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Datasheet for the decision
of 4 June 2020

Case Number: T 1091/17 - 3.5.05
Application Number: 08868858.5
Publication Number: 2229644
IPC: G06F19/00
Language of the proceedings: EN

Title of invention:
METHOD AND APPARATUS FOR REFINING SIMILAR CASE SEARCH

Applicant:
Koninklijke Philips N.V.

Headword:
Clinical statistics/PHILIPS

Relevant legal provisions:
EPC Art. 52(2)(d), 56

Keyword:
Inventive step - (no) - mixture of technical and non-technical features
Features relating to presentation of information
Presentation of information in diagnostic tasks
Decisions cited:
G 0001/04, G 0003/08, T 0643/00, T 1143/06, T 1749/06, T 1235/07, T 1741/08, T 1214/09, T 1562/11, T 0651/12, T 1802/13, T 0336/14, T 0581/14, T 1442/16
Case Number: T 1091/17 - 3.5.05

DEcision of Technical Board of Appeal 3.5.05
of 4 June 2020

Appellant: Koninklijke Philips N.V.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 14 December
2016 refusing European patent application No.
08868858.5 pursuant to Article 97(2) EPC.

Composition of the Board:
Chair A. Ritzka
Members: E. Konak
D. Prietzel-Funk
Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse the application on the grounds that the main request and auxiliary requests 1 to 4 lacked inventive step in view of the following document:


II. With its statement setting out the grounds of appeal, the appellant requested that the decision be set aside and a patent be granted on the basis of one of the requests on which the contested decision was based. It requested oral proceedings as a further auxiliary measure.

III. In its preliminary opinion issued in preparation for the oral proceedings, the board raised objections under Article 56 EPC in view of inter alia the following document mentioned in the examination proceedings:


IV. Oral proceedings were held before the board by video conference at the appellant's request.

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

"A method of searching cases in a database, said method comprising:
- a first step of performing similarity matching between an input case and cases in the database by
using a first matching criterion that includes at least one image-based feature to identify a set of cases similar to said input case, the at least one image-based feature including at least one of a shape of a tumor, texture of the tumor, and size change of the tumor;
- calculating statistics on features associated with the set of similar cases, wherein the statistics describe non-image-based clinical information and wherein the features associated with the set of similar cases are image-based and/or non-image-based features;
- presenting the set of similar cases and the statistics to a user;
- receiving a user input including a second matching criterion that includes at least one non-image-based feature derived from clinical information and is based on said statistics, said clinical information including at least one of relevant previous or current diseases, lifestyle facts, genetic profiles, family medical history, a physician's particular knowledge and information of the patient to be diagnosed or treated, weight, allergies, and vital statistics; and
- a second step of performing similarity matching between the input case and the set of similar cases by using said second matching criterion."

VI. Claim 1 of auxiliary request 1 differs from claim 1 of the main request as follows (with text additions underlined):

"[...]
weight, allergies, and vital statistics, wherein the user input further comprises a numerical weighting value given to each feature in the second matching criterion; and
- a second step of performing similarity matching between the input case and the set of similar cases by using said second matching criterion and by calculating a similarity metric by using the numerical weighting values."

VII. Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 as follows (with text additions underlined):

"[...] - a second step, performed after receiving user input, of performing similarity matching between the input case and the set of similar cases by using said second matching criterion and by calculating similarity metric by using the numerical weighting values, wherein the steps of performing similarity matching include calculating a similarity value for each case to be compared, for indicating the degree of similarity between the input case and the case to be compared."

VIII. Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 as follows (with text additions underlined):

"[...] and an iterative step of performing similarity matching between the input case and an updated set of similar cases by using an updated similarity matching criterion based on a further user input to retrieve cases similar to the user, wherein the result of search refinement in the iterative steps includes either moving cases entirely out from the set of similar cases or modulating the similarity rates for the set of similar cases based on the updated similarity matching criterion or a combination of both,
wherein the steps of performing similarity matching include calculating a similarity value for each case to be compared, for indicating the degree of similarity between the input case and the case to be compared.

IX. Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 3 as follows (with text additions underlined):

"A method of searching cases in a database, said method comprising:
- a first step of performing similarity matching between an input case and cases in the database by using a first matching criterion that includes at least one image-based feature to identify a set of cases similar to said input case, the at least one image-based feature including at least one of a shape of a tumor, texture of the tumor, and size change of the tumor, wherein the cases in the database include a plurality of images classified according to different imaging modalities and wherein said first step of performing similarity matching comprises performing similarity matching between an input case and cases in the database for each imaging modality to identify a plurality of respective sets of similar cases by using said first matching criterion, and selecting cases that appear in at least two sets of said sets of similar cases, and to be used by said step of calculating statistics;
[...]"

Reasons for the Decision

1. Main request
1.1 The contested decision considered D6 to represent the closest prior art. As D6 is not related to iterative query refinement and therefore is not a very meaningful starting point for assessing the inventive step of the method according to claim 1 of the main request, it was not discussed any further in the appeal proceedings. In its preliminary opinion, the board informed the appellant that *inter alia* D2, cited in the search report, would be a more suitable starting point. The discussion at the oral proceedings was based entirely on D2.

1.2 At the oral proceedings, the appellant questioned the public availability of D2 at the priority date of the present application (27 December 2007). Although the first page of D2 stated that the online publication date was 12 May 2007, the article appeared in the September 2008 issue of the journal. The authors' list of publications on their websites also gave the date of publication as September 2008. During the course of the oral proceedings, however, the board was able to confirm at SpringerLink ([https://link.springer.com/article/10.1007/s10278-007-9037-4](https://link.springer.com/article/10.1007/s10278-007-9037-4)), a reputable and reliable information source, that the article was indeed published on 12 May 2007. The appellant then did not further pursue its doubts.

1.3 D2 discloses an iterative method for querying medical images in a database in which initial queries are refined in subsequent iterations or interactive "loops". The queries can be based on a query image and involve content-based ("image-feature based" in the language of claim 1) retrieval (page 281, the paragraph bridging the left-hand and the right-hand columns; page 282, left-hand column, first paragraph to right-hand
column, second paragraph; paragraph bridging pages 283 and 284).

1.4 Although the method of D2 presents the query results of the initial image query together with "relevance facts" which "justify why particular images satisfy the query" and are deemed to be "important for the user in attempting to redefine the query" (page 282, first paragraph under "Interface Functionality", last three sentences), as the appellant also noted at the oral proceedings these unspecified relevance facts seem to be based on image-based features and not on metadata associated with the images, in particular clinical information as in claim 1. However, the appellant's alternative interpretation that the sliders presented under each thumbnail in Figures 3 and 4, which the user can use to give relevance feedback, may be the "relevance facts" contradicts the explicit disclosure of D2 that "relevance facts" belong to the output of the method of D2 (page 283, right-hand column, first full paragraph and Figure 1, "output modules [relevance facts]").

1.5 Therefore, the board agrees with the appellant that D2 does not disclose calculating statistics on the basis of clinical information associated with the set of similar images, presenting these statistics to the user and receiving subsequent user input based on these statistics.

1.6 At the oral proceedings, the appellant emphasised in particular the fact that the method of claim 1 presents the calculated statistics together with the set of similar cases. In the appellant's view, the case law consistently distinguished between what is presented to the user (statistics) and how it is presented (together
with the set of similar cases). Since, in this case, presenting the statistics together with the similar cases involved how the information is presented rather than what is presented, it was not a presentation of information as such.

The board is aware of a few exceptional decisions of the boards of appeal (see T 1749/06, point 4.1.3, second sentence; T 651/12, page 16, first full sentence) expressing the view that the reference to "presentations of information" in Article 52(2)(d) EPC was meant to relate exclusively to the cognitive content of the presented information ("what is presented") and not to the manner in which it is presented ("how it is presented"). Nevertheless, this view has not been adopted by the mainstream case law in the course of legal development (cf. G 3/08, Headnote 4). The predominant view in the case law is what T 1235/07 (see point 11) calls the "wider view", according to which both what is presented and how it is presented are considered to be "presentations of information" (see T 1143/06, points 3.4, 3.5 and 5.4; T 1741/08, point 2.1.10; T 1214/09, point 4.8.1; T 1562/11, point 2.7, last paragraph; T 1802/13, page 10, first full paragraph).

This view has also been adopted by the European Patent Office for its practice (see Guidelines for Examination in the European Patent Office, November 2019 edition, G-II.3.7).

Therefore, the appellant's argument that the distinguishing features do not relate to presentations of information does not convince the board.
1.7 Irrespective of whether an invention relates to "what is presented" or "how it is presented", the test suggested in the case law to judge whether a presentation of information might exceptionally (see T 1741/08, point 3.3, last paragraph) contribute to the technical character of the invention is to assess whether it credibly assists the user in performing a technical task by means of a continued and guided human-machine interaction process (see T 336/14, Headnote and T 1802/13, page 10, second full paragraph).

1.8 A prerequisite for this test is the proper formulation of the technical task performed by the user. The appellant referred in its written submissions to a "medical task". This level of generality would not be sufficient since not every task performed in medicine is a technical task. Indeed an example given by the appellant ("if the statistics, e.g. show that seven out of eight retrieved cases belong to patients with cancer, then the user can derive that the case under evaluation might have something to do with cancer") illustrates this point. The example implies that the alleged technical task is a diagnostic task. However, besides technical tasks carried out mainly in the examination phase involving the collection of data, diagnosis involves tasks of a predominantly non-technical nature such as the deductive decision phase, which is a purely intellectual exercise (see G 1/04, point 6.4.1). The "medical task" in the appellant's example relates to the purely intellectual deductive decision phase and therefore cannot be accepted as a technical task.

1.9 The appellant then argued, in analogy to T 643/00 (see Catchword, second sentence), that searching and
retrieving medical cases stored in a database was the relevant technical task. The board could accept this as a suitable formulation. The question to be answered then is whether the invention credibly assists the user in performing this technical task by means of a continued and guided human-machine interaction process.

1.10 In the appellant's view, the presentation of the calculated statistics together with the set of similar cases assisted the user (typically a physician) in performing the technical task of searching for a medical case more efficiently and reliably. This provided helpful information to guide the physician in concentrating their search and thus obtaining the desired case more quickly, which was a technical effect. The mere fact that mental activities on the user's part were involved did not necessarily render this effect non-technical (T 643/00, Catchword). The presentation according to claim 1 provided information to the physician in the form of a technical tool for an intellectual task that they had to master and hence contributed to the technical solution of the technical problem of an efficient search, retrieval and evaluation of cases.

This argumentation relies heavily on the wording of T 643/00, point 17, but removes it from its proper context. The borrowed wording is preceded by the following text: "the functions/steps of processing the images in a specific format, i.e. a predetermined plural number of images in a side-by-side manner at a low level of resolution, and allowing selection and display of an image at higher resolutions [provide information to the user in the form of a technical tool for an intellectual task he has to master]". It is thus clear that the deciding board in T 643/00 did not
give a carte blanche for deeming technical any information that supports a user in performing a technical task (see also T 1741/08, point 2.1.12, "not everything that supports a technical task has itself a technical character"). It made this statement for the very specific case of a particular display technique defined in terms of an objective technical criterion, namely image resolution. This has also been the common understanding in subsequent case law (see e.g. T 1741/08, point 2.1.13; T 336/14, point 1.2.6; T 581/14, point 16.19). The effect of image resolution on the user is an objective physiological effect which can qualify as a credible technical effect (see T 1442/16, point 1.8, last paragraph), unlike the effect of presenting clinical statistics in the case in hand, which relies on a chain broken by semantic or cognitive processing (see T 1741/08, point 2.1.6). Therefore, T 643/00 does not help the appellant's case.

1.11 The appellant was not able to convince the board that the distinguishing features of claim 1 of the main request produced a technical effect. Therefore, claim 1 of the main request does not involve an inventive step (Article 56 EPC).

2. Auxiliary request 1

2.1 Claim 1 of auxiliary request 1 has the additional feature that the user input for the second matching criterion includes numerical weights given to each feature, with these weights being used in the calculation of the similarity metric.

2.2 The appellant argued that this specific interplay of mathematical concepts strengthened the technical effects alleged beforehand, namely efficiency and speed
of case retrieval. However, since the appellant was not able to convince the board that the distinguishing features of claim 1 of the main request provided any credible technical effect, the additional features of claim 1 of auxiliary request 1 cannot rely on them for their technical effect. The description merely mentions these additional features as advantageous alternatives (see page 4, third paragraph or page 11, penultimate paragraph), but the application as filed does not even hint at their possible effects.

2.3 Therefore, the reasons for finding a lack of inventive step in claim 1 of the main request apply equally to claim 1 of auxiliary request 1 (Article 56 EPC).

3. Auxiliary request 2

3.1 Claim 1 of auxiliary request 2 has the additional feature whereby performing similarity matching includes calculating a similarity value for each case to be compared, for indicating the similarity between the input case and the case to be compared.

3.2 The board raised the objection that it was common general knowledge in the field of image retrieval that similarity matching involved the calculation of a similarity value, noting that this was also disclosed in D2, page 280, right-hand column, lines 13 to 15. In response, the appellant argued that that disclosure was related to background on content-based image retrieval and that there was no suggestion in D2 that the system of D2 did the same. However, even if this interpretation were to be accepted for the sake of argument, implementing similarity matching in the system of D2 - exactly as D2 acknowledges is done in the relevant art - would not involve an inventive step.
3.3 Therefore, claim 1 of auxiliary request 2 does not involve an inventive step (Article 56 EPC).

4. Auxiliary request 3

4.1 Claim 1 of auxiliary request 3 has the additional feature of iteratively performing similarity matching between the input case and an updated set of similar cases using an updated similarity matching criterion based on a further user input, including either moving cases entirely out from the set of similar cases or modulating the similarity rates for the set of similar cases based on the updated similarity matching criterion or a combination of both.

4.2 The board asked the appellant at the oral proceedings how this feature differed from the disclosure of D2, Figure 3 (corresponding text on page 285, right-hand column, first full paragraph), in which the set of similar images is displayed with sliders which the user can use to give relevance feedback for the next iteration of query refinement. The appellant had no comment to make.

4.3 Therefore, claim 1 of auxiliary request 3 does not involve an inventive step (Article 56 EPC).

5. Auxiliary request 4

5.1 Claim 1 of auxiliary request 4 has the additional feature that the cases in the database include a plurality of images classified according to different imaging modalities. Similarity matching is performed between the input case and cases in the database for each imaging modality, and those cases that appear in
at least two sets of similar cases are selected for calculating the statistics.

5.2 It is notoriously known that medical images are acquired through different imaging modalities. It is thus obvious to take this into account when searching for medical cases. As to the feature of calculating statistics on the basis of cases that appear in at least two sets, the appellant could not point to any effect supported by the description.

5.3 Therefore, claim 1 of auxiliary request 4 does not involve an inventive step (Article 56 EPC).

6. Thus, the appeal is not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

A. Chavinier-Tomsic A. Ritzka

Decision electronically authenticated