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**Datasheet for the decision
of 26 September 2023**

Case Number: T 0110/20 - 3.2.02

Application Number: 13172965.9

Publication Number: 2676609

IPC: A61B6/00

Language of the proceedings: EN

Title of invention:

X-ray imaging apparatus and control method thereof

Patent Proprietor:

Samsung Electronics Co., Ltd.

Opponent:

Siemens Healthcare GmbH

Headword:

Relevant legal provisions:

EPC Art. 123(2)

Keyword:

Amendments - extension beyond the content of the application
as filed (yes)

Allowability under Article 123(2) EPC based on point 2 of the
order of G 1/93 (no)

Decisions cited:

G 0001/93, G 0001/03, G 0002/10, G 0001/16, T 0768/20,
T 0412/22, T 0312/16, T 1779/09, T 1595/11, T 0824/08,
T 0535/08, T 0089/00

Catchword:



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Case Number: T 0110/20 - 3.2.02

D E C I S I O N
of Technical Board of Appeal 3.2.02
of 26 September 2023

Appellant: Siemens Healthcare GmbH
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Respondent: Samsung Electronics Co., Ltd.
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
26 November 2019 concerning maintenance of the
European Patent No. 2676609 in amended form.**

Composition of the Board:

Chair M. Alvazzi Delfrate
Members: A. Martinez Möller
N. Obrovski

Summary of Facts and Submissions

I. The appeal is against the Opposition Division's decision regarding European patent No. 2676609. The Opposition Division decided that, account being taken of the amendments made by the patent proprietor during the opposition proceedings according to the then auxiliary request 1, the European patent and the invention to which it related met the requirements of the Convention.

II. Oral proceedings before the Board took place on 26 September 2023.

The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (proprietor) requested that the appeal be dismissed.

III. Claims 1 and 4 of the main and only request read as follows:

1. "An X-ray imaging apparatus comprising:
an X-ray generator (130, 230) configured to perform X-ray imaging of a target object in an imaging position by generating and irradiating X-rays;
an image capturer (110, 210) configured to capture an image of the target object, said image being different from an X-ray image, said image capturer being installed in the apparatus to capture an image of the target object in the imaging position;

an image display (150, 250) to display the image captured by the image capturer (110, 210);
an input part (160, 260) configured to allow inputting of a designation of a segmentation imaging region for which segmentation imaging is to be performed on the image displayed on the image display (150, 250); and
a controller (120, 220) configured to control the X-ray generator (130, 230) to perform segmentation imaging with respect to the designated segmentation imaging region;

wherein the input part (160, 260) is configured to allow inputting of a designation of a plurality of segmentation regions constituting the segmentation imaging region, said designation including designation of each of a plurality of segmentation regions on the displayed image of the target object for allowing a user to adjust a location of an overlapping region between segmentation regions;

wherein the X-ray generator (130, 230) is provided with positioning means for positioning the X-ray generator (130, 230), and wherein the controller (120, 220) is configured to calculate, for each designated segmentation region, a location of the X-ray generator (130, 230) based on the image captured by the image capturer (110, 210) and that segmentation region, and to control the positioning means to place the X-ray generator (130, 230) in the calculated location for obtaining an X-ray image of the designated segmentation region that corresponds to the calculated location."

4. "A control method of an X-ray imaging apparatus, comprising:

capturing an image of a target object using an image capturer (110, 210) installed in the X-ray imaging apparatus (511, 521), said image being different from

an X-ray image, and said image being captured in an imaging position;
displaying the captured image of the target object (512, 522);
receiving designation of a segmentation imaging region for which segmentation imaging is to be performed on the displayed image of the target object (513, 523), wherein the receiving includes receiving a designation of a plurality of segmentation regions on the displayed image of the target object for allowing a user to adjust a location of an overlapping region between segmentation regions, the plurality of segmentation regions constituting the segmentation imaging region;
calculating, for each designated segmentation region, a location of the X-ray generator (130, 230) based on the image captured by the image capturer (110, 210) and that segmentation region; and
controlling the X-ray generator (130, 230) according to the calculated result (515, 525), such that the target object is segmentation imaged in the imaging position, said controlling comprising controlling the positioning of the X-ray generator (130, 230) for placing the X-ray generator (130, 230) in the calculated location for obtaining an X-ray image of the designated segmentation region that corresponds to the calculated location."

IV. The appellant's arguments relevant to the present decision can be summarised as follows.

Added subject-matter

The limitation in claims 1 and 4 that the imaging position was the same when the two images were captured was not disclosed in the application as filed and resulted in added subject-matter.

The "imaging position" of the target object in claims 1 and 4 not only related to the location in space but also included the patient's posture.

The application as filed did not deal with the imaging positions. Using the same imaging positions was only one possible option that could be considered by the person skilled in the art. Other options included the patient moving a step to the side between the capturing of each of the images, or a ruler being captured together with the non-X-ray image. It thus could not be unambiguously derived from the application as filed that the same imaging positions were used.

The limitation on the imaging positions made a technical contribution, so the second paragraph of the headnote of G 1/93 was not applicable.

- V. The respondent's arguments relevant to the present decision can be summarised as follows.

Added subject-matter

The contested feature of claims 1 and 4 of using the same imaging positions did not result in added subject-matter.

The term "imaging position" should not be construed mathematically as a single point in space but rather as a range of positions, i.e. a region in space where the target object should be when the images are captured. It did not exclude small movements of the target object between the two images such as breathing.

The prior calibration mentioned on page 13, lines 7 to 13 served to establish the relationship between the

regions of the non-X-ray image and the corresponding locations of the X-ray generator. This relationship only held if the positions for acquiring the two images corresponded to the positions used during the prior calibration. The non-X-ray and the X-ray images thus could not be captured at any position but had to be captured at predefined imaging positions.

In the light of the application as filed, the person skilled in the art would only consider using different predefined imaging positions for each of the two images upon reflection and using their imagination, so the application as filed did not disclose using different imaging positions (see T 89/00).

Instead, all the embodiments presented in the application as filed used the same imaging positions. In particular, Figure 4 showed the patient positioned between the X-ray generator and the X-ray detector when the image was captured by the image capturer. Page 9, lines 14 to 18 could only be understood as implying that the same imaging positions were used. Even if page 9, lines 15 to 18 did state that the image capturer could be positioned in a remote location rather than at the X-ray generator, this was only possible "so long as an image of the target object can be obtained", thus implying that the image capturer should be able to image the object as positioned in Figure 4 and confirming that the same imaging positions were used. This was also confirmed by Figure 5, in which the image captured by the image capturer showed the patient in the same position and orientation as in Figure 4.

Moreover, the method shown in Figure 9 and the corresponding description did not mention any change of imaging position. However, this change would be

essential if the method required two different predefined imaging positions.

Article 123(2) EPC served to prevent applicants from improving their position. This was not what was happening here. As submitted by the respondent for the first time at the oral proceedings before the Board, even if the contested feature were to be regarded as not disclosed in the application as filed, the second paragraph of the headnote of G 1/93 applied because the contested feature did not provide a technical contribution and merely limited the scope of protection, putting the applicant in a worse position.

Reasons for the Decision

1. The patent
 - 1.1 During X-ray imaging, the locations of an X-ray generator and an X-ray detector vary according to which part of the target object is to be imaged. Some parts of the target object (e.g. human long bones) are larger than the X-ray irradiation or detection regions, so one-time X-ray imaging is not possible. In this case, an image of the part may be obtained by using a segmentation imaging scheme that involves dividing (segmenting) the desired imaging area into a plurality of segmentation regions, X-ray imaging each segmentation region and stitching together the acquired images.
 - 1.2 The plurality of segmentation regions may thus overlap with one another. Since the overlapping regions receive an increased X-ray exposure, it is desirable to avoid

having a body part that is particularly sensitive to X-ray exposure located in the overlapping region.

- 1.3 When using a segmentation imaging scheme, the user should designate segmentation regions by directly moving the X-ray generator and the X-ray detector. This may result in user fatigue, increased imaging time and imprecise adjustment. The patent addresses this situation by providing the X-ray apparatus with a capturer configured to capture an image different from an X-ray image (e.g. a camera). The captured image is displayed and an input part is configured to allow the inputting of a designation of the segmentation imaging region on the displayed image as well as of each of a plurality of segmentation regions constituting the segmentation imaging region to allow a user to adjust a location of an overlapping region between segmentation regions. A controller then calculates, for each designated segmentation region, a location of the X-ray generator on the basis of the captured image and the segmentation region. The controller controls positioning means to place the X-ray generator in the calculated position to obtain an X-ray image of the designated segmentation region.

2. Added subject-matter

- 2.1 It is common ground that independent claims 1 and 4 require the target object to be imaged in the same imaging position when capturing the X-ray image and the image that is different from an X-ray image (referred to in the following as the "non-X-ray image").

- 2.2 It is also common ground that capturing both images in the same imaging position is not explicitly disclosed in the application as filed. It must thus be

established whether or not this is necessarily implied by the original disclosure and thus implicitly disclosed.

- 2.3 The application as filed (page 9, lines 10 to 23) discloses different options for the image capturer which captures the non-X-ray image.
- 2.4 Among these options, page 9, lines 14 to 20, discloses that the image capturer may be installed at a portion of the X-ray generator (as shown in Figure 4) and that it may face in the same direction as the irradiating X-rays. One way to implement the invention on the basis of these options would be to capture the non-X-ray image and the X-ray image with the target object in the same predefined imaging position in both cases.
- 2.5 As argued by the appellant and contrary to the respondent's assertion, however, this is not the only technically meaningful way to arrive at the embodiments presented in the application as filed. Other conceivable alternatives include the following.
- (1) Active motion tracking could be used to account for changes between the two imaging positions, as set out in point 3.1 of the decision under appeal.
 - (2) The non-X-ray image could always be captured at the same imaging position, which is different from the X-ray imaging position (e.g. at different distances from the X-ray generator), so that there is a known relationship between the two.
 - (3) A marker or reference such as a ruler could be included next to the target object when the non-X-ray image is captured.
- 2.6 Hence, if the image capturer was installed at a portion of the X-ray generator and faced in the same direction

as the irradiating X-rays, there are ways to establish a relationship between the regions designated on the displayed non-X-ray image and the corresponding locations of the X-ray generator which do not require the imaging positions to be the same.

- 2.7 The respondent further refers to page 9, lines 20 to 23, which discloses that the image capturer "may be installed at any place so long as an image of the target object can be captured". This may simply mean that sufficient space in front of the image capturer must be available for the target object. Even if it were to be read as implying that the image capturer must face the region which will be irradiated by the X-rays, similar reasoning to that indicated in the previous paragraph would apply.
- 2.8 The respondent argues that if a step of changing the imaging position between the two images was needed and thus essential, this would be mentioned in the method shown in Figure 9 and the corresponding passages of the description. However, the method can be implemented with (see point 2.5 above) or without (see point 2.4 above) a change of imaging position, so the change is not needed or essential. Moreover, at least alternatives (1) and (3) in point 2.5 above work irrespective of whether or not the imaging position is the same for both images.
- 2.9 When referring to T 89/00, the respondent is correct that using two different imaging positions is not disclosed and could only be done by the person skilled in the art upon reflection. However, it does not follow that using the same imaging positions is disclosed. On the contrary, the application as filed does not deal with the imaging positions and whether they are the

same or different, so the person skilled in the art could only use the same or different imaging positions upon reflection.

- 2.10 It follows that the disclosure of the application as filed does not necessarily imply that both images are captured at the same imaging positions, i.e. the contested feature is not implicitly disclosed.
- 2.11 Consequently, the application as filed does not directly and unambiguously disclose the subject-matter of claims 1 and 4, be it explicitly or implicitly, to the person skilled in the art using common general knowledge. Applying the gold standard disclosure test (see Case Law of the Boards of Appeal, 10th edition, 2022, II.E.1.3.1), the main request thus infringes Article 123(2) EPC.
3. Point 2 of the order in G 1/93
- 3.1 Decision G 1/93 deals with the conflicting requirements of Article 123(2) and (3) EPC. The Enlarged Board of Appeal acknowledged the inescapable trap that may result from Article 123(2) and (3) EPC (see point 1 of the order). It then went on to specify certain circumstances under which an undisclosed feature was not to be considered to infringe Article 123(2) EPC, discussed in points 15 to 17 of the reasons and summarised in point 2 of the order reproduced below:

"A feature which has not been disclosed in the application as filed but which has been added to the application during examination and which, without providing a technical contribution to the subject-matter of the claimed invention, merely limits the protection conferred by the patent as

granted by excluding protection for part of the subject-matter of the claimed invention as covered by the application as filed, is not to be considered as subject-matter which extends beyond the content of the application as filed in the sense of Article 123(2) EPC. The ground for opposition under Article 100(c) EPC therefore does not prejudice the maintenance of a European patent which includes such a feature."

- 3.1.1 Several decisions of the technical boards of appeal have assessed whether or not an undisclosed feature was to be considered added subject-matter under Article 123(2) EPC in view of point 2 of the order of G 1/93. In the majority of cases, the competent board has found that the undisclosed feature provided a technical contribution, concluding that the conditions set out in point 2 of the order of G 1/93 were not fulfilled (see for example T 412/22 and T 312/16). Occasionally, however, an undisclosed feature was found to be allowable under Article 123(2) EPC on the basis of point 2 of the order of G 1/93 (see for example T 1779/09, T 1595/11, T 824/08 and T 535/08).
- 3.2 The respondent argued that, even if the contested feature were considered not to be disclosed in the application as filed, the amendment would still be allowable in view of point 2 of the headnote of G 1/93. In particular, the contested feature did not provide a technical contribution and merely limited the scope of protection. The Board does not consider this line of argument convincing.
- 3.3 The contested feature that the imaging positions are the same results in a restriction of the possible ways of establishing a relationship between the regions

designated on the displayed non-X-ray image and the corresponding locations of the X-ray generator. This has technical implications for other features, in particular the controller of claim 1 and the "calculating" step of claim 4. Accordingly, the contested feature may potentially become relevant for the assessment of inventive step, as well as for the question of sufficiency of disclosure regarding the calculation of locations of the X-ray generator. Hence, as submitted by the appellant, the undisclosed feature added to each of claims 1 and 4 provides a technical contribution to the subject-matter of the claimed invention within the meaning of point 2 of the order of G 1/93. For this reason alone, the respondent's reference to G 1/93 cannot establish compliance with Article 123(2) EPC.

- 3.4 For the sake of completeness, the Board notes that T 768/20, Reasons 2.2.1, states that point 2 of G 1/93 seems to address undisclosed disclaimers, which were examined in greater detail by later decision G 1/03. The present Board further notes that the allowability criteria according to point 2 of the order of G 1/93 are different from those laid down for undisclosed disclaimers in G 1/03. Accordingly, an undisclosed disclaimer can comply with the criteria according to point 2 of G 1/93 without complying with the (stricter) criteria set out in G 1/03. In the Board's view this can only mean that, to the extent that point 2 of G 1/93 concerns undisclosed disclaimers, it must be considered to have been superseded by the Enlarged Board's later decisions G 1/03 and G 1/16 (the latter reconfirming the applicability of G 1/03 to undisclosed disclaimers). In any case, the amended feature under consideration does not concern an undisclosed disclaimer as per G 1/03.

3.5 Moreover, regardless of whether or not point 2 of G 1/93 addresses undisclosed disclaimers, it concerns amendments in the form of "a feature which has not been disclosed in the application as filed". Pursuant to G 1/93, such an amendment can still be allowable under Article 123(2) EPC if the criteria referred to in point 2 of G 1/93 are fulfilled. Hence, to the extent that point 2 of G 1/93 addresses amendments other than undisclosed disclaimers, this would establish a second exception to the gold standard as set out in G 2/10 and G 2/16, i.e. an exception in addition to the one concerning undisclosed disclaimers under G 1/03. Also in this regard, the Board refers to T 768/20, Reasons 2.2.1, in which it was stated that the case law of the Enlarged Board of Appeal does not seem to provide for any further exception to the gold standard.

3.5.1 It follows that the respondent's line of argument based on G 1/93 cannot succeed.

4. Conclusion

The main and only claim request comprises added subject-matter and infringes Article 123(2) EPC. The patent is thus to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chair:



A. Chavinier-Tomsic

M. Alvazzi Delfrate

Decision electronically authenticated