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**Datasheet for the decision
of 12 January 2021**

Case Number: T 0993/16 - 3.4.02

Application Number: 10250910.6

Publication Number: 2284592

IPC: G02B21/36, G06T5/50, G01N21/64

Language of the proceedings: EN

Title of invention:
Fluorescence imaging

Applicant:
Leica Biosystems Imaging Inc.

Headword:

Relevant legal provisions:
EPÜ Art. 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:



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 0993/16 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 12 January 2021

Appellant: Leica Biosystems Imaging Inc.
(Applicant) 1360 Park Center Drive
Vista CA 92081 (US)

Representative: D Young & Co LLP
120 Holborn
London EC1N 2DY (GB)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 3 December 2015
refusing European patent application No.
10250910.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman R. Bekkering
Members: H. von Gronau
G. Decker

Summary of Facts and Submissions

I. The appeal of the applicant is directed against the decision of the examining division to refuse European patent application No. 10250910.6. The examining division refused the application because the subject-matter of claim 1 of the main request, filed on 12 October 2015, was not new in view of document

D1: US 2008/0212866 A1,

and claim 1 of auxiliary request 1, filed during the oral proceedings before the examining division on 12 November 2015, was not clear.

II. With the statement setting out the grounds of appeal, the appellant requested that the contested decision be set aside and that a patent be granted on the basis of the application documents corresponding to the main request on which the decision was based.

As an auxiliary measure oral proceedings were requested.

III. In a communication pursuant to Article 15(1) RPBA 2007 the board expressed its preliminary opinion that the subject-matter of claim 1 was new but did not involve an inventive step in view of document D1 as closest prior art document in combination with document

D4: US 2007/0243545 A1.

IV. With letter dated 28 February 2020 the appellant filed claims of a new first auxiliary request and requested

that a patent be granted on the basis of the documents filed as main request or new first auxiliary request.

- V. Oral proceedings took place on 12 January 2021. During the oral proceedings the appellant put forward arguments in favor of the main request and the first auxiliary request. After deliberation, the chairman announced the opinion of the board that the subject-matter of claim 1 of the main request did not involve an inventive step with respect to document D1 in combination with document D4, that the board admitted the first auxiliary request into the proceedings and that the subject-matter of claim 1 of the first auxiliary request involved an inventive step with respect to document D1 in combination with document D4.

The appellant then filed amended description pages of the first auxiliary request and declared that it withdrew its main request and that the first auxiliary request constituted its main and sole request.

The appellant requested as its final request that the decision under appeal be set aside and a European patent be granted in the following version:

Description: Pages 1, 2, 8 to 23, and 25 as originally filed and pages 3 to 7 and 24 filed during the oral proceedings on 12 January 2021

Claims: Nos. 1 to 3 filed as first auxiliary request with the letter dated 28 February 2020

Drawings: Sheets 1/8 to 8/8 as originally filed.

At the end of the oral proceedings the chairperson announced the board's decision.

VI. Claims 1 to 3 of the sole request read as follows:

"1. A method for generating an output data set representing a fluorescence image of a sample (6), the method comprising the steps of:

(a) obtaining an input data set representing fluorescence images of the sample for a plurality of different focal plane depths in the sample and different exposure times, wherein the respective fluorescence images comprise image signal values for an array of pixel locations; and

(b) combining the image signal values for the fluorescence images from the different focal plane depths and different exposure times to form an output data set representing a single resultant planar fluorescence image of the sample, wherein step (b) comprises determining for each pixel location a weighted average of the corresponding image signal values in the different images and using the weighted averages to form the output data set representing the single resultant planar fluorescence image of the sample, and wherein the weightings for each image signal value are based on a measure of a variation in image signal values among neighbouring pixel locations with image signal values for pixel locations associated with relatively high variation weighted more than image signal values for pixel locations associated with relatively low variation.

2. An apparatus (30) for generating an output data set representing a fluorescence image of a sample (6), the apparatus comprising a source of an input data set, the input data set representing fluorescence images of the sample obtained for a plurality of different focal plane depths in the sample and different exposure

times, wherein the respective fluorescence images comprise image signal values for an array of pixel locations; the apparatus further comprising a processor operable to combine the image signal values for the fluorescence images from the different focal plane depths and different exposure times to form an output data set representing a single resultant planar fluorescence image of the sample, wherein the processor is operable to combine the image signal values by determining for each pixel location a weighted average of the corresponding image signal values in the different images and using the weighted averages to form the output data set representing the single resultant planar fluorescence image of the sample, and wherein the weightings for each image signal value are based on a measure of a variation in image signal values among neighbouring pixel locations with image signal values for pixel locations associated with relatively high variation weighted more than image signal values for pixel locations associated with relatively low variation.

3. A computer program product comprising a computer readable medium storing a plurality of instructions for controlling a processor to perform the method of claim 1."

Reasons for the Decision

1. The appeal is admissible.
2. Admission of the sole request (Article 13(1) and (3) RPBA 2007)

The present sole request was filed in response to the communication pursuant to Article 15(1) RPBA 2007 in which the board raised for the first time a lack of inventive step objection in view of document D1 in combination with document D4. Present claim 1 comprises a combination of features of claims 1 and 2 of the previous main request. The board considered it to be a legitimate reaction to file the present sole request upon the new objection of the board.

The board therefore decided to admit the sole request.

3. Amendments (Article 123(2) EPC)

3.1 Claim 1 consists of a combination of features from original claims 1 and 2 with a clarification from the description on page 14, lines 12 to 21, stating that image signal values from pixel locations associated with relatively high local contrast in the intermediate images are weighted more than image signal values from pixel locations associated with relatively low local contrast wherein pixels having relatively high image signal value differences in their local neighbourhood are associated with areas of high local contrast.

3.2 The subject-matter of claim 1 therefore does not extend beyond the content of the application as filed.

4. Inventive step (Article 56 EPC)

4.1 Document D1 can be regarded as the closest prior art document. The subject-matter of claim 1 differs from the disclosure of document D1 in that the image signal values for images having different focal plane depths are combined to form an output data set representing a single resultant planar image, wherein for each pixel

location a weighted average of the corresponding image signal values in the different images is determined, and wherein the weightings for each image signal value are based on a measure of a variation in image signal values among neighbouring pixel locations, with image signal values for pixel locations associated with relatively high variation weighted more than image signal values for pixel locations associated with relatively low variation. In document D1 the user is given the option to select the depth of field they wish to view and analyse (cf. paragraph 0123).

- 4.2 None of the documents on file suggests these differing features. Document D4 suggests to combine images from the one focal plane above and below a particular best focused image to produce a combined image that can be further analysed. However, this document does not suggest to determine for each pixel location a weighted average of the corresponding image signal values in the different images wherein the weightings for each image signal value are based on a measure of a variation in image signal values among neighbouring pixel locations with image signal values for pixel locations associated with relatively high variation being weighted more than image signal values for pixel locations associated with relatively low variation, and using the weighted averages to form the output data set representing the single resultant planar fluorescence image of the sample.
- 4.3 The board comes therefore to the conclusion that the subject-matter of claim 1 is not suggested by the documents on file.
- 4.4 Independent claim 2 defines an apparatus with a processor operable to perform essentially the method of

claim 1, and claim 3 defines a computer program product comprising a computer readable medium storing instructions for controlling a processor to perform the method of claim 1. The subject-matter of these claims therefore likewise involves an inventive step.

5. The description indicates the relevant background art and discloses the invention as claimed. The board comes to the conclusion that the documents of the sole request meet the requirements of the EPC.

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 with the order to grant a patent in the following version:

Description: Pages 1, 2, 8 to 23, and 25 as originally filed and pages 3 to 7 and 24 filed during the oral proceedings on 12 January 2021

Claims: Nos. 1 to 3 filed as first auxiliary request with the letter dated 28 February 2020

Drawings: Sheets 1/8 to 8/8 as originally filed.

The Registrar:

The Chairman:



L. Gabor

R. Bekkering

Decision electronically authenticated