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Datasheet for the decision of 30 August 2019

Case Number: T 1442/16 - 3.5.05

Application Number: 05777582.7

Publication Number: 1794694

IPC: G06F19/00

Language of the proceedings: EN

Title of invention:
METHOD OF MEDICAL MONITORING

Applicant:
Philips Intellectual Property & Standards GmbH
Koninklijke Philips N.V.

Headword:
Cabrera ECG/PHILIPS

Relevant legal provisions:
EPC Art. 52(2)(d), 56, 123(2), 111(1)
RPBA Art. 13(1)

Keyword:

Inventive step - main request and auxiliary requests I, II, III and IVa (no) - mixture of technical and non-technical features
Amendments - auxiliary requests IV, V , VI and Va - added subject-matter (yes)
Remittal to the department of first instance - auxiliary request VIa (yes)

Decisions cited:

T 0641/00, T 0643/00, T 0928/03, T 0049/04, T 1143/06, T 1741/08, T 0584/10, T 0862/10, T 0407/11, T 1375/11, T 1802/13, T 0336/14
German Federal Court of Justice: BGH, 26 February 2015, X ZR 37/13, GRUR 2015, 660 - Bildstrom

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Case Number: T 1442/16 - 3.5.05

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 30 August 2019

Appellant: (Applicant 1)	Philips Intellectual Property & Standards GmbH Steindamm 94 20099 Hamburg (DE)
Appellant: (Applicant 2)	Koninklijke Philips N.V. High Tech Campus 5 5656 AE Eindhoven (NL)
Representative:	Eisenführ Speiser Patentanwälte Rechtsanwälte PartGmbB Johannes-Brahms-Platz 1 20355 Hamburg (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 12 January 2016 refusing European patent application No. 05777582.7 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	A. Ritzka
Members:	E. Konak
	G. Weiss

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse the application due to the main request and auxiliary request II lacking an inventive step (Article 56 EPC) with regard to the following document:

D1: Chiang et al., "A New 3-D Display Method for 12-Lead ECG", IEEE Transactions on Biomedical Engineering, vol. 48, no. 10, 2001, pp. 1195-1202.

Auxiliary request I was found not to comply with the provisions of Article 123(2) EPC.

II. With their statement setting out the grounds of appeal, the appellants filed a main request and two auxiliary requests. They requested that the decision be set aside and a patent be granted on the basis of one of these requests.

III. The board summoned the appellants to oral proceedings. In reply to the summons to oral proceedings, the appellants filed auxiliary requests I to VIII to replace the auxiliary requests on file.

IV. Oral proceedings were held before the board. At the oral proceedings, the appellants filed auxiliary requests IVa, Va and VIa to be inserted between auxiliary requests VI and VII. They further deleted the text "pairs of" in feature i) in the independent claims of the auxiliary requests on file.

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

"A method of medical monitoring, the method comprising the steps of
- providing a plurality of sensors (2) and positioning the plurality of sensors (2) on a patient such that the plurality of sensors (2) define a particular arrangement,
- collecting data by means of the plurality of sensors (2);
- simultaneously displaying said data using a number of multiaxis diagrams (6, 7) such that

(i) a position and an angle of each of the axes (8, 10) in any of the multiaxis diagrams represents a location of a respective sensor (2) of the plurality of sensors (2) in the particular arrangement, and

(ii) on each axis (8, 10) data from its related sensor (2) is displayed."

VI. Claim 1 of auxiliary request I reads as follows:

"A method of medical monitoring, the method comprising the steps of
- providing a plurality of ECG electrodes (2) and positioning the plurality of ECG electrodes (2) on a patient such that the plurality of ECG electrodes (2) define a predefined arrangement,
- collecting ECG data by means of the plurality of ECG electrodes (2);
- simultaneously displaying said ECG data using a number of multiaxis diagrams (6, 7), such that

(i) a position and an angle of each of the axes (8, 10) in any of the multiaxis diagrams corresponds to a location of a respective ECG lead formed by respective ECG electrodes (2) of the plurality of ECG electrodes (2) in the predefined arrangement, and

(ii) on each axis (8, 10) ECG data from its respective ECG lead is displayed."

VII. Claim 1 of auxiliary request II differs from claim 1 of auxiliary request I in that features (i) and (ii) were replaced with the following text (with the additions underlined and the deletions ~~struck through~~):

"(i) each of the axes (8, 10) in any of the multiaxis diagrams extends from a common reference point;

(ii) a position and an angle of each of the axes (8, 10) ~~in any of the multiaxis diagrams~~ corresponds to a location of a respective ECG lead formed by respective ECG electrodes (2) of the plurality of ECG electrodes (2) in the predefined arrangement, and

(iii) on each axis (8, 10) ECG data from its respective ECG lead is displayed."

VIII. Claim 1 of auxiliary request III differs from claim 1 of auxiliary request II in that the beginning of the third step was replaced with the following text (with the additions underlined and the deletions ~~struck through~~):

"- simultaneously displaying said ECG data using a number of multiaxis diagrams (6, 7) together with a three-dimensional heart model such that

(i) each of the axes (8, 10) in any of the multiaxis diagrams extends from a ~~common reference point~~ center of the heart model;"

IX. Claim 1 of auxiliary request IV differs from claim 1 of auxiliary request III in that the following text was added to the end:

"- connecting, to form a first polygonal pattern (12), each of a plurality of values of the ECG data displayed on each of the axes (8) of a first multiaxis diagram (6) representing a vertical plane of a two-dimensional subspace in which a cardiac electrical field is projected;
- connecting, to form a second polygonal pattern (13), each of a plurality of values of the ECG data displayed on each of the axes (10) of a second multiaxis diagram (7) representing a horizontal plane of the two-dimensional subspace in which the cardiac electrical field is projected, and
- displaying the first polygonal pattern and the second polygonal pattern together with the multiaxis diagrams."

X. Claim 1 of auxiliary request V differs from claim 1 of auxiliary request IV in that the text "wherein the ECG data are ST elevation values" was added at the end of the step of collecting ECG data and the following text was added to the end:

"- determining a pattern parameter (23) of the first pattern (12) and a pattern parameter(24) of the second pattern (13), and
- triggering an alarm when a value of the pattern parameter (23) of the first pattern (12) and/or a value of the pattern parameter (24) of the second pattern (13) exceeds or falls below a given threshold value."

XI. Claim 1 of auxiliary request VI differs from claim 1 of auxiliary request V in that the following text was added to the end:

"according to:

$$AreaST = \sum_{i=1}^{M} \sum_{j=1}^{M} a_{ij} \cdot ST_i \cdot ST_j$$

, wherein

a value of the pattern parameter (23) of the first pattern (12) corresponds to an area of the first pattern (12) and a value of the pattern parameter (24) of the second pattern (13) correspond [sic] to an area of the second pattern (13), and

- triggering an alarm when the value of the pattern parameter (23) of the first pattern (12) and/or the value of the pattern parameter (24) of the second pattern (13) exceeds or falls below a given threshold value."

XII. Claim 1 of auxiliary requests IVa, Va and VIa differs from claim 1 of auxiliary requests IV, V and VI, respectively, in that the beginning of the third step was replaced with the following text (with the additions underlined and the deletions ~~struck through~~):

"- simultaneously displaying said ECG data using a number of multiaxis diagrams (6, 7) ~~together with a three-dimensional heart model~~ such that

(i) in each of said number of multiaxis diagrams (6,7), all axes (8, 10) run through a zero-point (11);"

~~(i) each of the axes (8, 10) in any of the multiaxis diagrams extends from a center of the heart model;~~"

XIII. The claims of auxiliary requests VII and VIII are not relevant for the present decision.

Reasons for the Decision

1. Main request and auxiliary requests I to III

1.1 Auxiliary requests I to III were filed in reply to the summons to oral proceedings, mainly to address the clarity objections raised by the board in its preliminary opinion. As auxiliary request III is the request representing the clearest and most concrete embodiment of the claimed invention, the ensuing assessment of inventive step is based on the wording of this request. It applies *a fortiori* to higher-ranking requests since these requests essentially comprise different degrees of generalisation or different terminology for corresponding features. There is no need to discuss whether the claims of the higher-ranking requests, in particular of the main request, meet the requirements of the EPC for clarity.

1.2 The appellants do not contest that D1 represents the closest prior art for claim 1 of auxiliary request III. D1 discloses a display method for 12-lead ECG by means of 3D diagrams of which the x-axis represents the temporal evolution of the cardiac signal, the y-axis the spatial locations of the leads, and the z-axis the voltages of the cardiac signals (see D1, page 1196, right-hand column, section E, first paragraph).

1.3 Claim 1 of auxiliary request III differs from the disclosure of D1 in that each axis of the multiaxis diagrams displaying ECG data displays data from its respective ECG lead data, the position and the angle of each of the axes correspond to the location of the respective ECG lead in the arrangement according to which the respective ECG electrodes of the leads were positioned on the patient, and a 3D heart model is

displayed together with the multiaxis diagrams, each of the axes in the multiaxis diagrams extending from the centre of the heart model.

1.4 These features relate to presentations of information (Article 52(2)(d) EPC) and may only contribute to an inventive step if they produce a technical effect, i.e. if they contribute to the technical character of the claim by interacting with its technical features to solve a technical problem (see T 641/00, Headnote 1 and T 1143/06, point 3.4 of the reasons).

1.5 In their statement setting out the grounds of appeal, the appellants referred to T 336/14 and argued that the arrangement of the axes in the present case reflected an operation state of the underlying technical system, formed by a plurality of sensors at a plurality of sensor locations on the patient's body, and assisted a physician in the technical task of pattern recognition or medical monitoring. The appellants submitted similar arguments during the examination proceedings based on previous case law (T 336/14 was issued after the oral proceedings before the examining division in the present case). However, as stated in T 336/14 (see point 1.2.4 of the reasons), the case law construes the term "operation state" to be technical information, such as a condition or an event internal to the underlying technical system, prompting the system user to interact with it in a continued and/or guided way for enabling its proper functioning. In the present case, the particular arrangement of the data on the axes of the diagrams does not prompt the physician to interact with the ECG device, nor does it have any relevance for the proper functioning of the ECG device.

1.6 In their statement setting out the grounds of appeal (see page 8, last paragraph to page 9, first paragraph), the appellants argued that the particular arrangement of the axes in the present case makes it simpler and quicker for the physician to assess the patient's condition as it provides a visual relationship between the sensed data and the arrangement of the sensors on the patient's body. At the oral proceedings, they further stated that the arrangement of the axes in the present case resulted in a presentation of the ECG data according to the Cabrera system (well-known to physicians) which illustrates ECG leads in an anatomically more meaningful manner. With this arrangement, a physician would locate a condition in the patient's heart more easily and quickly. However, the board is not convinced that the distinguishing features of claim 1 of auxiliary request III are objectively and causally linked to this alleged technical effect because the alleged effect inevitably relies on the user's cognitive abilities, including their knowledge of anatomy and principles underlying ECG, and their visualisation skills.

In this respect, the present case is not comparable with T 643/00 or T 928/03, cited by the appellants in their statement setting out the grounds of appeal and in which the technical effect of the invention was credibly demonstrated to the board.

1.7 Both during the examination proceedings and in their statement setting out the grounds of appeal, the appellants referred to T 49/04 in support of their argument. Yet as the contested decision correctly points out (see point 20, lines 1 to 6), T 49/04 was not followed by later case law (see e.g. T 1143/06, point 5 of the reasons; T 1741/08, Catchword and point

2.1 of the reasons; T 1802/13, point 2.1.7 of the reasons, first paragraph) and does not need further discussion.

1.8 The appellants' major argument at the oral proceedings relied on a decision of the German Federal Court of Justice, BGH, X ZR 37/13, GRUR 2015, 660 - *Bildstrom* of 26 February 2015.

The appellants submitted that in this decision the German Federal Court of Justice reviewed and explicitly confirmed the case law of the Boards of Appeal of the European Patent Office in relation to presentations of information. That decision was, however, noteworthy in that it identified (see paragraph 35) a category of inventions related to presentations of information other than the "what" ("*die Vermittlung bestimmter Inhalte*" in the citation below) and "how" ("*deren Vermittlung in besonderer Aufmachung*" in the citation below) categories discussed in T 336/14 and T 1802/13, namely those which exploit physiological characteristics of human perception so as to enable or improve the perception of presented information by a human.

According to the Court (see also the headnote), such inventions provided a technical solution to a technical problem:

"*Anweisungen, die zwar die [...] Informations-wiedergabe betreffen, bei denen aber nicht die Vermittlung bestimmter Inhalte oder deren Vermittlung in besonderer Aufmachung im Blickpunkt steht, sondern die Präsentation von Bildinhalten in einer Weise, die auf die physischen Gegebenheiten der menschlichen Wahrnehmung und Aufnahme von Informationen Rücksicht*

nimmt und dabei darauf gerichtet ist, die Wahrnehmung der gezeigten Informationen durch den Menschen in bestimmter Weise überhaupt erst zu ermöglichen, zu verbessern oder zweckmäßig zu gestalten, dienen der Lösung eines technischen Problems mit technischen Mitteln und sind bei der Prüfung auf erfinderische Tätigkeit zu berücksichtigen."

The appellants were not aware of any such distinction having been made in the case law of the Boards of Appeal of the European Patent Office up to now and asked the board to also recognise such inventions as contributing to the solution of a technical problem.

However, the distinction between subjective psychological factors and objective physiological factors when assessing the presence of a credible technical effect in inventions involving presentations of information has already been made in several decisions of the Boards of Appeal of the European Patent Office (see e.g. T 862/10, point 4.2 of the reasons; T 1375/11, point 4.6 of the reasons). This is not a further category of inventions involving presentations of information, but rather one criterion for assessing the credibility of an alleged technical effect. In the present case, although the Cabrera system evidently reflects the anatomy of the patient, an arrangement of the axes of the diagrams according to the Cabrera system clearly has nothing to do with the physiological characteristics of the physician's eye or visual system.

1.9 The appellants were not able to demonstrate credibly that the distinguishing features of claim 1 of auxiliary request III produced a technical effect. Accordingly, they relate to presentations of

information as such and are non-technical features which have to be disregarded in the assessment of inventive step according to the established case law (see T 641/00, Headnote 1).

1.10 In conclusion, claim 1 of the main request and auxiliary requests I to III does not involve an inventive step (Article 56 EPC).

2. Auxiliary requests IV, V and VI

2.1 The method according to claim 1 of auxiliary requests IV, V and VI comprises *inter alia* both of the features of displaying a three-dimensional heart model from the centre of which the axes of the multiaxis diagrams extend, and displaying polygonal patterns formed by connecting the plurality of values of the ECG data together with the multiaxis diagrams. However, there is no embodiment in the application as originally filed with both of these features together. The only embodiment with a three-dimensional heart model is the one illustrated in Figure 3 and explained on page 8, lines 8 to 32. In this embodiment, the values of the ECG data are not connected to form polygonal patterns, but rather to form "three dimensional reconstructions" in form similar to ellipsoids.

2.2 The appellants argued that the board's reading of the application was too literal. It was implicit from the overall style of the application that additional features were gradually introduced using the language "in another embodiment", "in still another embodiment" or "in a further embodiment". This did not mean that the features from one of these "embodiments" could not be combined with those of another "embodiment". The board cannot accept such a defence. Personal style does

not give applicants a carte blanche to mix and combine features from different embodiments as they please.

2.3 The appellants then cited page 8, lines 30 to 32 and page 10, lines 11 to 13 and 15 to 17 as the basis for an embodiment which has both of these features. None of these passages was sufficient to convince the board. Page 8, lines 30 to 32 mentions that the physician may review past representations of the polygonal patterns together with the heart model in a "retrospective modus" for reviewing historical data. It cannot be derived directly and unambiguously from this passage that the polygons and the heart model are superimposed as required by the claim. The passage on page 10 explains the equations AreaST and VolumeST for calculating the area of the polygonal patterns or the volume of the 3D reconstructions, respectively, with reference to Figure 6 for the first case and to Figure 3 for the latter. Figure 6, in which polygonal patterns are displayed, clearly lacks a heart model.

2.4 In consequence, auxiliary requests IV to VI do not meet the requirements of Article 123(2) EPC.

3. Admissibility of auxiliary requests IVa, Va and VIa

3.1 Auxiliary requests IVa, Va and VIa were filed during the oral proceedings before the board and are therefore late-filed requests. However, as they were filed to address the board's objection under Article 123(2) EPC raised during the oral proceedings, the board used its discretion under Article 13(1) RPBA and admitted them.

4. Auxiliary request IVa

4.1 Claim 1 of auxiliary request IVa essentially differs from claim 1 of auxiliary request III in that two polygonal patterns are formed by connecting the plurality of values of ECG data on each of the two multiaxis diagrams representing the horizontal and vertical planes in which the cardiac electrical field is projected.

4.2 The appellants argued that these polygons created new patterns which did not exist in raw ECG data and which provided additional information to the physician for locating a condition in a patient's heart. Polygonal patterns were a more intuitive representation than mere points plotted on axes and could convey further information through their shape, as suggested on page 7, first full paragraph of the application. The board is not convinced by these arguments since intuitiveness of presentations of information is not an objective effect, but rather a subjective one which depends on the user's individual needs and preferences (see T 584/10, point 1.1.4 of the reasons; T 407/11, point 2.1.4 of the reasons). It is furthermore an obvious matter of experience that values displayed as continuous curves are more easily recognisable than discrete values plotted as dots. Although D1 uses a different axis representation from the present invention, the values displayed in D1, Figure 2 are also connected. The axis representation in the present case would lead to a polygonal shape if the values were connected. The board cannot see why a polygonal shape would be more informative than any other shape.

4.3 In conclusion, claim 1 of auxiliary request IVa does not involve an inventive step (Article 56 EPC).

5. Auxiliary request Va

5.1 The method according to claim 1 of auxiliary request Va comprises the features of determining a pattern parameter of the first and second polygonal patterns and triggering an alarm when this pattern parameter exceeds or falls below a certain threshold. The definition of the "pattern parameter" is left open. However, the application as originally filed discloses the triggering of an alarm only if a parameter 23, 24, i.e. the parameter AreaST (see page 10, line 13), exceeds or falls below a given threshold (see page 10, lines 18 to 21). Therefore, there is no support for the intermediate generalisation in the claim.

5.2 The appellants argued that it was implicit that other parameters of the polygonal patterns found to be meaningful in clinical studies could also be used to trigger an alarm. The board does not contest that parameters of the polygonal patterns other than AreaST might be useful. However, these are not derivable from the application as originally filed.

5.3 Therefore, auxiliary request Va does not meet the requirements of Article 123(2) EPC.

6. Auxiliary request VIa

6.1 In claim 1 of auxiliary request VIa, the appellants limited the pattern parameter to the explicit formula provided for the parameter AreaST on page 10 of the application as originally filed. The objection to claim 1 of auxiliary request Va under Article 123(2) EPC was thus overcome.

6.2 The addition of the feature of triggering an alarm shifted the focus of the proceedings away from

presentations of information. Furthermore, numerous features from the description which were not present in the originally filed claims or in the claims examined during the examination proceedings were added to the claims during the appeal proceedings, in particular related to polygonal patterns and parameters calculated on the basis of these patterns, and therefore these features may not have been searched.

6.3 In view of the above, the board decided, pursuant to Article 111(1) EPC, to remit the case to the examining division for further prosecution on the basis of the claims of auxiliary request VIa.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution.

The Registrar: The Chair:

K. Götz-Wein A. Ritzka

Decision electronically authenticated