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**Datasheet for the decision
of 23 April 2021**

Case Number: T 1304/16 - 3.5.04

Application Number: 10726396.4

Publication Number: 2441264

IPC: H04N7/24, H04N7/26, H04N7/50

Language of the proceedings: EN

Title of invention:
MULTIVIEW VIDEO CODING OVER MPEG-2 SYSTEMS

Applicant:
QUALCOMM Incorporated

Headword:

Relevant legal provisions:
EPC Art. 123(2), 84
RPBA 2020 Art. 13(1), 13(2)

Keyword:

Main request - amendments - added subject-matter (yes)

First auxiliary request, second auxiliary request, third auxiliary request, fifth auxiliary request - amendment to appeal case - amendment overcomes issues raised (no)

Fourth auxiliary request - amendment to appeal case - amendment gives rise to new objections (yes)

Decisions cited:

T 0989/15, T 0954/17

Catchword:



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Case Number: T 1304/16 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 23 April 2021

Appellant: QUALCOMM Incorporated
(Applicant) Attn: International IP Administration
5775 Morehouse Drive
San Diego, California 92121-1714 (US)

Representative: Loveless, Ian Mark
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 5 January 2016
refusing European patent application No.
10726396.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairwoman B. Willems
Members: A. Seeger
T. Karamanli

Summary of Facts and Submissions

- I. The appeal is against the examining division's decision to refuse European patent application No. 10 726 396.4, published as international application WO 2010/144852 A1.
- II. The prior-art documents cited in the decision under appeal included the following:
- D1 T. Shierl et al., Information Technology - Generic Coding of Moving Pictures and Audio: Systems Amendment 4: Transport of Multiview Video over ITU-T Rec H.222.0|ISO/IEC 13818-1. 6 February 2009, XP002599507, Lausanne, Switzerland [retrieved on 2010-09-01]. Retrieved from <www.itscj.ipsj.or.jp/sc29/open/29view/29n10151t.doc>
- D3 WO 2008/088497 A2
- III. The application was refused on the grounds that the subject-matter of claim 1 according to the then main request and each of the then first and second auxiliary requests lacked inventive step over the disclosure of document D3 combined with the common general knowledge of the person skilled in the art as exemplified by document D1 (Article 56 EPC).
- IV. The applicant ("appellant") filed notice of appeal. With the statement of grounds of appeal, the appellant filed claims according to a main request and an auxiliary request.

- V. On 24 July 2020 a summons to oral proceedings was issued. In a communication under Article 15(1) of the Rules of Procedure of the Boards of Appeal in the version of 2020 (RPBA 2020, OJ EPO 2019, A63), the board gave the following preliminary opinion:
- (a) The subject-matter of claims 1 and 6 of the main request and of the first auxiliary request extended beyond the content of the application as filed, contrary to the requirements of Article 123(2) EPC.
 - (b) Claims 1 and 6 of the main request and claim 1 of the auxiliary request did not meet the requirements of Article 84 EPC.
 - (c) The subject-matter of claims 1 and 6 of the main request and the auxiliary request lacked inventive step over the combined disclosures of documents D1 and D3 (Article 56 EPC).
- VI. By letter of reply dated 23 December 2020, the appellant filed amended claims according to a main request and first to third auxiliary requests and replacement pages 1 to 3 of the description to replace pages 1 to 5 of the description as originally filed. The appellant retained the main request and the auxiliary request filed with the statement of grounds of appeal as fourth and fifth auxiliary requests, respectively.
- VII. By letter dated 8 January 2021, the appellant informed the board that, because of travel restrictions, it could not attend the oral proceedings scheduled for 5 February 2021 and requested a change of date for the oral proceedings.

- VIII. With a communication dated 19 January 2021, the appellant was informed that the oral proceedings appointed for 5 February 2021 were rescheduled to 23 April 2021 and would be held by videoconference.
- IX. In a communication dated 3 February 2021, the board gave the following non-binding opinion: all requests filed by letter dated 23 December 2020 gave rise to new objections. Exercising its discretion under Article 13(2) RPBA 2020 and relying on one of the criteria set out in Article 13(1) RPBA 2020, the board tended to not admit these new requests into the appeal proceedings.
- X. On 23 April 2021 the board held oral proceedings by videoconference under Article 15a(1) RPBA 2020, which was applicable to the oral proceedings in the present case pursuant to Article 3 of the Decision of the Administrative Council of 23 March 2021 approving an amendment to the Rules of Procedure of the Boards of Appeal (CA/D 3/21) (see OJ EPO 2021, A19).

During the oral proceedings, the appellant filed amended claims according to two new auxiliary requests and withdrew the requests filed as main request and auxiliary request with the statement of grounds of appeal.

The appellant's final requests were that the decision under appeal be set aside and that a European patent be granted on the basis of the claims of the main request filed by letter dated 23 December 2020, or, alternatively, one of the first and second auxiliary requests filed by letter dated 23 December 2020, or one of the third and fourth auxiliary requests filed at the oral proceedings on 23 April 2021, or the fifth

auxiliary request filed as third auxiliary request by letter dated 23 December 2020.

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

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

"A method of sending encoded video data, the encoded video data having a plurality of views, the encoded video data being sent in an MPEG-2 bitstream, the method comprising:

determining a subset of available views of the encoded video data having a plurality of views to send to a destination device; and

sending the bitstream comprising the subset of available views from a source device to the destination device,

characterised by:

constructing, with the source device, a data structure for signaling that the bitstream comprises a first view of a scene associated with a first view order index and a second view of the scene associated with a second view order index, the data structure including a multiview video coding (MVC) extension descriptor comprising individual view order index values for each view included in the bitstream, wherein the individual view order index values comprise values for the first view order index and the second view order index, wherein the first view order index value and the second view order index value are non-consecutive, wherein the view order index values are arranged in increasing

order, and wherein the second view order index value occurs immediately after the first view order index value in the MVC extension descriptor; and

transmitting the data structure to the destination device."

- XII. Claim 1 of the first auxiliary request is identical to claim 1 of the main request but adds the following feature at the end of the last paragraph:

"wherein a view order index indicates a decoding order of view components in an access unit."

- XIII. Claim 1 of the second auxiliary request is identical to claim 1 of the main request but adds the following feature at the end of the last paragraph:

"wherein a view order index is a view order index as specified in Annex H of ITU-T H.264/MPEG-4, Part 10, Advanced Video Coding."

- XIV. Claim 1 of the third auxiliary request reads as follows (amendments relative to claim 1 of the main request are underlined):

"A method of sending encoded video data, the encoded video data having a plurality of views, the encoded video data being sent in an MPEG-2 bitstream, the method comprising:

determining a subset of available views of the encoded video data having a plurality of views to send to a destination device, wherein determining the subset of available views comprises determining a subset of views that can be decoded without reference to any of the

plurality of views that are omitted from the subset of views; and

sending the bitstream comprising the subset of available views from a source device to the destination device,

characterised by:

constructing, with the source device, a data structure for signaling that the bitstream comprises a first view of a scene associated with a first view order index and a second view of the scene associated with a second view order index, the data structure including a multiview video coding (MVC) extension descriptor comprising individual view order index values for each view included in the bitstream, wherein the individual view order index values comprise values for the first view order index and the second view order index, wherein the first view order index value and the second view order index value are non-consecutive, wherein the view order index values are arranged in increasing order, and wherein the second view order index value occurs immediately after the first view order index value in the MVC extension descriptor; and

transmitting the data structure to the destination device

wherein the data structure comprises a program map table and the bitstream comprises an MPEG-2 transport stream, or the data structure comprises a program stream map and the bitstream comprises an MPEG-2 program stream."

XV. Claim 1 of the fourth auxiliary request reads as follows (amendments relative to claim 1 of the main request are underlined):

"A method of sending encoded video data, the encoded video data having a plurality of views, the encoded video data being sent in an MPEG-2 bitstream, the method comprising:

determining a subset of available views of the encoded video data having a plurality of views to send to a destination device, wherein determining the subset of available views comprises determining a subset of views that can be decoded without reference to any of the plurality of views that are omitted from the subset of views; and

sending the bitstream comprising the subset of available views from a source device to the destination device,

characterised by:

constructing, with the source device, a data structure for signaling that the bitstream comprises a first view of a scene associated with a first view order index and a second view of the scene associated with a second view order index, the data structure including a multiview video coding (MVC) extension descriptor comprising individual view order index values for each view included in the bitstream, wherein the individual view order index values comprise values for the first view order index and the second view order index, wherein the first view order index value and the second view order index value are non-consecutive, wherein the view order index values are arranged in increasing

order, and wherein the second view order index value occurs immediately after the first view order index value in the MVC extension descriptor; and

transmitting the data structure to the destination device at a transport level in the MPEG-2 bitstream."

XVI. Claim 1 of the fifth auxiliary request is identical to claim 1 of the main request but adds the following feature at the end of the last paragraph:

"wherein the encoded video data is encoded in accordance with Annex H of ITU-T H.264/MPEG-4, Part 10, Advanced Video Coding, AVC."

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

Main request

(a) Paragraph [0037] disclosed that, in general, any subset of views was possible. This disclosure was not invalidated by the later specific example providing a certain use case. The prediction structure shown in Figure 6 and the disclosure of paragraphs [00118] and [00125] were merely an example which did not impose a requirement on the general invention.

(b) The order of features in the claims as originally filed implied that non-consecutive views could occur without further restrictions. Original claim 1 specified two different views where the view order index values were non-consecutive. Original dependent claims 4 and 5 specified details

of the multiview video coding (MVC) extension descriptor only after that.

- (c) The invention was about transport over MPEG-2 systems. Such MPEG-2 transport would still work even if on the level of a video coding layer a view for inter-view prediction was missing.
- (d) The term "multiview video coding (MVC) extension descriptor" was specific to a transport layer of MPEG-2 systems. Hence, the use of this term in claim 1 implied a restriction to transport over MPEG-2 systems.

First, second and fifth auxiliary requests

- (e) The first auxiliary request should be admitted into the appeal proceedings. The objection under Article 123(2) EPC raised against claim 1 of the main request no longer applied. The feature of claim 1 "wherein a view order index indicates a decoding order of view components in an access unit" meant that the determined subset of available views was decodable, and thus there could not be a missing reference view. The same applied to the admittance of the second and fifth auxiliary requests into the appeal proceedings.

Third auxiliary request

- (f) The third auxiliary request should be admitted into the appeal proceedings. It was implicit that the data structure was transmitted over an MPEG-2 transport or program stream because claim 1 specified that "the data structure comprise[d] a program map table". The term "program map table"

used in this feature was specific to MPEG-2 transport and implied, for the skilled person, a transport over an MPEG-2 transport or program stream.

Fourth auxiliary request

(g) The fourth auxiliary request should be admitted into the appeal proceedings. The feature of claim 1 "transmitting the data structure to the destination device at a transport level in the MPEG-2 bitstream" together with the feature that "the encoded video data being sent in an MPEG-2 bitstream" meant that the data structure was transmitted in the same bitstream as the encoded video data.

Reasons for the Decision

1. The appeal is admissible.
2. Main request - admittance (Article 13(2) RPBA 2020)
 - 2.1 In the case in hand, the summons to oral proceedings was notified after the date on which RPBA 2020 entered into force, i.e. 1 January 2020 (Article 24(1) RPBA 2020). Thus, in accordance with Article 25(1) and (3) RPBA 2020, Article 13(2) RPBA 2020 applies to the question of whether to admit the appellant's main request, which was filed after notification of the summons to oral proceedings and is therefore an amendment within the meaning of Article 13(2) RPBA 2020.
 - 2.2 The board raised objections under Article 84 EPC and Article 123(2) EPC for the first time in its

communication under Article 15(1) RPBA 2020. In response to this communication, the appellant filed a main request aimed at overcoming these new objections. The board considers this to represent exceptional circumstances within the meaning of Article 13(2) RPBA 2020. Exercising its discretion under this provision, the board thus decided to admit the main request into the appeal proceedings.

3. Main request - added subject-matter
(Article 123(2) EPC)

3.1 Claim 1 was amended to specify "determining a subset of available views of the encoded video data having a plurality of views to send to a destination device".

This amendment is to be seen in the context of the further features of claim 1 specifying that two view order index values are non-consecutive but occur immediately after each other in a multiview video coding (MVC) extension descriptor.

3.2 Paragraph [0027] of the application as filed discloses:

"A server device, for example, may provide various services, each of which comprises respective subsets of particular views of multiview video coding video data, where the subset of views of the service may be selected based on the application executed by a client device, capacity of decoders executed by the client device, preferences expressed by the client device, or other selection criteria."

Paragraph [0037] of the application as filed discloses:

"A service generally corresponds to a subset of available views of MVC data. ... In general, a service corresponds to any combination (that is, any subset) of the available views."

- 3.3 Hence, paragraphs [0027] and [0037] disclose that, in general, any combination, i.e. subset of available views, can be selected.

However, paragraphs [00118] and [00125] disclose that in the particular case of views with non-consecutive view order index values, only those available views can be selected to form part of a subset which are either independently decodable or decodable by reference only to views within the subset. To be specific, the set of views S0, S2, and S4 mentioned in paragraph [00125] is decodable because the I-frame of view S0 at temporal location T0 is used as a reference frame for the P-frame of view S2 at temporal location T0, which is in turn used as a reference frame for the P-frame of view S4 at temporal location T0 (see paragraph [00118]). Thus, this possible subset of available views is decodable because none of the views in the possible subset is predictively coded using a reference view, which is itself not part of the possible subset.

- 3.4 Therefore, there is no basis in the application as filed for determining arbitrary subsets of available views of encoded video data to send to a destination device. In particular, if these subsets are made up of available views with non-consecutive view order index values, an arbitrary selection of these views can result in a subset which is not decodable at the destination device.

3.5 The board is not convinced by the appellant's argument that the general teaching of paragraph [0037] was not invalidated by the later examples (see point XVII(a) above). Claim 1 specifies that the subset is made up of available views with non-consecutive view order index values. This corresponds to the example of paragraphs [00118] and [00125]. These paragraphs disclose limitations to what is "in general" possible according to paragraphs [0027] and [0037].

Furthermore, the person skilled in the art understands that the inter-view prediction structure disclosed in Figure 6 is the core of any multiview video coding and not merely an example. If there were no prediction between the views, then any view could be coded independently of the other ones and there would be no need for any specific multiview video coding.

Finally, the skilled person reading paragraphs [0027] and [0037] together with paragraphs [00118] and [00125] would derive based on common general knowledge that all subsets of available views have to be decodable. To transmit a non-decodable subset would cause an error at the destination device.

3.6 The board has not been persuaded that the claim dependencies provide any further indication whether or not a subset of views has to be decodable (see point XVII(b) above). The dependent claims only specify in more detail the arrangement of view order index values inside the MVC extension descriptor.

3.7 The appellant's argument that transport over MPEG-2 systems would still work even if on the level of a video coding layer a view for inter-view prediction was missing (see point XVII(c) above) does not apply to

claim 1, because the claim only specifies transmitting the data structure containing the MVC extension descriptor, without referring to data transport over MPEG-2 systems.

- 3.8 The board is not convinced that the term "multiview video coding (MVC) extension descriptor" implies data transport over MPEG-2 systems (see point XVII(d) above). This term can equally refer to an extension descriptor for MVC on a video coding layer. As an example, the data structure "seq_parameter_set_mvc_extension" shown in Table 3 of document D3 describes extensions for a sequence parameter set in case of multiview video coding. This data structure on the video coding layer could be regarded as an MVC extension descriptor.
- 3.9 In view of the above, the amendment to claim 1 quoted under point 3.1 above has no basis in the application as filed, and thus claim 1 of the main request does not meet the requirements of Article 123(2) EPC.
4. First, second and fifth auxiliary requests - admittance (Article 13(2) RPBA 2020)
- 4.1 The first, second and fifth auxiliary requests were filed at the same time as the main request. They are, therefore, amendments within the meaning of Article 13(2) RPBA 2020 for the same reasons as set out under point 2.1 above.
- 4.2 Article 13(2) RPBA 2020 implements the third level of the convergent approach applicable in appeal proceedings (see Supplementary publication 2, OJ EPO 2020, explanatory remarks on Article 13(2), first paragraph, first sentence).

When exercising its discretion in accordance with Article 13(2) RPBA 2020 and deciding whether to admit an amendment made at the third level of the convergent approach, the board is free to use or not use the criteria applicable at the second level of the convergent approach, i.e. as set out in Article 13(1) RPBA 2020 (see Supplementary publication 2, OJ EPO 2020, explanatory remarks on Article 13(2), fourth paragraph; and for example decisions T 989/15, point 16.2 of the Reasons, and T 954/17, point 3.10 of the Reasons).

- 4.3 Under Article 13(1) RPBA 2020 the board exercises its discretion in view of, inter alia, whether an amendment is detrimental to procedural economy.
- 4.4 Claim 1 of the first auxiliary request specifies the subset of available views in the same manner as claim 1 of the main request. It further specifies that "a view order index indicates a decoding order of view components in an access unit".
- 4.5 The board has not been persuaded that the quoted feature of claim 1 of the first auxiliary request specifies that the determined subset of available views is decodable, and thus there could not be a missing reference view (see point XVII(e) above).

The quoted feature only defines the meaning of a view order index. It neither specifies nor implies that the determined subset of available views is decodable.

- 4.6 Hence, a subset of views as specified in claim 1 of the first auxiliary request does not need to be decodable at the destination device for similar reasons as given

with respect to claim 1 of the main request (see point 3.4 above). Therefore, the board would have to discuss the same objection under Article 123(2) EPC as raised against claim 1 of the main request (see section 3 above) for claim 1 of the first auxiliary request.

This would be detrimental to procedural economy.

4.7 The same holds for claim 1 of each of the second and fifth auxiliary requests which defines the meaning of a view order index by reference to Annex H of ITU-T H. 264/MPEG-4, Part 10, Advanced Video Coding. In this respect, the appellant has not provided further arguments (see point XVII(e) above).

4.8 In view of the above, the board exercised its discretion under Article 13(2) RPBA 2020 and decided not to admit the first, second and fifth auxiliary requests into the appeal proceedings.

5. Third auxiliary request - admittance
(Article 13(2) RPBA 2020)

5.1 The third auxiliary request was filed during the oral proceedings before the board. Hence, it is an amendment within the meaning of Article 13(2) RPBA 2020.

As explained in point 4.2 above, the board, when exercising its discretion under Article 13(2) RPBA 2020, is free to use or not use the criteria set out in Article 13(1) RPBA 2020.

5.2 According to Article 13(1) RPBA 2020, the onus is on the appellant to demonstrate that any amendment to a patent application, *prima facie*, overcomes the issues raised by the board.

5.3 During the oral proceedings, the appellant submitted that the amendments to claim 1, inter alia, aimed at specifying that the data structure including the multiview video coding (MVC) descriptor was transmitted on a transport layer of an MPEG-2 transport or program stream. Therefore, the issue raised by the board that the MVC descriptor could be understood as being part of a video coding layer (see points 3.7 and 3.8 above) had been overcome.

5.4 However, claim 1 only specifies "transmitting the data structure to the destination device", without mentioning any specific stream or layer on which this takes place.

Hence, claim 1 does not explicitly state that the data structure including the MVC extension descriptor is transmitted on a transport layer of an MPEG-2 transport or program stream.

5.5 The appellant argued that the transmission of this data structure over an MPEG-2 transport or program stream was implicit because claim 1 specified that "the data structure comprises a program map table". The term "program map table" used in this feature was specific to MPEG-2 transport and implied, for the skilled person, a transport over an MPEG-2 transport or program stream (see point XVII(f) above).

The board is not convinced by this argument, because the term "program map table" is not specified with reference to a particular standard.

5.6 Hence, claim 1 neither explicitly nor implicitly specifies that the data structure including the MVC

extension descriptor is transmitted on a transport layer of an MPEG-2 transport or program stream.

Therefore, the appellant has not demonstrated that the amendments, prima facie, overcome an issue raised by the board (see points 3.7 and 3.8 above).

5.7 In view of the above, the board exercised its discretion under Article 13(2) RPBA 2020 and decided not to admit the third auxiliary request into the appeal proceedings.

6. Fourth auxiliary request - admittance
(Article 13(2) RPBA 2020)

6.1 The fourth auxiliary request was filed during the oral proceedings before the board. Hence, it is an amendment within the meaning of Article 13(2) RPBA 2020.

As explained in point 4.2 above, the board, when exercising its discretion under Article 13(2) RPBA 2020, is free to use or not use the criteria set out in Article 13(1) RPBA 2020.

6.2 According to Article 13(1) RPBA 2020, the onus is on the appellant to demonstrate that any amendment to a patent application, prima facie, does not give rise to new objections.

6.3 Claim 1 of the fourth auxiliary request specifies:
"transmitting the data structure to the destination device at a transport level in the MPEG-2 bitstream".

Claim 1 further specifies "the encoded video data being sent in an MPEG-2 bitstream".

- 6.4 The board agrees with the appellant that these features of claim 1 together specify that the data structure and the encoded video data are transmitted in the same MPEG-2 bitstream (see point XVII(g) above).
- 6.5 However, the MPEG-2 bitstream can be a packetised elementary stream.

The expression "at a transport level in the MPEG-2 bitstream" (emphasis added by the board) is thus unclear, because the transport level syntax elements, i.e. the elements forming an MPEG-2 transport or MPEG-2 program stream, are added on top of a packetised elementary stream but are not part of it or "in" it.

Hence, claim 1, prima facie, gives rise to a new clarity objection (Article 84 EPC).

- 6.6 Therefore, the board exercised its discretion under Article 13(2) RPBA 2020 and decided not to admit the fourth auxiliary request into the appeal proceedings.

7. Conclusion

Claim 1 of the main request does not meet the requirements of Article 123(2) EPC. The first to fifth auxiliary requests were not admitted into the appeal proceedings. Since none of the appellant's requests is allowable, the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairwoman:



K. Boelicke

B. Willems

Decision electronically authenticated