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**Datasheet for the decision
of 15 April 2016**

Case Number: T 1174/11 - 3.4.01

Application Number: 00977080.1

Publication Number: 1247246

IPC: G06K9/00, G02B21/36

Language of the proceedings: EN

Title of invention:

SYSTEM FOR OPTICALLY SECTIONING AND MAPPING SURGICALLY EXCISED
TISSUE

Applicant:

LUCID, INC.

Headword:

Relevant legal provisions:

EPC 1973 Art. 54, 84
EPC Art. 56, 111(1)

Keyword:

Appeal decision - remittal to the department of first instance
(yes)

Decisions cited:

Catchword:



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Case Number: T 1174/11 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 15 April 2016

Appellant: LUCID, INC.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted on 22 December
2010 refusing European patent application No.
00977080.1 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman G. Assi
Members: F. Neumann
D. Rogers

Summary of Facts and Submissions

- I. The appeal lies from the decision of the examining division refusing European patent application number 00 977 080.1.
- II. With the statement setting out the grounds of appeal, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request on which the contested decision was based. Alternatively, it was requested that a patent be granted on the basis of one of four sets of claims which were filed with the statement of grounds and which formed the basis of Subsidiary Requests 1 to 4.

In addition thereto, oral proceedings were requested.
- III. The Board issued a communication in preparation of oral proceedings. The Board set out some provisional and non-binding remarks mainly concerning clarity. It was also indicated that the question of inventive step would probably only be addressed if the claims could be shown to meet the requirements of Article 123(2) EPC and Article 84 EPC 1973.
- IV. In response to the Board's communication, with letter of 4 April 2016, the appellant withdrew all requests then on file and filed three new sets of claims forming the basis of a main request and first and second auxiliary requests.
- V. During the oral proceedings, the claims of the main request and the first auxiliary request were modified.

VI. The final requests of the appellant, submitted at the oral proceedings before the Board, were as follows:

As a main request, that the decision under appeal be set aside and that a patent be granted on the basis of claims 1-10 filed at 11:15 during the oral proceedings before the Board.

Alternatively, that the decision under appeal be set aside and that a patent be granted on the basis of claims 1-10 filed as Auxiliary Request I at 11:30 during the oral proceedings before the Board.

Alternatively, that the decision under appeal be set aside and that a patent be granted on the basis of claims 1-10 filed as Auxiliary Request II with the letter of 4 April 2016.

VII. Claim 1 of the **main request** reads as follows:

"A system for optically sectioning and mapping a surgically excised tissue specimen (42) comprising:

means for providing data (24) representing a mosaic (50) of map elements of an image of the specimen (42) comprising a laser scanning confocal microscope (10); wherein the mosaic of map elements constitutes a full resolution image;

a computer (26) for creating a composite macroscopic image of reduced resolution as well as the mosaic (50) of map elements and for storing the composite macroscopic image as well as the mosaic (50) of map elements in memory together with their associated pointers; and

a terminal (34) for viewing the macroscopic composite image of the specimen (42) and the microscopic images of selected elements of the mosaic (50) at selected locations on the composite image."

The wording of independent claim 8 of the main request does not play a role in the present decision so will not be reproduced here.

Claim 1 of **Auxiliary Request I** reads as follows:

"A system for optically sectioning and mapping a surgically excised tissue specimen (42) comprising:

means for providing data (24) representing a mosaic (50) of map elements of an image of the specimen (42) comprising a laser scanning confocal microscope (10); wherein the mosaic of map elements constitutes a full resolution image[;]

a computer (26) for creating a composite macroscopic image of reduced resolution obtained by pixel elimination, mean-value-substitution or median filtering as well as the mosaic (50) of map elements and for storing the composite macroscopic image as well as the mosaic (50) of map elements in memory together with their associated pointers; and

a terminal (34) for viewing the macroscopic composite image of the specimen (42) and the microscopic images of selected elements of the mosaic (50) at selected locations on the composite image."

Claim 8 of **Auxiliary Request I** reads as follows:

"A method of optically sectioning and mapping tissue (42) for histopathology comprising the steps of:

capturing an anatomic map of elements constituting a full field representation of a region of said tissue (42) which constitutes a specimen (42) by a laser scanning confocal microscope;

storing data representing a plurality of pixels constituting each of said map elements of said specimen (42);

creating a composite macroscopic image of reduced resolution obtained by pixel elimination, mean-value-substitution or median filtering as well as a mosaic (50) of map elements and for storing the composite macroscopic image as well as the mosaic (50) of map elements in memory together with their associated pointers; wherein the mosaic of map elements constitutes a full resolution image[;] and

displaying in response to said data the composite macroscopic image of said full field containing all of said pixels on a terminal (34); and

displaying microscopic images of selected blocks of said elements of sufficient resolution to show portions of said specimen (42) containing cells of interest."

The wording of the independent claims of **Auxiliary Request II** does not play a role in the present decision so will not be reproduced here.

VIII. The arguments of the appellant, insofar as they are pertinent to the present decision, are set out below in the reasons for the decision.

Reasons for the Decision

1. The appeal is admissible.

2. Main request

2.1 Article 123(2) EPC

Claim 1 is based on original claims 1 and 3 in combination with page 4, lines 30-32, page 2, lines 7-11 and page 5, lines 3-6 of the published application.

Claim 8 is based on original claim 9 in combination with page 4, lines 30-32, page 2, lines 10-11 and page 5, lines 3-6 of the published application.

The dependent claims find their basis in the original dependent claims.

The requirements of Article 123(2) EPC are therefore fulfilled.

2.2 Article 84 EPC 1973

2.2.1 Independent claim 1 defines a system for optically sectioning and mapping a surgically excised tissue specimen. The system comprises three elements, each of these elements being defined in terms of its function. A laser scanning confocal microscope forms part of a means which is suitable for providing data representing

a mosaic of map elements constituting a full resolution image of a specimen. In addition thereto, a computer is provided which is suitable for creating the mosaic of map elements and a composite macroscopic image of reduced resolution. The computer is also suitable for storing both the composite macroscopic image and the mosaic of map elements with their respective pointers. A terminal is also provided which is suitable for viewing the macroscopic image and the microscopic images of selected elements of the mosaic at selected locations of the macroscopic image.

2.2.2 Claim 8 defines a method of optically sectioning and mapping tissue for histopathology. The method steps defined in claim 8 roughly correspond to the system features of claim 1.

2.2.3 Since claims 1 and 8 are clear in terms of the structural elements and method steps which make up the claimed system and method respectively, the Board considers the requirements of Article 84 EPC 1973 to be satisfied.

3. Claim 1 - novelty (Article 54 EPC 1973)

3.1.1 Document D2 discloses a system for mapping a surgically excised tissue specimen (page 7, lines 8-30) comprising:

means for providing data representing a mosaic of map elements of an image of the specimen wherein the mosaic of map elements constitutes a full resolution image (Figures 3 and 10; page 7, lines 22-26; page 20, lines 28-37; page 21, lines 17-23; page 22, line 34 to page 23, line 9);

a computer for creating a composite macroscopic image of reduced resolution (as seen in window 24 in Figures 3 and 10) as well as the mosaic of map elements (as seen in window 26 in Figures 3 and 10; page 31, lines 1-7; page 40, lines 1-33) and for storing the composite macroscopic image as well as the mosaic of map elements in memory together with their associated pointers (page 21, line 17 to page 23, line 32); and

a terminal for viewing the macroscopic composite image of the specimen and the microscopic images of selected elements of the mosaic at selected locations on the composite image (Figures 3 and 10; page 30, line 33 to page 31, line 7; page 40, lines 17-24).

- 3.1.2 The system of claim 1 is distinguished from the system of D2 in the use of a laser scanning confocal microscope which enables optical sectioning of the specimen.
- 3.1.3 Claim 1 is therefore new with respect to D2.
- 3.1.4 Since all other available prior art citations are even further removed from the subject-matter of claim 1 than the disclosure of D2, claim 1 is novel.
- 3.2 Claim 1 - inventive step (Article 56 EPC)
 - 3.2.1 The appellant considered that the subject matter of claim 1 was distinguished from the teaching of D2 by more than just the laser scanning confocal microscope.

The appellant explained that the invention required only a single scan of the sample. In contrast, page 7 of D2 made clear that the system of D2 required two scans to be made, one at low magnification and one at

high magnification, the magnification being set at the microscope, and that a separate scan was made at each magnification. This was the fundamental difference to the claimed system. As a result, D2 did not disclose the creation of a composite macroscopic image assembled from the microscopic (high magnification) images. Instead, the macroscopic image in D2 was composed of individual frames of the low magnification scan.

The appellant submitted that the aim of the invention was to reduce the amount of data to be transferred to a viewing terminal and to thus provide for a faster transfer of the high-resolution data required to view selected map elements. In accordance with the invention, the composite macroscopic image and **only selected elements** of the microscopic image were displayed. The appellant argued that it was necessary to construe the claim in a limited manner in order that the stated aim could be achieved. Thus, even though claim 1 did not explicitly mention that **only** selected elements of the microscopic image were displayed, the claim had to be interpreted with this meaning.

Understanding claim 1 in the manner "*as meant by the present invention*", claim 1 was additionally distinguished from the teaching of D2 in that only one scan had to be made from which both the macroscopic image as well as microscopic images of selected elements could be derived.

- 3.2.2 The Board considers that claim 1 does not have to be interpreted exclusively in the manner set out by the appellant. Indeed, a straightforward reading of the claim does not suggest that the macroscopic image is derived from the microscopic images. Furthermore, the Board notes that the appellant's interpretation is

based, in part, on an alleged aim of the invention which does not appear in the application. It was only during the appeal proceedings that the objective of reducing the amount of data to be transferred to the viewing terminal and thereby providing a faster transfer of data was mentioned. With no previous indication that this was what the invention set out to achieve, it seems questionable that this objective may be relied upon when interpreting the claim.

The Board does not contest that the appellant intended claim 1 to reflect the fact that macroscopic data is derived from microscopic data obtained by a single scan of the confocal microscope. However, this intention is not apparent from the wording of independent claim 1. Although this does not affect the clarity of the claim, it renders the appellant's arguments in this respect meaningless since the feature which the appellant considers to distinguish the subject-matter of claim 1 from the disclosure of D2 is not defined in claim 1.

- 3.2.3 Consequently, the Board maintains its view that the system of claim 1 is distinguished from the disclosure of D2 only in that the means for providing the image data comprises a laser scanning confocal microscope which makes the system suitable for optically sectioning the tissue specimen.
- 3.2.4 Since laser scanning confocal microscopes and their ability to provide optical sectioning were known at the priority date of the application (see, e.g. D10), the skilled person would have no difficulty in replacing the conventional microscope of D2 by a laser scanning confocal microscope, should optical sectioning of the tissue specimen be desired.

3.2.5 The appellant did not wish to present any comments with regard to the inventive step involved in the provision of a laser scanning confocal microscope. As a result, the Board can recognise no inventive activity in deriving the image data for the image processing and display units of D2 from a known laser scanning confocal microscope.

3.2.6 Claim 1 therefore lacks an inventive step.

4. Auxiliary Request I

4.1 Article 123(2) EPC

4.1.1 Claim 1 has been amended vis-à-vis claim 1 of the main request by including reference to the fact that the composite macroscopic image of reduced resolution is obtained by pixel elimination, mean-value-substitution or median filtering.

The basis for this amendment may be found on page 2, lines 10-13 or page 7, lines 9-11.

In addition thereto, claim 8 has been amended to include reference to the laser scanning confocal microscope and to remove the reference to the storage of data representing the orientation of the specimen with respect to a patient. Basis for these amendments can be found on page 4, lines 12-15, 24-25 and 30-32.

The dependent claims remain unchanged vis-à-vis the dependent claims of the main request.

4.1.2 The requirements of Article 123(2) EPC are therefore fulfilled.

4.2 Article 84 EPC 1973

4.2.1 The amendment to claim 1 still does not restrict the meaning of the claim to the appellant's desired interpretation. In particular, the data compression is not defined as being performed on the "*full resolution*" data previously mentioned in the claim. Nevertheless, the Board considers that the amendment clearly defines that the computer is suitable for employing one of the listed data compression techniques in the creation of a low-resolution image.

4.2.2 Claim 8 defines the corresponding method. In a similar manner to claim 1, the wording of claim 8 does not restrict its meaning to the appellant's intended interpretation. Nevertheless, the method steps listed in claim 8 are each *per se* clear.

4.2.3 The requirements of Article 84 EPC 1973 are therefore fulfilled.

4.3 Remittal to the examining division

4.3.1 The appellant submitted that there was no need to remit the case to the examining division because the aspect of data compression lay within the scope of the claims considered by the examining division and therefore would have been searched. The creation of a composite macroscopic image of reduced resolution, as defined in the independent claims, implied that the data forming the high resolution image was compressed to form a lower resolution image.

4.3.2 In contrast, the Board notes that claim 1 on which the contested decision was based refers to the viewing of a macroscopic composite image of the specimen at a first

(low) resolution "*in accordance with said data representing said mosaic of optically formed sectional image elements*". Thus, it would appear that in the claims on which the contested decision was based, the data provided by the laser scanning confocal microscope is macroscopic data. There is no mention or suggestion in any version of claim 1 submitted to the examining division that a composite macroscopic image is created by data compression.

- 4.3.3 Since the aspect of data compression has been taken from the description and has apparently not been considered in any way during the first instance proceedings, it cannot be presumed that the prior art documents on file are complete in this respect.

In view of the uncertainty as to whether all relevant prior art is on file, the Board is not in a position to definitively assess novelty and inventive step of the claimed subject-matter. For this reason, the Board considers it appropriate, in accordance with Article 111(1) EPC, to remit the case to the examining division for further prosecution of the case on the basis of the claims of the first auxiliary request.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the department of first instance for further prosecution upon the basis of Auxiliary Request I that was filed at the oral

proceedings before the Board on 15 April 2016 (see Annex 3 of the minutes).

The Registrar:

The Chairman:



R. Schumacher

G. Assi

Decision electronically authenticated