

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 10 March 2020**

Case Number: T 1656/14 - 3.5.04

Application Number: 09153591.4

Publication Number: 2160037

IPC: H04N13/00

Language of the proceedings: EN

Title of invention:

Methods and systems for converting 2D motion pictures for stereoscopic 3D exhibition

Applicant:

IMAX CORPORATION

Headword:

Relevant legal provisions:

EPC Art. 56

RPBA Art. 12(4), 13(1)

Keyword:

Main request, first to third auxiliary requests - admitted (no)
Fourth auxiliary request - inventive step (no)
Fifth auxiliary request - admitted (no)

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 1656/14 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 10 March 2020

Appellant: IMAX CORPORATION
(Applicant) 2525 Speakman Drive
Sheridan Park
Mississauga, Ontario L5K 1B1 (CA)

Representative: Phillips & Leigh LLP
Temple Chambers
3-7 Temple Avenue
London EC4Y 0DA (GB)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 24 March 2014
refusing European patent application
No. 09153591.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman C. Kunzelmann
Members: R. Gerdes
G. Decker

Summary of Facts and Submissions

- I. The appeal is directed against the decision to refuse European patent application No. 09 153 591.4, published as EP 2 160 037 A2, which is a divisional application of European patent application No. 07 789 439.2, published as international application WO 2007/148219 A2.
- II. The patent application was refused by the examining division on the grounds that the subject-matter of claim 1 of the then sole request (which had been filed during the oral proceedings before the examining division) lacked inventive step (Article 56 EPC) in view of the following document and the common general knowledge of a person skilled in the art:
- D2: EP 0 735 512 A2
- III. The applicant (appellant) appealed against this decision and submitted amended claims of a main request and first to third auxiliary requests with the statement of grounds of appeal.
- IV. In a communication under Article 15(1) RPBA, which was annexed to the summons to oral proceedings, the board stated, *inter alia*, that it would have to be discussed at the oral proceedings whether the new requests should be admitted. The board also indicated that it considered the subject-matter of claim 1 of the main request to lack an inventive step in view of D2 and common general knowledge.

- V. With its reply to the summons dated 10 February 2020, the appellant submitted amended claims according to a fourth auxiliary request.
- VI. The oral proceedings were held before the board on 10 March 2020. At the end of these proceedings, 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 or the first, second or third auxiliary request filed with the statement of grounds of appeal, or the fourth auxiliary request filed with the letter dated 10 February 2020, or the fifth auxiliary request filed during the oral proceedings on 10 March 2020. As a further auxiliary request, the appellant requested that the case be remitted to the department of first instance for further prosecution on the basis of the fifth auxiliary request.
- VII. Claim 1 of the main request reads as follows:
- "A method of converting 2D motion pictures for stereoscopic 3D exhibition by processing at least one image data sequence comprising the steps of:
- i) receiving (116) source image data sequences (200, 202) comprising at least a first version (Version x) of an image data sequence (100); and,
 - ii) collecting (102) processing information from the first version for generating a converted image data sequence (120) based upon the first version of the image data sequence;
 - iii) storing a first set of processing information in a render data record (110);
 - iv) generating (112) the converted image data sequence (120) based on the first version of the

image data sequence and the render data record (110); comprising:
generating a converted 3D image data sequence from a first 2D image data sequence;

further characterized by the steps of:

- v) updating (216) the render data record (110) by detecting changes in the source image data sequences (200, 202) wherein updating the render data record (110) comprises:
 - a) receiving a latest version (Version x+1) of the image data sequence (200);
 - b) comparing (204) the latest version (Version x+1) of the image data sequence to the first version or a previous version (Version x) of the image data sequence (202) to detect changes in the source image data sequences; and;
 - c) analyzing (208) the detected changes to determine (210) if updating the render data record is needed."

VIII. Claim 1 of the first auxiliary request differs from claim 1 of the main request in that feature v)b) now reads as follows (the amendment is underlined):

"b) comparing (204) image frames of the latest version (Version x+1) of the image data sequence to the first version or a previous version (Version x) of the image data sequence (202) to detect changes in the source image data sequences; and;".

IX. Claim 1 of the second auxiliary request is identical to claim 1 of the main request, with previous feature v)

being renumbered feature vi) and the following additional feature v) being inserted before feature vi):

"v) updating (216) the render data record (110) independently of color processing information;".

X. Claim 1 of the third auxiliary request contains the amendments to claim 1 of the first and second auxiliary requests.

XI. Claim 1 of the fourth auxiliary request reads as follows:

"A method of converting 2D motion pictures for stereoscopic 3D exhibition by processing at least one image data sequence comprising:

- i) receiving (116) source 2D image data sequences (200, 202) comprising at least one unlocked first version (202) of a 2D image data sequence (100); and,
- ii) collecting (102) processing information from the first version for generating a converted image data sequence (120) based upon the first version of the 2D image data sequence;
- iii) storing a first set of processing information in a render data record (110);
- iv) generating (112) the converted image data sequence (120) based on the first version of the image data sequence and the render data record (110); comprising generating a converted 3D image data sequence from the first 2D image data sequence;

characterized in that:

said collecting of processing information comprises collecting colour independent processing information;
said first set of stored processing information is a first set of colour independent processing information;
wherein the method further comprises the steps of:

- v) updating the render data record (110) by detecting changes in the source image data sequences (200, 202) wherein updating the render data record (110) comprises:
 - a) receiving a latest version (200) of the 2D image data sequence;
 - b) comparing (204) the latest version (200) of the 2D image data sequence to the first version (202) of the image data sequence to detect changes in the source 2D image data sequences; and,
 - c) analyzing (208) the detected changes to determine (210) if updating the render data record is needed; and,
 - d) collecting (214) new processing information from the latest version of the 2D image data sequence if updating the render data record (110) is needed."

XII. Claim 1 of the fifth auxiliary request differs from claim 1 of the fourth auxiliary request in that the following features have been appended to the claim:

"... wherein collecting a first set of processing information comprises:

- A) dividing the first version of the 2D image data sequence into scenes and objects; and

- B) collecting processing information based on analysis of the scenes and objects and wherein the analysis of:
 - I) scenes comprises temporal analysis (402), scene separation (404), scene layout planning (406) and scene automation analysis (408);
 - II) objects comprises layer analysis (410), layer conversion (412) and scene compositing (414)."

XIII. In the decision under appeal, the examining division held that the subject-matter of claim 1 of the then sole request (which was essentially the same as claim 1 of the now fourth auxiliary request) differed from D2 in that D2 did not contain the features of its characterising portion. The absence of colour from the render data record was not considered to involve an inventive step, because the render data record of D2 could be derived even if the image sequence to be converted was monochromatic. The remaining distinguishing features related to a process of updating the render data record if a new version of the image sequence was received. These steps represented what an operator would do as a matter of routine to provide a new 3D-converted image sequence if they received the latest version of the 2D-image sequence after a previous version had already been converted. Hence, the subject-matter of claim 1 was found to lack an inventive step (see section "Reasoning", points 9 to 11).

XIV. The appellant's arguments, where relevant to the present decision, may be summarised as follows.

The claims of the main request and the first to fourth auxiliary requests were essentially the same as those of the sole request on which the decision under appeal

was based. Features relating to colour independent processing had not been present in the claims filed on 4 March 2014 in preparation for the oral proceedings before the examining division, and were not considered to be essential for the invention. The removal of these features from the independent claims was a natural development of the claims since these features were not essential and their subject-matter was not considered inventive by the examining division. The additional, dependent claims 2 to 6 provided fall-back positions which had been added as a reaction to comments from the examining division (see statement of grounds, section II.A).

Regarding the inventive step of the subject-matter of claim 1 of the fourth auxiliary request, the appellant argued that D2 focused on a method of calculating depth information for a single 3D image. It was not concerned with converting 2D motion pictures to a 3D image data sequence and, hence, was not an adequate starting point for the invention. Although D2 was in the same general field of 2D-to-3D conversion, there was no disclosure of addressing the problems of processing a large number of images (as in a typical motion picture) in a way that was practical and could be accomplished within a reasonable period of time. In the statement of grounds, the appellant argued that the features of the characterising portion of claim 1 were not disclosed in D2. The technical problem could be regarded as converting a 2D motion picture to 3D for a day-and-date release (see statement of grounds, sections II.B to II.H). In the oral proceedings, the appellant additionally disputed that D2 disclosed steps iii) and iv) of claim 1. It also proposed a modified formulation of the technical problem, namely how to allow the production of a 3D film sequence which was updatable.

The solution to this problem implied that the concept of D2 had to be applied to an image sequence. D2 referred to a comparison of an "object" frame with a reference frame. It was not obvious how this concept could be applied to a movie, which contained cuts and transitions from one scene to the next. If an updated reference frame was provided in a version of the movie, all the object frames depending on it would have to be updated as well. Hence, the skilled person would not have arrived at the subject-matter of claim 1 without any inventive activity.

Claim 1 of the fifth auxiliary request was based on claim 1 of the fourth auxiliary request and additionally contained the features of its dependent claims 5 and 6. These features further described the collection of processing information and scene analysis. The new claims should be admitted because the additional features were present in the dependent claims of the set of claims on which the decision was based.

Reasons for the Decision

1. The appeal is admissible.
2. *Main request and first to third auxiliary requests*
 - 2.1 According to the established case law of the boards of appeal, the function of appeal proceedings is to give a decision upon the correctness of an earlier decision taken by a department of first instance (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, V.A.1 and V.A.4.11.4 b)). In line with that, Article 12(4) RPBA 2007 (applicable

according to Article 25(2) RPBA 2020) states that it is within the power of the board to hold inadmissible facts, evidence or requests which could have been presented or were not admitted in the first-instance proceedings. Although new requests with amended claims may be admitted into appeal proceedings, it is not the purpose of an appeal to give the appellant an opportunity to present a "fresh case".

- 2.2 Claim 1 of the main and sole request on which the decision under appeal was based contained features relating to the "collecting of processing information" comprising "colour independent processing information" and "said first set of stored processing information" being "a first set of colour independent processing information". In addition, feature v)d) specified the step of "collecting (214) new processing information from the latest version of the image data sequence if updating the render data record (110) is needed". These features have been omitted in claim 1 of the main request and each of the first to third auxiliary requests.
- 2.3 In addition, dependent claims 2 to 6 have been added to the set of claims of the main request and partially incorporated into claim 1 of each of the first to third auxiliary requests. Claims 2 to 6 each depend directly on all previous claims and specify details relating to different improvements of the method of claim 1. They can therefore not be considered to take a convergent approach and limit the invention defined in claim 1. Instead, they provide a variety of diverging fall-back positions. Furthermore, since the features of these claims were not present in the claims as originally filed, it is questionable whether their content has been searched.

2.4 The appellant argued that the features relating to the "colour independence" in claim 1 of the request underlying the decision under appeal were not essential for the invention, and that these features had not been present in claim 1 of the main request filed in reply to the summons to oral proceedings in examination on 4 March 2014 (see point XIV above). However, that request was withdrawn during those oral proceedings. Hence, the main request now essentially corresponds to a request that was submitted and then withdrawn during the first-instance proceedings. Similarly, claim 1 of each of the first to third auxiliary requests is essentially based on the main request filed in reply to the summons to oral proceedings on 4 March 2014. It is established case law that the boards of appeal do not admit requests that were withdrawn during first-instance proceedings (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, V.A.4.11.4.c). If the board were to admit such a request, it would be contrary to the main purpose of *ex parte* appeal proceedings, which are primarily concerned with examining the contested decision (see G 10/93, OJ EPO 1995, 172, Reasons 4).

2.5 Hence, the board decided not to admit the main request and the first to third auxiliary requests (Article 12(4) RPBA 2007).

3. *Fourth auxiliary request, admission*

3.1 The claims of the fourth auxiliary request correspond essentially to the claims on which the decision under appeal was based. Claim 1 of the fourth auxiliary request additionally describes the image data sequences as 2D image data sequences and refers to the first

version of the 2D image data sequence as an "unlocked first version". These modifications are considered to be clarifying amendments.

3.2 Hence, the board decided to admit the fourth auxiliary request.

4. *Fourth auxiliary request, inventive step*

4.1 D2 relates to a method of converting 2D motion pictures for stereoscopic 3D exhibition (see abstract and page 2, lines 7 to 14). In order to calculate depth from a sequence of motion pictures, D2 processes image data sequences. The processing comprises steps of receiving source 2D image data sequences and collecting processing information from those image data sequences for generating a converted image (see page 7, line 6 and pages 9 to 12, steps S13 and S14). It is considered implicit that the processing information must be stored. D2 also discloses that a converted 3D image is generated based on the data sequence (see pages 13 to 17, stages 3 and 4). The board also considers D2 as disclosing the collecting of colour independent processing information (such as edges and corners, see D2, page 9, lines 23 to 27 and 36 to 39). The set of stored processing information is accordingly (at least partially) colour independent processing information (see also decision under appeal, Reasoning, point 10, first paragraph).

4.2 Hence, D2 discloses all the steps of claim 1 except for step v) and the following aspects of the preamble of claim 1:

(a) D2 does not relate to an unlocked version of the 2D image data sequence.

(b) D2 does not disclose generating a converted 3D image data sequence instead of a single 3D image.

4.3 The appellant disputed that D2 could be regarded as the closest prior art with regard to the claimed subject-matter.

4.3.1 D2 focused on a method of accurately calculating depth information for a single 3D image. It was not concerned with converting 2D motion pictures to a 3D image data sequence and, hence, was not an adequate starting point for the invention. Although D2 was in the same general field of 2D-to-3D conversion, there was no disclosure of addressing the problems of processing a large number of images (as in a typical motion picture) in a way that was practical and could be accomplished in a reasonable period of time (see point XIV above).

4.3.2 It is established case law that the closest prior art for assessing inventive step is normally a prior-art document that discloses subject-matter conceived for the same purpose or with the same objective as the claimed invention, and that has the most relevant technical features in common, i.e. requiring the minimum of structural modifications. It is not excluded that a document relating to a similar purpose might be considered a better - or at least an equally plausible - choice of closest prior art, provided that it would be immediately apparent to the skilled person that what is disclosed in the document could be adapted to the purpose of the claimed invention in a straightforward manner, using no more than common general knowledge (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, sections I.D.3.1 and I.D.3.4.1).

- 4.3.3 D2 repeatedly refers to television and is based on the analysis of motion in image sequences (see D2, page 2, lines 20 and 21; page 3, lines 55 to 57; page 25, lines 13 to 15; and page 26, lines 10 and 11). The board therefore considers that the person skilled in the art would have recognised that the method of D2 could readily be used for generating 3D image sequences. The board has taken note of the appellant's arguments referring to "the context of converting new 2D movies to 3D movies of theatre projection quality" and the discussion of the history of, and complexities involved in, theatre quality conversion of 2D-to-3D feature movies (see statement of grounds, paragraphs 11 F) and G)). However, the board does not see any feature in claim 1 which limits the invention as claimed to the context of converting new 2D movies to 3D movies of theatre projection quality.
- 4.3.4 The board therefore holds that D2 can be considered the closest prior art.
- 4.4 The examining division argued in the decision under appeal that distinguishing feature (a) relates to a commercial agreement between companies or to a business method (see Reasoning, point 12.4, paragraph (a)). The board agrees with this assessment.
- 4.5 The appellant formulated the technical problem on the basis of distinguishing feature (b) and step v) as "how to allow for the production of a 3D image sequence which is updatable". The board concurs with this formulation, interpreting the term "updatable" to mean that a new version of the 3D image sequence should be generated if a new 2D image sequence has been provided.

- 4.6 The board agrees with the decision under appeal that the solution presented in claim 1 would have been obvious for the person skilled in the art (see Reasons, point 11). It was known that the time between the edit lock and the release might be too short for a 2D-to-3D conversion of an entire movie. Hence, speedy processing was a known business requirement (see the application, paragraphs [0038] and [0044]). It was also common general knowledge that motion pictures were available in different versions before their final release. Based on these facts, it was obvious to start conversion on the early version (in particular on parts that were not likely to be modified any more) and later only (re-)convert the modified sections. The present invention may, for example, be compared to the well-known procedure for marking changes in text documents (e.g. in word processing tools with the function "track changes") so that the comparison of versions and subsequent analysis of the changes is simplified for a user.
- 4.7 The appellant argued that, "[w]hilst the solution provided by the claimed invention is seemingly simple, in the context of converting new 2D movies to 3D movies **of theatre projection quality**, it is not" (see statement of grounds, page 3, points F and G; emphasis in original). The board agrees that different solutions to quickly produce a 3D version are conceivable, for example parallelisation of work and more personnel (see statement of grounds, page 9, point q). However, the selection of one of several well-known methods cannot be considered inventive. Hence, the board is not convinced by this argument.
- 4.8 The appellant also argued that D2 referred to a comparison of an "object" frame with a reference frame.

It was not obvious how this concept could be applied to a movie, which contained cuts and transitions from one scene to the next. If an updated reference frame was provided in a version of the movie, all the object frames depending on it would have to be updated as well. Hence, the skilled person would not have arrived at the subject-matter of claim 1 without the exercise of inventive activity. The board agrees that object frames may require an update even if only the reference frame has been changed. However, frame dependencies are usually limited to a distance of several frames. Moreover, motion analysis is an established technique for depth analysis and is also used in the application at issue, where it is described as temporal analysis (see claim 6, feature I and Figure 9, 424 and 908 together with paragraph [0120]).

- 4.9 Hence, the subject-matter of claim 1 would have been obvious to a person skilled in the art in view of D2 and thus lacks inventive step (Article 56 EPC).

Fifth auxiliary request

5. During the oral proceedings the appellant submitted a revised set of claims as a fifth auxiliary request (see point VI above).
- 5.1 The transitional provisions of the revised version of the Rules of Procedure of the Boards of Appeal, RPBA 2020 (see OJ EPO 2020, Supplementary Publication 1, 42) provide in Article 25(3) RPBA 2020 that Article 13 RPBA 2007 (Rules of Procedure of the Boards of Appeal of the European Patent Office, OJ EPO 2007, 536) continues to apply to any amendment to a party's case after it has filed its grounds of appeal where the summons to oral proceedings has been notified before the date of entry

into force of the revised version of the RPBA (i.e. 1 January 2020, see Article 24(1) RPBA 2020). In the present case, the summons was notified before that date. Hence, the admission of the fifth auxiliary request is to be decided on the basis of Article 13 RPBA 2007.

- 5.2 According to Article 13(1) RPBA 2007, any amendment to a party's case after it has filed its grounds of appeal may be admitted and considered at the board's discretion. This discretion is to be exercised in view of, *inter alia*, the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy.
- 5.3 In the fifth auxiliary request, independent claim 1 incorporates the wording of claims 1, 5 and 6 of the fourth auxiliary request. The additional features of claims 5 and 6 provide details relating to the collecting of processing information and the analysis of scenes and objects.
- 5.4 The amended claims were only submitted during the oral proceedings, i.e. at the latest stage in the proceedings. The board also notes that the features of claims 5 and 6 were not present in the set of claims which formed the basis for the search of the application. Hence, it is questionable whether the search took the claimed subject-matter into account. The additional features of claim 1 also shift the focus of the claim from the updating of the render data record to details of the collecting of processing information. Hence, the new request presents a fresh case, which significantly increases the complexity of the case. It also follows that the board might have to remit the case to the department of first instance if

it admitted the claims of the fifth auxiliary request. This would be contrary to procedural economy.

5.5 In view of the above, the board decided not to admit the fifth auxiliary request into the appeal proceedings, in application of Article 13(1) RPBA 2007.

6. *Remittal*

6.1 As a further auxiliary request, the appellant requested that the case be remitted to the department of first instance for further prosecution on the basis of the fifth auxiliary request.

6.2 Since the board decided not to admit the fifth auxiliary request, the request for remittal for further prosecution on the basis of that request is irrelevant.

7. *Conclusion*

It follows from the above that none of the appellant's requests is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



K. Boelicke

C. Kunzelmann

Decision electronically authenticated