

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 17 March 2022**

Case Number: T 2246/19 - 3.5.07

Application Number: 14855171.6

Publication Number: 3062445

IPC: H03M13/11, H03M13/03

Language of the proceedings: EN

Title of invention:

Sparse graph creation device and sparse graph creation method

Applicant:

Nippon Telegraph and Telephone Corporation

Headword:

Sparse graph creation/NTT

Relevant legal provisions:

EPC Art. 83

RPBA 2020 Art. 11, 12(2)

Keyword:

Sufficiency of disclosure - technical effect not claimed

Decisions cited:

G 0001/03, T 0939/92, T 2001/12, T 1469/16, T 1966/16,
T 0731/17



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2246/19 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 17 March 2022

Appellant: Nippon Telegraph and Telephone Corporation
(Applicant) 5-1, Otemachi 1-chome,
Chiyoda-ku,
Tokyo 100-8116 (JP)

Representative: Michalski Hüttermann & Partner
Patentanwälte mbB
Kaistraße 16A
40221 Düsseldorf (DE)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 20 February
2019 refusing European patent application
No. 14855171.6 pursuant to Article 97(2) EPC**

Composition of the Board:

Chair J. Geschwind
Members: R. de Man
C. Barel-Faucheux

Summary of Facts and Submissions

I. The appellant (applicant) appealed against the decision of the examining division refusing European patent application No. 14855171.6.

II. The contested decision cited, *inter alia*, the following document:

D1: X. Hu et al.: "Regular and Irregular Progressive Edge-Growth Tanner Graphs", IEEE Transactions on Information Theory, Vol. 51, No. 1, January 2005, pp. 386-398.

The examining division decided that the application did not disclose the invention as claimed in the sole request in a manner sufficiently clear and complete for the skilled person to carry it out, contrary to the requirements of Article 83 EPC.

Under the heading "Additional Remarks which do not form part of the Decision", it stated that claims 1 to 4 contained many unclear features not fulfilling the requirements of Article 84 EPC.

III. With its statement of grounds of appeal, the appellant maintained the claims considered in the contested decision as a main request and filed a new set of claims as an auxiliary request.

In its notice of appeal, the appellant requested that the decision under appeal be set aside.

In its statement of grounds of appeal, the appellant requested that a communication under Rule 71(3) EPC be issued or, in the alternative, a communication under Article 94(3) EPC. More auxiliary, oral proceedings were requested.

IV. In a communication issued under Rule 100(2) EPC, the board informed the appellant that it took the preliminary view that the reasons given for refusing the application were not convincing and that it intended to remit the case to the examining division for further prosecution. In response, the appellant agreed to a remittal of the case without oral proceedings before the board being held first.

V. Independent claim 1 of the main request reads as follows:

"A channel encoding device (91) or a decoding device (94) comprising a sparse graph creation device (100) creating a sparse graph matrix corresponding to a sparse graph by using progressive edge-growth, PEG, algorithm for constructing a sparse graph code used for channel encoding or channel decoding in a communication system and comprising means adapted to encode transmission data by the using the created sparse matrix and/or means adapted to decode received data by using the created sparse matrix,

the sparse graph creation device (100) comprising:
a route-node edge connection unit (104) which connects a route node in the creation of a local graph and one node to each other through an edge, wherein, using the local graph, candidate nodes for new edges are determined and one of those candidate nodes is selected for placing the new edge and wherein the route node is a node as a target of addition of a new edge

and a node located at the highest position in tree expression;

an inactivation unit (105);

an inactivation control unit (106) which determines the node which is not included in the searching in the creation of the local graph as condition for the inactivation unit (105);

a searching unit (108) which searches for a node which can be reached through a minimum number of edges from an activated node connected to the route node which becomes a route in creation of the local graph from the remaining sparse graph inactivated by the inactivation unit (105);

a node selection unit (109) which receives a result of the searching of the searching unit (108) and determines a position of a to-be-added node, which cannot be reached from the route node through any three edges; and

a route-node edge connection unit (104) which connects the node selected by the node selection unit (109) and the route node, whereby

the node selection unit (109) selects a first check node as the route node,

the inactivation control unit (106) determines a to-be-inactivated node, which is already created, and

the node inactivation unit (105) inactivates the to-be inactivated node."

VI. The text of the claims of the auxiliary request is not relevant to the outcome of this decision.

Reasons for the Decision

1. *Appellant's requests*

The appellant's requests as formulated in its statement of grounds of appeal (see point III above) appear to be directed at the examining division rather than the board of appeal. However, the board understands that the appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request or, in the alternative, of the auxiliary request. In its letter in response to the board's communication, the appellant did not dispute this interpretation.

2. *Decision under appeal*

2.1 In point 1.2 of the reasons for its decision, the examining division stated that "the technical effect envisaged by the present alleged invention" could be summarised as "to provide a construction principle for parity check matrices of sparse graph codes **which achieve a better (or at least as good) correction performance than sparse graph codes constructed using the 'conventional' PEG algorithm** (as disclosed for example in D1) **while speeding up the construction process**" (original **emphasis**).

It then explained why, in its view, the application did "not provide information in a manner sufficiently clear and complete to enable a person skilled in the art to carry out the invention as claimed (here in particular the node inactivation process with respect to 'when' to start a node inactivation process and 'how' the set of nodes to-be-inactivated is selected) and to achieve

thereby the envisaged technical effect over the whole claimed area" (see point 1.7).

2.2 The questions "when" to start the node inactivation process and "how" the set of nodes to be inactivated is selected, if referring to the claims at all, can only concern the features of claim 1 identified by the examining division as features 5, 6, 11 and 12:

- an inactivation unit;
- an inactivation control unit which determines the node which is not included in the searching in the creation of the local graph as condition for the inactivation unit;
- the inactivation control unit determines a to-be-inactivated node, which is already created, and
- the node inactivation unit inactivates the to-be inactivated node.

The board notes that these features do not express any requirement as to "when" the node inactivation process is started or "how" the set of nodes to be inactivated is selected; any selection of a not yet inactivated node appears to be within the scope of the claim.

Apparently, the examining division was of the view that the disclosure in the application of the node inactivation process, in particular regarding the "when" and "how", was insufficient to enable the skilled person to achieve the technical effects of a good/better error-correction performance and of speeding up the construction process of the sparse graph code.

2.3 However, these technical effects are expressed neither in claim 1 nor in any of the other claims of the main

request. This means that if the effect is not achieved over the whole scope of any of the claims, this is not an issue under Article 83 EPC but may have an impact on the assessment of inventive step (see decisions T 939/92, OJ EPO 1996, 309, reasons 2.2.2 and 2.2.3; G 1/03, OJ EPO 2004, 413, reasons 2.5.2; T 2001/12, reasons 3.3 and 3.4; and T 1469/16, reasons 4.3).

2.4 It follows that the reasons given in the contested decision for refusing the then sole request and now main request are not convincing.

3. *Remittal for further prosecution*

3.1 In its decision, the examining division suggested that the main request did not comply with Article 84 EPC (see the "additional remarks" in section IV of the decision). At least *prima facie*, the board, too, has doubts that the claims are clear from their wording alone, as required by Article 84 EPC.

3.2 Moreover, the contested decision does not deal with the requirements of novelty and inventive step.

3.3 Since the primary purpose of the appeal proceedings is to review the decision under appeal in a judicial manner (Article 12(2) RPBA 2020), in these circumstances special reasons within the meaning of Article 11 RPBA 2020 present themselves for remitting the case to the examining division for further prosecution on the basis of the main request (see decisions T 1966/16, Reasons 2.2; and T 731/17, Reasons 7.2 and 7.3).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division for further prosecution.

The Registrar:

The Chair:



S. Lichtenvort

J. Geschwind

Decision electronically authenticated