph [0116] was predefined relative to the storage of data.

8.3 The board recalls that according to decision G 1/04, point 6.2 of the Reasons, "[...] Article 84 EPC requires that the claims define the subject-matter for which patent protection is sought, and that they must be clear. It signifies that an independent claim within the meaning of Rule 29 EPC should explicitly specify all of the essential features needed to define the invention, and that the meaning of these features

should be clear for the person skilled in the art from the wording of the claim alone." (underlining added).

8.3.1 The appellant accepted that the skilled person understands feature C3 of claim 1 as meaning that the object to be retrieved is not yet known when the label number is derived. In the context of claim 1, however, it is not apparent how the label number of an object that is not yet known can be derived. Consequently, the skilled person reading claim 1 does not understand from claim 1 how a label for an unknown object to be retrieved is derived in feature C3, i.e. the meaning of feature C3 is not clear from the wording of the claim alone. The fact that the skilled person might speculate on how a label might be derived under these circumstances does not render the wording of the claim clear.

8.3.2 Moreover, the board does not see any reason why the skilled person, based on the wording of claim 1 or even when reading claim 1 in the light of the description, would consider that, for example, a label number could be derived based on information received by the search unit relating to the object to be retrieved other than the spatio-temporal information. The appellant did not cite any part of the application as filed as support for its view and the board cannot find any support for this view in the description or the claims. Consequently, the appellant's argument is not convincing.

8.3.3 Regarding the appellant's argument based on Figure 27, the board considers that Figure 27 and the corresponding description in paragraph [0133] disclose searching for keys matching the upper bit string

obtained from the splitting unit C2 combined with any of three possible label numbers (the variable D being equal to three in paragraph [0133]); however, the wording of feature C3 of claim 1 specifies deriving a label number of "the object to be retrieved" which the board interprets as meaning deriving the specific label number with which "the object to be retrieved" has been stored by the system. How this label number could be "derived" is unclear to the skilled person and the wording of feature C3 does not specify deriving all possible label numbers as disclosed in the embodiment of Figure 27.

In this context the board also notes that feature C4 specifies that the key retrieval unit is configured to retrieve "a second key that matches the second upper bit string and the label number" (underlining added by the board), which was derived by the label deriving unit. This wording of feature C4 encompasses the fact that a single key (corresponding to the object to be retrieved) is retrieved by searching for a key that matches a bit string and the label number. This implies that the label number used for searching is the label number that was assigned to the object to be retrieved when this object was stored. It follows that the context provided by feature C4 confirms the board's interpretation of feature C3.

Furthermore, it does not help that the description of the application as filed is itself inconsistent regarding the meaning of the variable D (which is used for deriving the possible label numbers) in the second embodiment. There is a difference in terms of whether the variable D is defined as (a) "the number of nodes" "already defined when the data was stored", as in paragraph [0114] of the description, or (b) "the number

of distribution destination nodes" (see paragraph [0116]).

8.4 In view of the above, the meaning of feature C3 is not clear from the wording of claim 1 alone. Consequently, claim 1 of the main request infringes Article 84 EPC.

9. *Auxiliary requests 1, 2, 4 and 6 to 8 - clarity*

9.1 The above objection under Article 84 EPC to the main request also applies to auxiliary requests 1, 2, 4 and 6 to 8 for the following reasons.

9.2 The appellant argued that feature B3 of claim 1 of auxiliary request 1 specified how the label number for storing an object was calculated, namely based on a random number ("wherein the label calculating unit (2245) is configured to calculate the label number based on a modulo of a random number by a number of distribution destination nodes of the plurality of nodes"; see point IX. above). Consequently, the label number was not based on the spatio-temporal information of the object and did not define whether or not an object was relevant for the range condition according to feature C1.

Accordingly, the skilled person would realise that the stored keys with an upper bit string matching that of the range condition might be relevant for answering the query, regardless of the label number. Therefore, the skilled person reading feature C3 would realise from the overall claim wording that keys with any possible label number might be of interest if all potential results were to be retrieved. Consequently, the skilled person would search for a key with any possible label number that could be obtained from the modulo of a

random number by the number of distribution destination nodes.

9.3 The board considers that the amendment made to feature C3 of claim 1 of auxiliary request 1 ("wherein the label deriving unit (2255) is configured to derive the label number based [on] the number of distribution destination nodes,") does not overcome the objection under Article 84 EPC to feature C3 of claim 1 of the main request solely for the reason that the wording "a number of distribution destination nodes" is unclear. Claim 1 does not specify the meaning of "distribution destination nodes". Feature B3 of auxiliary request 1 merely specifies that these "distribution destination nodes" are some subset of all nodes ("the plurality of nodes"), but it is unclear how that subset is defined and what purpose it serves. Moreover, the wording "based [on]" is vague and unclear.

9.4 The appellant's submissions on the clarity of feature C3 in the context of the further features of claim 1 are also inconsistent with its arguments about the cluster structure (see also point 10.2 below).

In particular, it is not convincing that the label number is used to balance the load over the nodes of the cluster structure when the node on which an object is stored in the cluster structure is determined by the cluster structure itself. Either the system calculates a storage target node in the cluster (e.g. using the formula in paragraph [0037] for the first embodiment, but this formula is apparently not used for the second embodiment and does not make any use of the label number) or the cluster structure itself somehow

determines the storage target node in the cluster; however, in the latter case, the claim does not specify if and how the label number is used by the cluster structure for balancing the load. The fact that feature A of claim 1 specifies that the nodes are key-value stores and operate as a cluster structure does not define how keys are distributed over and stored in the nodes of the cluster structure.

9.5 Consequently, the skilled person reading claim 1 of auxiliary request 1 cannot understand how the label number of the (not yet known) object to be retrieved is derived in step C3 "based [on] the number of distribution destination nodes", even when taking into account the context provided by the further features of claim 1. Instead, it appears that the wording "based [on] the number of distribution destination nodes" is not even clear in the light of the description and the drawings given the inconsistent disclosure regarding the variable D in paragraphs [0114] and [0116] of the description for the second embodiment.

9.6 The amendments made to auxiliary requests 2, 4 and 6 to 8 do not overcome the clarity objection as they do not have an impact on the relevant features.

10. *Main request - added subject-matter*

10.1 According to point 9.2 of the board's communication, the wording of feature C4 encompassed searching for a single second key in all the nodes of the cluster structure; however, paragraph [0133] of the description, on which this feature was allegedly based, disclosed generating a number of search keys equal to the number D (each key being a combination of an upper bit string and one of the D possible label numbers) and

searching for these keys. The number D was defined in paragraphs [0114] and [0116] of the description, but these two paragraphs provided two different definitions of the number D: "the number of nodes" in paragraph [0114] and "the number of distribution destination nodes" in paragraph [0116]. In view of the above, the board preliminarily considered that claim 1 of the main request infringed Article 123(2) EPC.

10.2 The appellant explained that the contribution of the invention was that of organising the storage to avoid load imbalances, as explained in paragraph [0009] of the description and Figure 15 of the application. The label number served the purpose of distributing the load among the nodes which were operating as a cluster structure, i.e. as a single storage structure (shown in Figure 22 of the application as the data memory system 230).

Cluster structures were well known to the skilled person. Data might be stored in any of the nodes, and when searching for a key, the entire cluster structure was searched. Adding the label number to the upper bit string as the key served the purpose of distributing data from the same spatio-temporal region to different nodes when the key was stored in the cluster.

10.2.1 According to the appellant, most of the wording of feature C4 was recited *verbatim* in claim 5 as originally filed, namely: "a key retrieval unit that retrieves a key that matches the upper bit string split by said second splitting unit and the label number calculated by said label deriving unit from a plurality of nodes operating as said cluster structure".

The wording of claim 5 as originally filed supported

the wording of a single key being retrieved. The amendment to this feature, which was made in response to a clarity objection, was to specify that the key was retrieved by searching; however, the fact that the key was retrieved by searching the nodes operating as the cluster was already evident from the wording of claim 5 as originally filed.

Paragraph [0109] of the description disclosed that the search unit retrieved a key equivalent to the split upper bit string and the label number from the search target node. The skilled person would directly and unambiguously derive from this double reference to a search (i.e. "search unit" and "search target node") that the key was retrieved by searching the search target node. Each of these passages of the application as filed, and paragraph [0133] itself, supported the wording of searching for "a key" (singular), such that introducing the words "by searching" into the claim without modifying the reference to a single key already present in the original claim could not add subject-matter.

10.3 The board is aware that the wording of claim 1 of the main request was based on claims 1 and 5 of the application as filed, *inter alia*; however, the wording of claim 1 is also based on passages of the description which relate to the second embodiment, wherein the nodes operate as a cluster structure. For example, features B1 and C2 refer to a three-dimensional Z curve and are, according to the appellant, based on paragraphs [0124] and [0131] of the description as originally filed, which describe the second embodiment.

In view of this fact, the board considers that Article 123(2) EPC requires the wording of claim 1 as a

whole to be consistent with the second embodiment disclosed in the description. In the board's interpretation, paragraph [0133] and Figure 27 of the application as filed disclose that the label deriving unit 2255 derives the possible label numbers of the object to be retrieved by means of the variable D. For each of the possible label numbers, the key retrieval unit 2256 then searches the data memory system 230 (i.e. the cluster structure) for keys matching the upper bit string in combination with the label number.

When reading paragraph [0133] of the description, the skilled person is aware that, in the second embodiment, the label number is generated as a random number in the range of 1 to D when a key is stored (according to the formula disclosed for the second embodiment in paragraph [0116] of the description). Consequently, the skilled person directly and unambiguously derives from the application as filed that the specific label of an object to be retrieved was determined as a random number when this object was stored and cannot be "derived" from the spatio-temporal query. The skilled person therefore understands from the disclosure in paragraph [0133] of the description that the upper bit string is used in combination with all possible label numbers to search for matching keys in the cluster structure. By contrast, feature C4 of claim 1 encompasses searching for a single second key in all the nodes of the cluster structure.

When asked by the board how the wording of feature C4 of claim 1 fitted with the disclosed second embodiment, on which some of the claim features were based, the appellant did not make any further submissions.

10.4 Since some of the features of claim 1 are based on the second embodiment but feature C4 is inconsistent with this embodiment, the board concludes that the subject-matter of claim 1 of the main request is directed to a combination of features which is not directly and unambiguously derivable from the application as filed (see decision G 2/10, point 4.3 of the Reasons, and the decisions cited in it). Consequently, claim 1 of the main request infringes Article 123(2) EPC.

11. The above objection under Article 123(2) EPC to claim 1 of the main request also applies to auxiliary requests 1, 2, 4 and 6 to 8, since the amendments made to these auxiliary requests do not overcome this objection. At the oral proceedings, the appellant did not provide any further arguments with regard to these auxiliary requests.

Alternate main request and alternate auxiliary requests 1, 2, 4 and 6 to 8 - clarity and added subject-matter

12. Features C3 and C4 of claim 1 of the alternate main request read as follows:

C3 "a label deriving unit (2255) configured to derive a label number of the object to be retrieved from a number of distribution destination nodes defined when data was stored,";

C4 "a key retrieval unit (2256) configured to retrieve a number of second keys that matches [*sic!*] the second upper bit string and the label number by searching the plurality of nodes operating as said cluster structure for each second key, wherein the number of second keys is equal to the number of distribution destination nodes,".

13. *Alternate main request and alternate auxiliary requests 1, 2, 4 and 6 to 8 - clarity*

13.1 At the oral proceedings, the board argued that the wording "a number of distribution destination nodes defined when data was stored" in feature C3 of the alternate main request appeared to be unclear. Moreover, it appeared to be unclear how the label number was derived.

13.2 The appellant argued that the wording "a number of distribution destination nodes defined when data was stored" was intended to refer to the plurality of nodes defined in feature B4 ("a plurality of nodes operating as said cluster structure") which were used for storing information (see features B4 and B6 of claim 1).

According to the appellant, feature C4 of the alternate requests further specified that a number of second keys equal to the number of distribution destination nodes was searched for. It was clear to the skilled person that this meant that all possible label numbers that might be obtained when calculating the label number according to feature B4 were used to retrieve the second keys and were therefore derived in feature C3.

13.3 The board is not convinced by the appellant's arguments since it is not clear (Article 84 EPC) how the number of "distribution destination nodes" is defined. Feature C3 seems to imply that the number of nodes changes over time, since this number depends on a number of nodes defined when data was stored. It is also unclear to what data the expression "when data was stored" refers. It is unclear whether the word "data" in the cited expression refers to the "object to be retrieved", for example.

Moreover, the label number of the "object to be retrieved" cannot be determined from the range condition as explained above for the main request. Instead, all possible labels have to be "derived" for searching the cluster structure, but this is not clear from the wording of feature C3 alone or when read in combination with the further features of claim 1.

13.4 In view of the above, the board considers that claim 1 of the alternate main request is unclear (Article 84 EPC).

13.5 None of the alternate auxiliary requests 1, 2, 4 and 6 to 8 includes any amendments that overcome the above clarity objection to claim 1 of the alternate main request, and the appellant did not contest this finding at the oral proceedings. Consequently, claim 1 of each of alternate auxiliary requests 1, 2, 4 and 6 to 8 is unclear (Article 84 EPC).

14. *Alternate main request and alternate auxiliary requests 1, 2, 4 and 6 to 8 - added subject-matter*

14.1 At the oral proceedings, the board objected that the wording of feature C4 of claim 1 of the alternate main request appeared to infringe Article 123(2) EPC. The application as filed did not disclose a key retrieval unit configured to "retrieve a number of second keys that matches the second upper bit string and the label number", "wherein the number of second keys is equal to the number of distribution destination nodes" (underlining added by the board). The board interprets the wording of feature C4 as meaning that the number of retrieved second keys (each of which matches a specific combination of "the second upper bit

string" and a single ("the") label number) is equal to the "number of distribution destination nodes".

However, paragraph [0133] discloses searching for keys matching the second upper bit string in combination with the possible label numbers. In the example disclosed in paragraph [0133] only one key is retrieved and the number D of "distribution destination nodes" is equal to three, i.e. different from the number of keys retrieved. Consequently, it is not directly and unambiguously derivable from the cited paragraph that the number of retrieved keys matching a specific combination of "the second upper bit string" and a single ("the") label number is equal to the number of distribution destination nodes. In the board's understanding of paragraph [0133], the number of keys retrieved depends on the number of matching keys stored in the cluster structure during the runtime of the query, but not directly on the number of distribution destination nodes.

14.2 In addition to the arguments for the main request, the appellant argued that the claims of the alternate requests all specified, based on paragraph [0133] of the application as filed, that a number of second keys equal to the number of distribution destination nodes was retrieved and searched for in the nodes operating as a cluster structure. Accordingly, the objection raised in section 9.2 of the summons was not to apply to the claims of these requests.

14.3 The board is not convinced by the appellant's arguments since there is no basis in paragraph [0133] of the application as filed for a key retrieval unit configured to retrieve a number of second keys equal to the number of distribution destination nodes, wherein

the retrieved second keys match "the second upper bit string" and "the label number" as specified in feature C4 of the alternate main request.

14.4 In view of the above, claim 1 of the alternate main request infringes Article 123(2) EPC.

15. The objection under Article 123(2) EPC to claim 1 of the alternate main request also applies to alternate auxiliary requests 1, 2, 4 and 6 to 8 since these auxiliary requests do not include any amendments which could overcome this objection. The appellant did not contest this conclusion.

Admissibility of alternate auxiliary request 2A

16. Alternate auxiliary request 2A was filed at the oral proceedings before the board. The appellant argued that this request had been amended based on alternate auxiliary request 2 with a view to overcoming all the board's objections, including the board's objection of added subject-matter to the alternate main request.

16.1 According to the appellant, the board's objections to the alternate main request had been raised only during the oral proceedings. Consequently, auxiliary request 2A had been filed at the earliest possible opportunity to address the board's objections to the alternate claim requests.

The board's objection under Article 123(2) EPC represented a shift when compared with the objection under Article 123(2) EPC to the main request according to point 9.2 of the board's communication. Consequently, there were exceptional circumstances as required by Article 13(2) RPBA and alternate auxiliary

request 2A was to be admitted into the appeal proceedings.

16.2 The objection of added subject-matter to the main request had been raised in point 9.2 of the board's communication pursuant to Article 15(1) RPBA. In response to this objection, and in advance of the oral proceedings, the appellant filed a number of claim requests, including the alternate main request (see point 6. above).

In the board's view, an appellant has to expect that amendments to a newly submitted set of claims, such as the alternate main request, which are discussed for the first time during the oral proceedings before the board, may give rise to objections under Articles 84 and 123(2) EPC, for example. Such objections to amended claim requests which are related to the amendments made in these claim requests usually do not constitute an exceptional circumstance within the meaning of Article 13(2) RPBA.

In the case in hand the board considers that its objections under Articles 84 and 123(2) EPC to the alternate main request are not fresh objections, since the underlying issues regarding the basis and clarity of features C3 and C4 of claim 1 of the alternate main request do not go beyond the framework of the earlier discussion under Articles 84 and 123(2) EPC for the main request (see also decision T 2214/15, points 5.3 and 5.4 of the Reasons). Furthermore, they concern, at least in part, the amendments filed in advance of the oral proceedings before the board.

16.3 In view of the above, the board is not convinced by the appellant's argument that there are exceptional

circumstances within the meaning of Article 13(2) RPBA. Consequently, the board does not admit alternate auxiliary request 2A into the appeal proceedings (Article 13(2) RPBA).

Conclusion

17. Since none of the requests admitted into the appeal proceedings is allowable, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

S. Lichtenvort J. Geschwind

Decision electronically authenticated