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**Datasheet for the decision
of 14 April 2016**

Case Number: T 0651/12 - 3.4.03

Application Number: 98919519.3

Publication Number: 0926652

IPC: G09B29/10, G06T17/50,
G08G1/0969, G01C21/00

Language of the proceedings: EN

Title of invention:

MAP DATABASE DEVICE, MAP DISPLAYING DEVICE AND RECORDING
MEDIUM HAVING AND USING HEIGHT DATA EFFICIENTLY

Applicant:

Xanavi Informatics Corporation

Headword:

Relevant legal provisions:

EPC Art. 153(7)
EPC 1973 Art. 54(1)

Keyword:

Supplementary European Search Report - no documents cited
Technical subject-matter (yes)
Novelty (no) - main request
Remittal to examining division

Decisions cited:

T 0258/03

Catchword:



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Case Number: T 0651/12 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 14 April 2016

Appellant: Xanavi Informatics Corporation
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 2 November 2011
refusing European patent application No.
98919519.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman G. Eliasson
Members: R. Bekkering
T. Bokor

Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division refusing the application No. 98 919 519.

- II. The application was originally filed at the Japanese Patent Office under the PCT with international application number PCT/JP98/02040. An International Search Report was drawn up by the Japanese Patent Office acting as International Search Authority citing a number of documents. Following entry into the regional phase before the EPO, a Supplementary European Search Report was drawn up in accordance with Article 153(7) EPC.

The Supplementary European Search Report contained the following statement:

*"The technical aspects identified in the present application (Art. 92 EPC) are considered part of common general knowledge. Due to their notoriety no documentary evidence is found to be required. For further details see the accompanying Opinion and the reference below.
XP002456252"*

No Opinion is on file.

Document XP002456252 contains the following statement:

"Statement in accordance with the Notice from the European Patent Office dated 1 October 2007 concerning business methods (OJ EPO 11/2007, 592-593).

The claimed subject matter, with due regard to the

description and drawings, relates to processes comprised in the list of subject matter and activities excluded from patentability under Art. 52(2) and (3) EPC. The applicant is advised that in accordance with the established practice of the EPO, no search need be performed in respect of those aspects of the claimed invention.

The only identifiable technical aspects of the claimed invention relate to the use of conventional, general-purpose data processing technology for processing data of an inherently non-technical nature. The information technology employed is considered to have been generally known as it was widely available to everyone at the date of filing/priority of the present application. The notoriety of such prior art cannot reasonably be contested. No documentary evidence was therefore considered required. A note to this effect has been made in the search report."

III. According to the appealed decision, the subject-matter of claim 1 according to the main request lacked an inventive step, Article 56 EPC. The claim was made up of technical and non-technical features, the technical features merely defining a commonplace map display apparatus and the non-technical features defining a method defining an abstract calculation on the basis of modelled map data.

Features which could not be seen to make any contribution, either independently or in combination with other features, to the solution of a technical problem were not relevant for assessing inventive step. The above method was consequently not relevant for assessing inventive step.

Since the difference between a commonplace map display apparatus and the subject matter of claim 1 could only be found in the abstract method defining the calculation (the hardware being commonplace) the problem to be solved by the invention might therefore be regarded as automating this method by way of the claimed apparatus. A computer programmer would consider this to be an obvious problem as he received the computing method as a set of requirements and would implement the software for the commonplace system accordingly. When "*automating*" the method on the commonplace computer system the computer programmer did not have to overcome any technical problem, commonplace programming skills and computer knowledge would suffice. The programmer would therefore arrive at the subject-matter of claim 1 without possibly requiring an inventive step (Article 56 EPC).

The amendments leading to the first auxiliary request were not consented to by the examining division, as they did not *prima facie* overcome the objection formulated for the main request (Rule 137(3) EPC).

In particular, the amendments did not overcome the objection of lack of inventive step raised with respect to claim 1 of the main request in that

- the display was already implicit in claim 1 of the main request and
- the abstract method underlying claim 1 of the auxiliary request was not of a different technical relevance than that underlying claim 1 of the main request.

IV. With the statement setting out the grounds of appeal of 9 March 2012, the appellant requested that the decision of the examining division refusing the application be

set aside and that a patent be granted based on the following:

Main request:

The main request rejected by the examining division, namely:

Claims: 1 to 10 according to the "*Main request*"
filed on 12 September 2011;

Description: pages 1, 2, 11 to 70 as originally
filed;
pages 3, 10 filed on 31 March 2011;

Drawings: 1/34 to 34/34 as originally filed;

First auxiliary request:

The auxiliary request rejected by the examining division, namely:

Claims: 1 to 4 according to the "*Auxiliary request*"
filed on 12 September 2011;

Description and drawings as for the main request;

Second auxiliary request:

Claims: 1 to 8 according to the "*Second auxiliary request*"
filed with the statement setting out the grounds of
appeal filed 9 March 2012;

Description and drawings as for the main request;

Third auxiliary request

Claims: 1 to 6 according to the "*Third request*"
filed with the statement setting out the
grounds of appeal filed 9 March 2012;

Description and drawings as for the main request.

V. Reference is made to the following documents:

D1': JP 2 244 188 A

D1: EP 0 378 271 A

D2': FR 2 610 752 A

D2: US 4 940 972 A.

VI. A summons to oral proceedings appointed for 21 June 2016 was issued by the board, provided with an annexed communication in which a provisional opinion of the board on the matter was given.

In particular, the appellant was informed that in the board's provisional view, a map display apparatus and method explicitly comprising, after the calculation of the three-dimensional bird's eye view map, displaying this map on the screen, would provide a more realistic view of the road to the user and support the user in better orienting himself. This would be considered to be a technical solution to a technical problem.

Moreover, the specific claimed calculation used a reduced amount of height data, reducing the need for data storage and enhancing the calculation speed, which also would be considered to be a technical solution to

a technical problem.

Accordingly, in the board's provisional view all features of such a claim would have to be taken into account when assessing novelty and inventive step.

Claims 1 and 6 of the main request concerned the calculation of the three-dimensional bird's eye view map, but did not include displaying this map on the screen. Still, some steps of the calculation were technical. They produced the technical effect of reducing the need for data storage and enhancing the calculation speed and were thus considered to provide a technical solution to a technical problem.

Since at the search stage most of the claimed features were considered non-technical, and the remaining technical feature were considered notorious, no documents were cited in the Supplementary European Search Report. In view of the above differing finding on what was technical, however, it appeared necessary to remit the case to the department of first instance to have a complete search done.

However, before doing so the board considered it expedient to have a first examination of the requests on file with the prior art already available.

The subject-matter of claims 1 and 6 of the main request appeared to lack novelty in the sense of Article 54(1) EPC 1973 over document D2.

The amendments according to the first auxiliary request, corresponding to the auxiliary request filed in first instance proceedings and not admitted in the proceedings by the examining division, appeared a fair

attempt to address the issue of whether the claimed subject-matter was technical. The board, therefore, consented to the amendments under Rule 137(3) EPC.

However, as a number of features included in claims 1 and 6 of the main request had been omitted, doubts existed as to whether the requirements of clarity of Article 84 EPC 1973 and of Article 123(2) EPC were met.

Moreover, regarding the issue of novelty and inventive step, it was noted that document D2 already addressed displaying colour or grey scale gradation. However, in D2 the colour or grey scale gradation was taken from a map, and thus differed from claim 1.

Since, however, no proper supplementary search was carried out on the invention, the board indicated that it was minded to remit the case to the examining division for it to carry out a complete search and a subsequent examination of the first auxiliary request, and, if necessary, of the second and third auxiliary requests on file.

VII. With a letter dated 27 January 2016, the board was informed that the appellant would not be attending the oral proceedings.

No arguments were provided by the appellant in response to the board's observations.

VIII. The oral proceedings were accordingly cancelled.

IX. Claims 1 and 6 of the appellant's main request read as follows:

"1. A map display apparatus for displaying a bird's eye view map, the map display apparatus comprising:
a database device (2) that includes at least a height data portion in which a plurality of height data respectively corresponding to altitudes of a plurality of areas into which a two-dimensional map is divided are respectively stored in correspondence to the areas, each one of the plurality of areas being assigned with only one of the plurality of height data, and a road data portion in which a road (R) extending within the two-dimensional map is expressed with a plurality of element points (0, 1, 2, ..., n-1, n) and positional coordinates (X, Y) of each of the element points in the two-dimensional map are stored; and
a calculation means for generating a bird's eye view map by converting the two-dimensional map into a display format of a bird's eye view method, the bird's eye view map corresponding to a view obtained by looking down the two-dimensional map from a specific viewpoint, wherein
the calculation means is configured to perform a calculation to determine in which of the areas each of the element points read out from the road data portion is located,
read out height data corresponding to one of the areas ascertained through the calculation from the height data portion to use as height data for each of the element points, and
calculate coordinate values of each of the element points on the bird's eye view map to be displayed on a monitor screen based upon positional coordinates read out from the road data portion and the height data read out from the height data portion."

"6. A computer-implemented method for displaying a bird's eye view map using a database device (2) that

includes at least a height data portion in which a plurality of height data respectively corresponding to altitudes of a plurality of areas into which a two-dimensional map is divided are respectively stored in correspondence to the areas, each one of the plurality of areas being assigned with only one of the plurality of height data, and a road data portion in which a road (R) extending within the two-dimensional map is expressed with a plurality of element points (0, 1, 2, ..., n-1, n) and positional coordinates (X, Y) of each of the element points in the two-dimensional map are stored, the method comprising:

performing a calculation to determine in which of the areas each of the element points read out from the road data portion is located;

reading out height data corresponding to one of the areas ascertained through the calculation from the height data portion to use as height data for each of the element points; and

calculating coordinate values of each of the element points on the bird's eye view map to be displayed on a monitor screen based upon positional coordinates read out from the road data portion and the height data read out from the height data portion."

X. Claim 1 according to the first auxiliary request reads as follows:

"A map display apparatus for displaying a bird's eye view map, the map display apparatus comprising:

a database device (2) that includes at least a height data portion in which a plurality of height data respectively corresponding to altitudes of a plurality of areas into which a two-dimensional map is divided are respectively stored in correspondence to the areas, each one of the plurality of areas being assigned with

only one of the plurality of height data, and a road data portion in which a road (R) extending within the two-dimensional map is expressed with a plurality of element points (0, 1, 2, ..., n-1, n) and positional coordinates (X, Y) of each of the element points in the two-dimensional map are stored; and calculation means for generating a bird's eye view map by converting the two-dimensional map into a display format of a bird's eye view method, the bird's eye view map corresponding to a view obtained by looking down the two-dimensional map from a specific viewpoint; display means (3) for displaying, on a monitor screen (8) having a plurality of pixels, the generated bird's eye view map, wherein the calculation means (3) is configured to calculate coordinate values on the bird's eye view map to be displayed on the monitor screen for a point in each of the areas based on positional coordinates and height data of the point, calculate graduation for each of the pixels in an area enclosed by points on the monitor screen in correspondence to heights of the points, and display the bird's eye view map three-dimensionally by displaying the graduation for each of the pixels in the monitor screen."

XI. The appellant submitted with the statement setting out the grounds of appeal in substance the following arguments:

Processing and storing height data and positional coordinates were technical. Therefore, not only were the database device and the calculation means of claim 1 technical features per se, but also the configurations of and the operations carried out by the database device and the calculation means on height

data and positional coordinates were also technical. Therefore, all features of claim 1 were technical features.

Moreover, even if height data and positional coordinates were considered not to be technical features, then processing of height data and positional coordinates by the technical features of claim 1 clearly involved an interaction which resulted in altering the technical character of the apparatus.

Furthermore, the problem solved by the invention was not simply automating an "*abstract calculation*" as argued by the examining division. Instead, the technical problem was how to allow roads whose altitudes vary to be displayed more efficiently in a bird's eye view map. The claimed apparatus provided a technical advantage in this respect.

Document D1 did not clearly and unambiguously describe any form of height data for a two-dimensional map, let alone height data arranged in height data portions as specified in claim 1. Moreover, D1 did not mention any form of area determination, height read out or calculation using height read out from memory.

Therefore, claim 1 was new over document D1.

The objective technical problem was to allow roads whose altitudes vary to be displayed more efficiently in a bird's eye view map. No prior art document was concerned with this problem and no prior art document taught the claimed solution. Moreover, the claimed solution was not commonplace in the art at the priority date of the claimed invention.

Therefore, claim 1 involved an inventive step over D1.

Moreover, the examining division should have consented to the amendment according to the auxiliary request. The main request and sole auxiliary request were submitted at the same time. Given that claim 1 of the auxiliary request was intended to solve a different technical problem and thus overcome an objection of lack of inventive step of the main request and given the reasonable number of requests (ie only two), it would have been reasonable to have admitted and considered the auxiliary request.

Reasons for the Decision

1. The appeal is admissible.
2. *Supplementary search*

As noted above, the Supplementary European Search Report contained the following statement:

*"The technical aspects identified in the present application (Art. 92 EPC) are considered part of common general knowledge. Due to their notoriety no documentary evidence is found to be required. For further details see the accompanying Opinion and the reference below.
XP002456252"*

The reference to an accompanying Opinion is of no use as no Opinion is on file.

The reference to document XP002456252 is confusing as according to its heading it concerns a statement in accordance with a notice from the EPO concerning business methods. The case at issue, however, clearly does not concern any business method.

Moreover, according to the statement, the claimed subject matter related to processes comprised in the list of subject-matter and activities excluded from patentability under Article 52(2) and (3) EPC. However, it remains unclear to which excluded subject-matter or activities the search division considered the claimed subject-matter to be related to and accordingly why no documents were cited in the Supplementary European Search Report.

3. *Technical subject-matter*

- 3.1 According to the decision under appeal, claim 1 related to a map display apparatus, considered to be technical, and further comprised the steps of a non-technical method essentially defining an abstract calculation on the basis of modelled map data.

Furthermore, according to the decision under appeal, *"Claim 6 would be excluded from patentability under the provisions of Article 52(2) and (3) EPC, were it not for the fact that it has been amended to explicitly claim a "computer implemented" method. Apart from that feature, which implies automation, the claim deals solely with an abstract method of data presentation, defined by abstract data and calculation, i.e. a non-technical method as such"* (cf Reasons, points 1.1, 1.2 and 2).

3.2 Since claim 1 according to the main request essentially relates to the technical implementation in a map display apparatus of the method for displaying a bird's eye view map of claim 6, it is considered expedient to consider claim 6 of the main request first.

From the above it would appear that the examining division essentially considered the method of claim 6 to relate to some combination of a mathematical method and presentation of information, both listed in Article 52(2) EPC as subject-matter or activities not to be regarded as inventions and, therefore, deemed to be non-technical.

As a first point, it is noted that the subject-matter of claim 6 is not excluded from patentability under Article 52(3) EPC, as it does not relate to such subject-matter or activities as such. Indeed, since claim 6 is directed at a computer-implemented method, it involves the use of technical means in the form of a computer and thus, according to established jurisprudence of the boards of appeal, is an invention within the meaning of Article 52(1) EPC (cf T 258/03 OJ 2004, 575, Reasons 4.1 to 4.4 and "*Case Law of the Boards of Appeal of the EPO*", 7th Edition 2013, I.A. 2.4.4.c).

In the board's judgement, however, the method of claim 6 does not relate to a mathematical method within the meaning of Article 52(2)(a) EPC. Meant are in Article 52(2)(a) EPC, in the board's view, merely abstract mathematical methods, ie calculations for the sake of the calculation.

In the present case, however, the outcome of the calculation is used for a technical purpose, namely to

display information in an ergonomically improved manner.

It is noted in this respect that in the board's judgement, displaying the three-dimensional bird's eye view map, eg in a car navigation system, provides a more realistic view of the road to the user and supports the user in better orienting himself, ultimately assisting the user in taking the right turn, and thus adds to the ergonomics of the map display.

In the board's opinion, ergonomics, understood as the applied science of refining the design of products to optimize them for human use, in the context of the map display of the present case, is a technical field. Displaying the three-dimensional bird's eye view map is, thus, considered to provide a technical solution to a technical problem.

Moreover, it is noted that in the context of eg a car navigation system, the immediate apprehension of the presented information results in the driver being less distracted from the road and traffic and, thus, also adds to safety. Accordingly, also in this respect, displaying the three-dimensional bird's eye view map provides a technical solution to a technical problem.

As such, the board sees no fundamental difference between the present case and a method for operating a computer-controlled machine where the outcome of some calculation is used for operating the machine in an improved manner, which is generally considered technical in all aspects.

Moreover, in the board's judgement, the method of claim 6 does also not relate to presentations of information

within the meaning of Article 52(2)(d) EPC. Generally, the view is taken that the reference to presentations of information in Article 52(2)(d) EPC is meant to relate exclusively to the information content and not to the way the information is presented.

The principle of ruling out mere presentations of information is adopted from the PCT (cf Rules 39 and 67 PCT; Travaux Préparatoires, Minutes of the 9th meeting of Working Party I, Luxembourg, 12 to 22 October 1971, BR/135/71, point 95). Although apparently the intent of the provision was to remove from what had to be searched, a presentation of information eg "*in tabular form, particular ways of writing and that sort of thing*", and, thus, arguably to some extent also the way the information is presented (cf Records of the Washington Diplomatic Conference on the PCT, 1970, WIPO, Geneva, 1972, page 650, points 1180 to 1183).

In the present case, however, the three-dimensional bird's eye view does not provide merely a more orderly or appealing presentation of map data, but a presentation which is ergonomically adapted to the needs of the user, eg a driver of a car.

As noted above, displaying the three-dimensional bird's eye view map is, thus, considered to provide a technical solution to a technical problem.

- 3.3 It is, furthermore, noted that also the calculation as such has in the board's judgement clear technical aspects.

The calculation essentially consists of:

- a) using a database device that includes at least a height data portion in which a plurality of height data respectively corresponding to altitudes of a plurality of areas into which a two-dimensional map is divided are respectively stored in correspondence to the areas, each one of the plurality of areas being assigned with only one of the plurality of height data, and a road data portion in which a road extending within the two-dimensional map is expressed with a plurality of element points (0, 1, 2, ..., n-1, n) and positional coordinates (X, Y) of each of the element points in the two-dimensional map are stored,
- b) performing a calculation to determine in which of the areas each of the element points read out from the road data portion is located;
- c) reading out height data corresponding to one of the areas ascertained through the calculation from the height data portion to use as height data for each of the element points; and
- d) calculating coordinate values of each of the element points on the bird's eye view map to be displayed on a monitor screen based upon positional coordinates read out from the road data portion and the height data read out from the height data portion.

In the board's judgement, hereof steps a to c are technical. They produce the technical effect of reducing the need for data storage and enhancing the calculation speed, and are, thus, considered to provide a technical solution to a technical problem.

It is noted in this respect that in the board's view although the choice of eg the shape and size of the areas, and thereby the acceptable level of data reduction for the height data, would rather fall within the competence of a cartographer concerned with map

design and thus be non-technical, the fundamental choice to use data reduction for the height data stems from the technician in charge of building the apparatus concerned with data storage and calculation capacity and speed.

Step d is considered non-technical in the context of the present claim, as it lacks the application on a physical act such as displaying the calculated bird's eye view map on a screen.

Accordingly, claim 6 both concerning displaying the three-dimensional bird's eye view map and the calculation steps is considered to relate to technical subject-matter.

3.4 For the same reasons also claim 1, which essentially concerns the technical implementation in a map display apparatus of the method for displaying a bird's eye view map of claim 6, is considered to relate to technical subject-matter.

3.5 Accordingly, the claims presently on file, and at least some of the originally filed claims being the subject of the Supplementary European Search Report, relate to technical subject-matter.

The level of technical detail and complexity of this technical subject-matter goes beyond what can reasonably be held to be notorious.

Accordingly, specific prior art documents should have been searched and cited with respect to this technical subject-matter in the Supplementary European Search Report.

In view of the above, it is necessary to remit the case to the examining division to have an additional search done before any grant of a patent may be decided.

3.6 Before doing so, however, the board considers it expedient at this stage of the proceedings to carry out a first examination of the requests on file with the prior art available so far.

4. *Main request*

4.1 In the application as filed document D1' is cited as prior art (cf page 1, line 16 to page 2, line 14). Reference is made to the corresponding European application document D1.

Document D1 provides a bird's eye view of a two-dimensional topographic map. Document D1 itself does not consider height data related to points of the two-dimensional map.

Reference is, however, made in document D1 to document D2', stated to disclose a method in which a representation of a not necessarily flat terrain, stored in a data structure as a network of nodes, is transposed into a surface extending through the constituent nodes by interpolation, the surface being projected onto an auxiliary plane (cf D1, column 1, lines 17 to 31).

Reference is made to the corresponding US patent document D2.

In document D2, height data are available for nodes representing an area of approximately 65 m in latitude and 92 m in longitude. According to one embodiment, the

height for a point (E) is taken to be the height of the closest node (D) (cf column 6, lines 26 to 42; figure 5). This means taking for each point in an area centered on each node the height data of the node. This corresponds to what is claimed in claims 1 and 6.

Accordingly, the subject-matter of claims 1 and 6 lacks novelty in the sense of Article 54(1) EPC 1973 over document D2.

The appellant's main request is, thus, not allowable.

5. *Auxiliary requests*

5.1 The first auxiliary request corresponds to the auxiliary request filed in first instance proceedings. This request was not admitted into the proceedings by the examining division under Rule 137(3) EPC on the grounds that it did not overcome the objection of lack of inventive step raised in that

- the display was already implicit in claim 1 of the main request and
- the abstract method underlying claim 1 of the auxiliary request was not of a different technical relevance than that underlying claim 1 of the main request.

However, as discussed above, in the board's opinion displaying the map is not provided in claim 1 of the main request. The inclusion of display means for displaying the map in the first auxiliary request, thus, in the board's view adds to the claim defining a technical solution to a technical problem as discussed above. Moreover, calculating and displaying colour or grey scale gradation further contributes to providing a

more realistic view and, thus, adds to the ergonomics of the map display apparatus and, thus, to the technical solution.

The amendments, thus, constitute in the board's view a fair attempt to render the claimed subject-matter technical and to address the issues of novelty and inventive step.

The request, therefore, is admitted into the proceedings.

5.2 Claim 1 according to the first auxiliary request includes the additional feature with respect to the main request that the calculation means is configured to

"calculate gradation [sic] for each of the pixels in an area enclosed by points on the monitor screen in correspondence to heights of the points, and display the bird's eye view map three-dimensionally by displaying the gradation [sic] for each of the pixels in the monitor screen".

In the board's judgement it is clear that document D2 already provides for displaying the map. Furthermore, displaying colour and grey scale gradation is also already addressed in document D2 (cf column 4, line 56 to column 6, line 25; figures 1 to 4).

In document D2, however, the colour and grey scale gradation is taken from a map, and thus differs from claim 1.

Accordingly, the subject-matter of claim 1 of the first auxiliary request is new over document D2.

However, since no proper supplementary search was carried out on the invention, the board considers itself not in a position to carry out a complete examination of the first auxiliary request, in particular concerning the issues of novelty and inventive step.

6. Accordingly, the board, exercising its power under Article 111(1) EPC 1973, considers it necessary to remit the case to the examining division for it to have an additional search done including all features deemed technical above and to carry out a subsequent examination of the first auxiliary request.

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, which shall include an additional search.

The Registrar:

The Chairman:



S. Sánchez Chiquero

G. Eliasson

Decision electronically authenticated