Internal distribution code:

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

Datasheet for the decision of 12 March 2025

Case Number: T 0258/23 - 3.5.04

Application Number: 16718438.1

Publication Number: 3417632

IPC: H04N21/44, H04N21/845, H04N21/2343

Language of the proceedings: EN

Title of invention:
DYNAMICALLY ADAPTIVE BITRATE STREAMING

Applicant:
V-Nova International Ltd

Relevant legal provisions:
EPC Art. 56, 83, 111(1), 123(2)
EPC R. 103(1)(a)
RPBA 2020 Art. 11, 13(1), 13(2), 12(1)(a), 12(2), 12(3), 12(4), 12(5), 12(6)

Keyword:
Main request and auxiliary request 4 - treated as admitted (yes)
Remittal - (no)
Main request - sufficiency of disclosure (no)
Auxiliary request 1 - inventive step (no)
Auxiliary requests 2 and 3 - statement of grounds of appeal - reasons set out clearly and concisely (no)
Auxiliary request 4 - amendments - added subject-matter (yes)
Auxiliary requests 5 and 6 - amendment to case - suitability of amendment to address issues (no)
Reimbursement of appeal fee - (no)

Decisions cited:
T 2324/14, T 2026/15

Europäisches Patentamt
European Patent Office
Office européen des brevets

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

Case Number: T 0258/23 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 12 March 2025

Appellant: (Applicant)	V-Nova International Ltd 1 Sheldon Square Paddington London W2 6TT (GB)
Representative:	Rooney, John-Paul Withers & Rogers LLP 2 London Bridge London SE1 9RA (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 26 September 2022 refusing European patent application No. 16718438.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	B. Willems
Members:	A. Seeger
	G. Decker

Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse European patent application No. 16 718 438.1, published as international patent application WO 2017/141001 A1.

II. The prior-art documents cited in the decision under appeal were the following:

D1: US 2012/0030723 A1

D2: R. Cohen et al., "Streaming Fine-Grained Scalable Video over Packet-Based Networks", Globecom'00 - IEEE Global Telecommunications Conference, San Francisco, CA, USA, pages 288 to 292, 27 November 2000, DOI: 10.1109/GLOCOM.2000.892018, XP002174291

D3: H. Schwarz et al., "Overview of the Scalable Extension of the H.264/MPEG-4 AVC Video Coding Standard", Joint Video Team of ISO/IEC JTC1/SC29/WG11 and ITU-T SG 16, 21st JVT meeting and 78th MPEG meeting, Hangzhou, China, No. JVT-U145, 20 October 2006, XP030006791

III. The decision under appeal was based on the following grounds.

(a) The main request and auxiliary request 4 were not admitted into the proceedings, under Rule 116(2) EPC and Rule 137(3) EPC, because the amendments to claim 1 did not prima facie meet the requirements of Article 123(2) EPC.

(b) The subject-matter of claim 1 of auxiliary request 1 did not involve an inventive step within the meaning of Article 56 EPC.
(c) Claim 1 of auxiliary requests 2 and 3 was not clear (Article 84 EPC), and its subject-matter did not involve an inventive step within the meaning of Article 56 EPC.

IV. The applicant (appellant) filed notice of appeal and a statement setting out the grounds of appeal.

V. The appellant was summoned to oral proceedings. In a communication under Article 15(1) RPBA, the board gave the following preliminary opinion.

(a) The main request and auxiliary request 4 formed part of the appeal proceedings under Article 12(1)(a) and (2) RPBA, and the board had no discretion not to admit them under Article 12(4) and (6), first sentence, RPBA.
(b) The subject-matter of claim 1 of auxiliary request 1 did not involve an inventive step over the combined disclosures of documents D1, D2 and D3 (Article 56 EPC).
(c) Since the appellant had failed to present its appeal case regarding auxiliary requests 2 and 3, the board intended to exercise its discretion under Article 12(5) RPBA by not admitting them into the appeal proceedings.
(d) Claim 1 of auxiliary request 4 did not meet the requirements of Article 123(2) EPC.
(e) The appeal fee was not to be reimbursed.

VI. With its reply dated 12 February 2025, the appellant filed claims of auxiliary requests 5 and 6, indicated a basis for the amendments in the application as filed

and submitted arguments to support its opinion that the claims of auxiliary requests 1, 5 and 6 met the requirements of Article 56 EPC and that claim 1 of the main request met the requirements of Article 123(2) EPC.

VII. The board held oral proceedings on 12 March 2025.

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 which had formed the basis for the decision under appeal, or alternatively the claims of one of auxiliary requests 1 to 4 which had formed the basis for the decision under appeal, or of one of auxiliary requests 5 or 6 filed with the letter dated 12 February 2025. The appellant further requested remittal to the examining division of the main request and of auxiliary request 4, and reimbursement of the appeal fee.

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

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

"A method of buffering, without knowledge of the available bandwidth, at a client device (200), a segment of an encoded data stream, the segment being arranged in hierarchical layers comprising a base layer segment and an enhancement layer segment, the base layer segment being decodable to a base level of reproduction quality, and the enhancement layer segment, together with the base layer segment, being decodable to an enhanced level of reproduction quality, the method is characterised by comprising the steps of:

receiving, at the client device (200), the segment of the encoded data stream for a prescribed time period so as to buffer the base layer segment and as much of the enhancement layer segment as is received up until expiry of the prescribed time period, wherein when the prescribed time period expires, no further information regarding the segment is stored in the buffer, wherein the prescribed time period is determined at least in part by a playback time of the segment; and
sending the buffered base layer segment and what is received of the enhancement layer segment to a decoder (240) for decoding and output, wherein if all segment layers of the segment are received and stored in buffer within the prescribed time period, then the method performs the sending, or pauses until the expiry of the prescribed time period;
wherein the segment comprises data representing a plurality of frames of video data, and each frame is represented by a base layer unit and an enhancement layer unit."

IX. Claim 1 of auxiliary request 1 reads as follows (features added compared with claim 1 of the main request are underlined and deleted features are ~~struck through~~):

"A method of buffering, ~~without knowledge of the available bandwidth,~~ at a client device (200), a segment of an encoded data stream, the segment being arranged in hierarchical layers comprising a base layer segment and an enhancement layer segment, the base layer segment being decodable to a base level of reproduction quality, and the enhancement layer segment, together with the base layer segment, being decodable to an enhanced level of reproduction quality, the method is characterised by comprising the steps of:

receiving, at the client device (200), the segment of the encoded data stream for a prescribed time period so as to buffer the base layer segment and as much of the enhancement layer segment as ~~is~~was received ~~up until expiry of the~~ in the prescribed time period, ~~wherein when the prescribed time period expires, no further information regarding the segment is stored in the buffer,~~ wherein the prescribed time period is determined at least in part by a playback time of the segment; and
sending the buffered base layer segment and what is received of the enhancement layer segment to a decoder (240) for decoding and output, ~~wherein if all segment layers of the segment are received and stored in buffer within the prescribed time period, then the method performs the sending, or pauses until the expiry of the prescribed time period~~;
wherein the segment comprises data representing a plurality of frames of video data, and each frame is represented by a base layer unit and an enhancement layer unit."

X. Claim 1 of the second auxiliary request differs from claim 1 of the first auxiliary request by the following amendment to the last feature of the claim preceding the full stop (features added compared with claim 1 of auxiliary request 1 are underlined):

"wherein the segment comprises data representing a plurality of frames of video data, and each frame is represented by a base layer unit and an enhancement layer unit, and wherein each enhancement layer unit is independently decodable in the enhancement layer and is usable to enhance the corresponding base layer unit to create an enhanced frame."

XI. Claim 1 of the third auxiliary request differs from claim 1 of the first auxiliary request by the following amendment to the last feature of the claim preceding the full stop (features added compared with claim 1 of auxiliary request 1 are underlined):

"wherein the segment comprises data representing a plurality of frames of video data, and each frame is represented by a base layer unit and an enhancement layer unit, and wherein each enhancement layer unit is independently decodable in the enhancement layer and is usable to enhance the corresponding base layer unit to create an enhanced frame; and
wherein the reproduction quality is resolution."

XII. Claim 1 of the fourth auxiliary request differs from claim 1 of the first auxiliary request by the following amendment to the last feature of the claim preceding the full stop (features added compared with claim 1 of auxiliary request 1 are underlined):

"wherein the segment comprises data representing a plurality of frames of video data, and each frame is represented by a base layer unit and an enhancement layer unit, and wherein each enhancement layer segment unit is decodable independently from other segment units."

XIII. Claim 1 of auxiliary request 5 reads as follows (features added compared with claim 1 of the main request are underlined and deleted features are ~~struck through~~):

"A method of buffering, ~~without knowledge of the available bandwidth,~~ at a client device (200), a segment of an encoded data stream, the segment being

arranged in hierarchical layers comprising a base layer segment and an enhancement layer segment, the base layer segment being decodable to a base level of reproduction quality, and the enhancement layer segment, together with the base layer segment, being decodable to an enhanced level of reproduction quality, the method is characterised by comprising the steps of:
requesting, by the client device, the segment from a streaming server,
monitoring, at the client device, a timer to determine an expiry of a prescribed time period,
receiving, at the client device (200), the segment of the encoded data stream for ~~a~~the prescribed time period so as to buffer the base layer segment and as much of the enhancement layer segment as is received up until expiry of the prescribed time period, wherein when the prescribed time period expires, no further information regarding the segment is stored in the buffer, wherein the prescribed time period is determined at least in part by a playback time of the segment; and
sending the buffered base layer segment and what is received of the enhancement layer segment to a decoder (240) for decoding and output, wherein if all segment layers of the segment are received and stored in buffer within the prescribed time period, then the method performs the sending, or pauses until the expiry of the prescribed time period;
wherein the segment comprises data representing a plurality of frames of video data, and each frame is represented by a base layer unit and an enhancement layer unit."

XIV. Claim 1 of auxiliary request 6 reads as follows (features added compared with claim 1 of auxiliary request 1 are underlined):

"A method of buffering, at a client device (200), a segment of an encoded data stream, the segment being arranged in hierarchical layers comprising a base layer segment and an enhancement layer segment, the base layer segment being decodable to a base level of reproduction quality, and the enhancement layer segment, together with the base layer segment, being decodable to an enhanced level of reproduction quality, the method is characterised by comprising the steps of:
requesting, by the client device, the segment from a streaming server,
receiving, at the client device (200), the segment of the encoded data stream for a prescribed time period so as to buffer the base layer segment and as much of the enhancement layer segment as was received in the prescribed time period, wherein the prescribed time period is determined at least in part by a playback time of the segment; and
sending the buffered base layer segment and what is received of the enhancement layer segment to a decoder (240) for decoding and output;
wherein the segment comprises data representing a plurality of frames of video data, and each frame is represented by a base layer unit and an enhancement layer unit."

Reasons for the Decision

1. Main request and auxiliary request 4 - basis of appeal proceedings (Article 12(1)(a) and (2) RPBA)

1.1 The examining division held that the amendments of claim 1 of the main request and of auxiliary request 4 did not prima facie meet the requirements of Article 123(2) EPC. Therefore the examining division did not admit the main request and auxiliary request 4

into the proceedings (see decision under appeal, points 1.8 and 5.7).

1.2 The board finds that the examining division provided full reasoning why it was of the opinion that the amendments to claim 1 of the main request did not meet the requirements of Article 123(2) EPC (see decision under appeal, points 1.4 and 1.6).

In that reasoning, the examining division checked the basis for the amendments provided by the appellant and their relationship with the remaining features of the claims. The examining division then found that the amended features constituted generalisations that were not directly and unambiguously derivable from the application as filed. This means that the examining division did not limit its examination of the main request to prima facie considerations. In fact, the examining division carried out a full examination of the requirements of Article 123(2) EPC.

The same is true for auxiliary request 4. The examining division in fact carried out a full assessment of added subject-matter by discussing in detail whether the passage on page 21, lines 1 to 3 of the application as filed provided a suitable basis or whether features described in a cross-referenced document could provide such a basis (see decision under appeal, points 5.4 to 5.6).

1.3 Providing full reasoning on a request by an examining division is incompatible with not admitting the request (see Case Law of the Boards of Appeal of the European Patent Office, 10th edition, 2022 ["Case Law"], IV.B.2.4.1, ninth paragraph, and T 2324/14, points 2.5

and 2.6 of the Reasons, and T 2026/15, points 2.4 and 2.5 of the Reasons).

1.4 In the board's opinion, if an examining division gives full reasoning why a request does not comply with the requirements of the EPC, and then does not admit the request, this request should be treated as if the examining division had in fact admitted it into the proceedings. It follows that the main request and auxiliary request 4 are requests on which the decision under appeal was based. Consequently, they form part of the appeal proceedings under Article 12(1)(a) and (2) RPBA and the board has no discretion not to admit them under Article 12(4) and (6), first sentence, RPBA.

2. Remittal to the examining division for further examination of the main request and auxiliary request 4 (Article 111(1) EPC and Article 11 RPBA)

2.1 Under Article 111(1) EPC, the board may either exercise any power within the competence of the department which was responsible for the decision appealed or remit the case to that department for further prosecution.

Under Article 11 RPBA, the board does not remit a case to the department whose decision was appealed for further prosecution, unless special reasons present themselves for doing so. As a rule, fundamental deficiencies which are apparent in the proceedings before that department constitute such special reasons.

2.2 Since the board treats the main request and auxiliary request 4 as being admitted into the proceedings by the examining division (see point 1. above), the substantial procedural violation invoked by the appellant does not have an impact.

2.3 Furthermore, the board was able to decide on each of the requests.

2.4 Therefore, in exercising its discretion under Articles 111(1) EPC and 11 RPBA, the board decided not to remit the case to the examining division for further prosecution.

3. Main request - sufficiency of disclosure (Article 83 EPC)

3.1 Under Article 83 EPC, the European patent application must disclose the invention in a manner sufficiently clear and complete for it to be carried out by the person skilled in the art.

According to the established case law of the boards of appeal, the requirements of sufficiency of disclosure are met if the person skilled in the art can carry out the invention as defined in the independent claims over the whole scope of the claims without undue burden using their common general knowledge (see Case Law, II.C.5.4).

3.2 Claim 1 contains the following features:

(a) "*buffering, without knowledge of the available bandwidth, at a client device (200), a segment of an encoded data stream, the segment being arranged in hierarchical layers comprising a base layer segment and an enhancement layer segment*"

(b) "*receiving, at the client device (200), the segment of the encoded data stream for a prescribed time period so as to buffer the base layer segment and*

as much of the enhancement layer segment as is received up until expiry of the prescribed time period ... wherein the prescribed time period is determined at least in part by a playback time of the segment"

3.3 According to feature (b) quoted in the preceding paragraph, the complete base layer segment is received within the prescribed time period.

However, the application does not disclose how this is ensured if the bandwidth is too low to receive the base layer segment during the prescribed time period.

This is in particular true in a situation in which parameters such as the amount of data in the base layer segment and the prescribed time period cannot be adjusted to the available bandwidth, since claim 1 requires the method to work "*without knowledge of the available bandwidth*".

Also according to the description, it is not ensured that the base layer segment is received during the prescribed time period at any realistically available bandwidth. The description just sets out that the base layer segment has a very high chance of being received if the available bandwidth is greater than the bit rate of base layer segments (see description page 16, lines 10 to 20).

Therefore the board takes the view that the person skilled in the art cannot carry out the invention as defined in claim 1 over the whole scope, i.e. including any realistic base layer segment bit rates and available bandwidths.

3.4 The appellant argued that no streaming method would function if the available bandwidth were zero. This was not a realistic scenario.

The board is not convinced by this argument, because a situation in which a base layer segment bit rate is higher than the available bandwidth does occur not only if the bandwidth is zero but also at realistic bandwidth values. For example, Table 1 on page 12 of the description mentions certain bit rates. According to this table, a base layer segment coded with 1080p @ 15fps would require between 0.75 and 1.5 Mbit/s and thus a higher bandwidth value than the 0.75 Mbit/s mentioned on page 16, line 18 of the description. Even lower bandwidth values are realistic in mobile communications networks mentioned on page 2, line 28 of the description. Even higher base layer segment bit rates are possible if the base layer is coded at 30fps or at a higher spatial resolution than 1080p (e.g. the base layer being a 2K video frame and the enhancement layer representing a 4K video frame).

3.5 The appellant also argued that claim 1 was restricted to a situation in which the prescribed time period was such that the base layer segment was received within that period. The boundaries of the claim were thus clear to a potential infringer.

The board is not convinced by this argument, because whether the boundaries of the claim are clear may matter in assessing clarity but not in assessing whether the person skilled in the art can carry out the invention as defined in claim 1 over the whole scope, i.e. over all realistic values of the bandwidth, the prescribed time period and the amount of data in a base layer segment.

3.6 The appellant further argued that the person skilled in the art could modify the parameters, for example the prescribed time period, and thereby make the claimed method work without undue burden.

The board is not convinced by this argument, for the following reasons. Admittedly, the person skilled in the art observing that the current base layer segment is not received within the prescribed time period could, by trial and error, increase the prescribed time period for the next segment. However, in view of a possibly varying bandwidth, speculatively assuming a value for the prescribed time period without knowledge of the bandwidth does not ensure that the next base layer segment is received within the prescribed time period.

3.7 The appellant argued that by making the prescribed time period large enough, e.g. ten times the playback time of a segment, the base layer segment would be received within the prescribed time period and thus the method of claim 1 could be carried out by the person skilled in the art.

The board is not convinced by this argument, for the following reasons. According to claim 1, "*the prescribed time period is determined at least in part by a playback time of the segment*". The person skilled in the art would consider this wording to include that the prescribed time period is the playback time or a realistic fraction of it, such as 20% or 50% of the playback time. The person skilled in the art would not rule out such values of the prescribed time period as not obtainable in practice. Therefore the argument that by making the prescribed time period large enough, e.g.

ten times the playback time, the method of claim 1 could be carried out cannot demonstrate that the method of claim 1 can be carried out over its whole scope.

3.8 In view of the above, the board finds that claim 1 does not meet the requirements of Article 83 EPC.

4. Auxiliary request 1 - inventive step (Article 56 EPC)

4.1 The examining division identified document D1 as the closest prior art for assessing inventive step (see decision under appeal, point 2.2.1). This was not contested by the appellant, and the board agrees with this assessment.

4.2 Document D1 discloses a method of buffering, at a client device (see paragraph [0032]: "*FIG. 2 is a block diagram of a client device 200. As shown, client device 200 comprises decoder 201, combiner 202, storage 203, and transceiver 204*" and Figure 2: "*storage*" 203), a segment of an encoded data stream (see paragraph [0033]: "*Storage 203 ... is used to store I, P, and B sub-chunks*"), the segment being arranged in hierarchical layers comprising a base layer segment and an enhancement layer segment (see paragraph [0046]: "*The IP-file may look like ((II...I) (PP...P)). The (II...I) portion of the file may be referred to as first sub-chunk, and the (PP...P) portion a second sub-chunk*"), the base layer segment being decodable to a base level of reproduction quality, and the enhancement layer segment, together with the base layer segment, being decodable to an enhanced level of reproduction quality (see paragraph [0063]: "*The video can be reconstructed at lower fidelity by decoding only the base layer, or at higher fidelity by combining the base layer with one or*

more enhancement layers"), the method comprising the steps of:

receiving, at the client device, the segment of the encoded data stream (see paragraph [0047]: "*client requests the first and second sub-chunks by requesting the IP-file. However, the client can abort the download of the IP-file at any time after the I-frames have been acquired*") so as to buffer the base layer segment and as much of the enhancement layer segment as was received (see paragraph [0043]: "*only a portion of the second sub-chunk of video may be received. When this happens, the step of assembling the video by combining the first sub-chunk and the second sub-chunk of video comprises the step of combining at least part of the obtained portion of the second sub-chunk of video with the first sub-chunk of video*" and paragraph [0063]: "*If only a portion of the second sub-chunk is obtained, the client can combine the first sub-chunk and the obtained portion of the second sub-chunk*"); and

sending the buffered base layer segment and what is received of the enhancement layer segment to a decoder for decoding and output (see paragraph [0035]: "*sub-chunks that were downloaded for a particular video are stored in storage 203 and available for combiner 202. Combiner 202 simply reorganizes the sub-chunks of I frames and P/B-frames (if available) into a combined sequence of video chunk recognized by decoder 201. Decoder 201 then takes the chunk and outputs a decoded video stream*");

wherein the segment comprises data representing a plurality of frames of video data (see paragraph [0029]: "*for each temporal chunk of video, parser 102 organizes sub-chunks of I-frames and*

sub-chunks of P-frames for the chunk of video. A single chunk of video preferably spans a time duration of a small number of seconds (e.g., typically from 2 to 10 seconds)").

4.3 The subject-matter of claim 1 therefore differs from the disclosure of document D1 in that the former further specifies that:

(a) a segment of encoded video data is only received during a prescribed time period, wherein the prescribed time period is determined at least in part by a playback time of the segment

(b) each frame is represented by a base layer unit and an enhancement layer unit

4.4 These distinguishing features have the following technical effects.

(a) The reception of a segment of encoded video data is cut off after a given time period.

(b) The frame rates of base layer and enhancement layer are identical.

4.5 In view of these technical effects, the board is of the opinion that the distinguishing features are not functionally interdependent, i.e. do not mutually influence each other to achieve a technical success over and above the sum of their respective individual effects. To wait or not to wait until all data required to decode a segment is available is independent of the type of scalability, i.e. whether temporal, spatial or SNR scalability is employed for the hierarchical layers. Therefore it has to be established whether each

of the features (a) and (b) set out under point 4.3 above is separately obvious in the light of the prior art (see Case Law, I.D.9.3.2).

4.6 The appellant argued that the distinguishing features had a synergistic effect. It was only possible to cut off the reception of a segment of encoded video data after a predetermined time period because that segment was structured as a base and enhancement layer. Due to this structure, a client could display a base video with only part of it enhanced. If the segment of encoded video data had a single-layer structure, the client would have to wait until it received the entirety of the segment to make use of it (see appellant's letter dated 12 February 2025, page 4).

The board is not convinced by this argument, because the distinguishing feature (b) is not about the structure of the segment of encoded video data as a base and enhancement layer. This structure is already disclosed in document D1 (see paragraphs [0046] and [0063]). Document D1 also discloses that due to that structure the reception of a segment can be cut off after some time, and discloses how the client can make use of the base layer and what was received of the enhancement layer (see paragraphs [0043], [0048] and [0063]).

The appellant further argued that because each frame was represented by a base layer unit and an enhancement layer unit the client could make incremental use of each part of the enhancement layer to enhance each decoded base layer frame step by step. In contrast, according to document D1, the enhancement layer portions were P-frames and thus the client could only make use of them as complete frames, not partial ones.

The board is not convinced by this argument, because the ability to make incremental use of each part of the enhancement layer to enhance a base layer frame is dependent on the data structure of the enhancement layer, e.g. in the form of fine-granular scalability. However, claim 1 does not specify any particular data structure of the enhancement layer. Hence claim 1 encompasses an enhancement layer structure in which all data to enhance a base layer frame is contained in one packet and can only be used if that packet is completely received.

4.7 In view of the technical effects of the distinguishing features (a) and (b) set out under point 4.4 above, the corresponding partial objective technical problems may be formulated as follows.

(a) To choose a time at which the reception of a segment of encoded video data is cut off.

(b) To choose a scalability mode in which the frame rates of base layer and enhancement layer are identical.

4.8 Faced with the partial objective technical problem (a), the person skilled in the art would have understood from paragraph [0039] of document D1 that the maximum overall time allocated to downloading a chunk of video (split into an I-file and a P-file) was given by the value of a time threshold. According to paragraph [0040] of document D1, this time threshold was based on the time duration of a video represented by the chunk. As one option, the time threshold may be set equal to the time duration of the video chunk.

It would have been an obvious choice for the person skilled in the art to select the same time threshold as the time at which to abort the download of the IP-file containing the same I- and P-frames as the I-file and the P-file.

Thereby, the person skilled in the art would have arrived directly at the distinguishing feature (a).

4.9 The appellant referred to paragraph [0047] of document D1, according to which the client could abort the download of the IP-file "*at any time after the I-frames have been acquired*".

The appellant argued that the expression "*at any time*" meant the opposite of a "*prescribed time period*".

According to the appellant, the feature of a "*prescribed time period*" meant that this time period was "*prescribed*", i.e. independent of any events. In contrast, the time in paragraph [0047] was a time selected after an event, namely after the reception of the I-frames.

The board is not convinced by these arguments, for the following reasons. The expression "*at any time*" in paragraph [0047] means that the client has a choice in selecting this time. However, the client will not select an arbitrary time but will follow a certain strategy or algorithm to select the time. Furthermore, this strategy will be fixed and is not dependent on the actual moment when all the I-frames were received.

4.10 Faced with the partial objective technical problem (b), the person skilled in the art would have known either from common general knowledge or from document D3 that

spatial and SNR scalability were alternatives to temporal scalability (see D3, abstract: "*temporal, spatial, and SNR scalability*") and had the property that the frame rates of base layer and enhancement layer could be identical (see D3, Fig. 6 and Section B. "Spatial scalability" stating: "*as illustrated in Fig. 6, lower layer pictures do not need to be present in all access units, which makes it possible to combine temporal and spatial scalability*" and Section C. "Quality/SNR scalability" stating: "*SNR scalability can be considered as a special case of spatial scalability for which the picture sizes of base and enhancement layer are identical*").

Therefore the person skilled in the art would have replaced the temporal scalability used in document D1 by a suitable mode of either spatial or SNR scalability having the same frame rate in both the base and the enhancement layer.

4.11 The appellant argued that the person skilled in the art would not have combined the teachings of documents D1 and D3, for the following reasons.

(a) The SVC teachings of document D3 were inherently incompatible with the teachings of document D1, since D1 taught a bandwidth of 64 kbps (see statement of grounds of appeal, page 8, penultimate paragraph).

(b) SVC had no commercial take-up or success. In SVC there were very little bandwidth savings, but complex prediction chains owing to inter-layer signalling. Complex control was needed to halt drift problems (see statement of grounds of appeal, page 8, last two paragraphs).

(c) Paragraph [0063] of document D1 referred to a scalable video based on SVC. However, paragraph [0063] did not disclose downloading an enhancement layer if sufficient bandwidth was not available (see statement of grounds of appeal, page 9, penultimate paragraph).

(d) Document D3 did not teach the use of Fig. 10(a) for SVC. This figure showed an extreme example not in practical use (see statement of grounds of appeal, page 10, second paragraph).

(e) According to document D1, all reference frames were transmitted in a first sub-chunk. This was not compatible with the teaching of document D3, in which reference frames may also be present in the enhancement layer (see statement of grounds of appeal, page 10, third paragraph).

4.12 The board is not convinced by these arguments, for the following reasons.

(a) The teaching of document D1 is not limited to 64 kbps but includes other data rates more in the range of typical data rates used for SVC (see D1, paragraph [0003]: "*250 kbps, 500 kbps, and 800 kbps*" and D3, Figure 3 showing results for bit rates between 50 kbps and 700/1200 kbps).

(b) Claim 1 contains no features requiring any bandwidth savings. Furthermore, claim 1 does not contain any features related to inter-layer signalling or drift control. All claim 1 requires is a base layer segment being decodable to base level of reproduction quality, and an enhancement

layer segment, together with the base layer segment, being decodable to an enhancement level of reproduction quality. This is certainly given in SVC, which is a known standard and cited in paragraph [0063] of document D1. Therefore the board sees no reason why SVC should not be considered by the person skilled in the art.

(c) Paragraph [0063] itself does not disclose that a second sub-chunk may be requested if no sufficient bandwidth is available. However, paragraph [0039] discloses this, and the teachings of paragraph [0063] are compatible with this because they address a situation in which "*only a portion of the second sub-chunk is obtained*".

(d) According to document D3, Figure 10(a) is presented as one of the "*concepts for trading off enhancement layer coding efficiency and drift*". Since claim 1 contains no features relating to coding efficiency and drift control, the scheme of Figure 10(a) may be used as well as any other of the concepts shown in Fig. 10(b) to 10(d) of document D3.

(e) If the person skilled in the art replaces the temporal scalability of document D1 by spatial/SNR scalability, this implies that the prediction structure is changed accordingly. Hence the person skilled in the art would not derive from the prediction structure of D1 any restriction on an updated prediction structure. Furthermore, claim 1 does not contain any features requiring the base layer to contain all the reference frames.

4.13 In view of points 4.5, 4.8 and 4.10 above, the person skilled in the art would have arrived directly at the subject-matter of claim 1.

Therefore the board finds that the subject-matter of claim 1 does not involve an inventive step within the meaning of Article 56 EPC.

5. Auxiliary requests 2 and 3 - admittance (Article 12(3) and (5) RPBA)

5.1 Under Article 12(3) RPBA, the statement of grounds of appeal must contain a party's complete appeal case. Accordingly, it must set out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended or upheld, and should specify expressly all the requests, facts, objections, arguments and evidence relied on. Under Article 12(5) RPBA, the board has discretion not to admit any part of a submission by a party which does not meet the requirements in paragraph 3.

5.2 In the statement of grounds of appeal, the appellant submitted no counter-arguments to the examining division's objections raised under Article 84 EPC against claim 1 of auxiliary requests 2 and 3 (see decision under appeal, sections 3.2 and 4.2). Nor did the appellant submit counter-arguments in this respect at the oral proceedings.

5.3 Since the appellant failed to present its appeal case regarding auxiliary requests 2 and 3, the board exercises its discretion under Article 12(5) RPBA by not admitting auxiliary requests 2 and 3 into the appeal proceedings.

6. Auxiliary request 4 - added subject-matter (Article 123(2) EPC)

6.1 Claim 1 of auxiliary request 4 was amended to specify that "*wherein each enhancement layer segment unit is decodable independently from other segment units*".

6.2 The appellant referred to the description, page 20, line 24 to page 21, line 11 and Figure 5.

This passage reads: "*segment units in the base layer LOQ#0 may be encoded with inter-dependencies and need not be stand-alone independently decodable segment units ... However, it is useful to have at least one enhancement layer LOQ#1, LOQ#2 where the segment units are independently decodable in that layer, but which enhance lower segment units, especially correspondingly lower segment units in the hierarchy, such as segment units in the base layer LOQ#0. In more detail, where possible and desirable, and most commonly in enhancement layers LOQ#1, LOQ#2, each segment unit 0, 1, 2, etc. is decodable independently from other segment units. In other words, there is no inter-dependency between segment units in the same enhancement layer. In more detail, first enhancement layer segment unit 310-1-0 is decodable with its corresponding base layer unit 310-0-0 only, that is, independently from other base layer segment units, for example base layer segment unit 310-0-1, or other first or second (or further) enhancement layer segment units. Of course, it may be possible and desirable for base layer segment units themselves to be decodable independently from other base layer segment units.*"

6.3 Both this passage and Figure 5 disclose that an enhancement layer segment unit may be decoded

independently from other enhancement layer segment units. Furthermore, the enhancement layer segment unit may be decoded independently from other base layer segment units, i.e. base layer segment units other than the one representing the same frame as the enhancement layer segment unit.

However, this passage does not disclose that an enhancement layer segment unit may be decoded independently from the base layer segment unit representing the same frame as the enhancement layer segment unit.

Since the amended feature of claim 1 refers to "*each enhancement layer segment unit*", the following term "*other segment units*" can refer to other enhancement layer segment units or to other segment units in the base layer, including the base layer segment unit representing the same frame as the "*each enhancement layer segment unit*". For that last option there is no basis in the application as filed.

6.4 The appellant argued that the passage of the description referred to under point 6.2 above provided a verbatim basis for the amendment because it contained the statement: "*in enhancement layers LOQ#1, LOQ#2, each segment unit 0, 1, 2, etc. is decodable independently from other segment units*".

The board is not convinced by this argument, because the person skilled in the art would understand this statement in the given context as referring to other segment units of the same enhancement layer and not to any other segment units, including segment units of the base layer. This is due to the next sentence: "*In other words, there is no inter-dependency between segment*

units in the same enhancement layer", which rephrases the previous statement and refers only to segment units of the same enhancement layer. This is also due to the next-but-one sentence: "*In more detail, first enhancement layer segment unit 310-1-0 is decodable with its corresponding base layer unit 310-0-0 only, that is, independently from other base layer segment units, for example base layer segment unit 310-0-1, or other first or second (or further) enhancement layer segment units*", describing that an enhancement layer segment unit is decodable independently of other enhancement layer segment units and of base layer segment units representing other frames, but dependent on the base layer segment unit representing the same frame as the enhancement layer segment unit.

6.5 Therefore the board finds that claim 1 does not meet the requirements of Article 123(2) EPC.

7. Auxiliary requests 5 and 6 - admittance (Articles 13(2) and (1) RPBA).

7.1 Under Article 13(2) RPBA, any amendment to a party's appeal case made after notification of a communication under Article 15(1) RPBA will, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

The explanatory remarks on Article 13(2) RPBA also contain the following guidance: "*At the third level of the convergent approach, the Board may also rely on criteria applicable at the second level of the convergent approach, i.e. as set out in proposed new paragraph 1 of Article 13*" (see Supplementary

publication 2, OJ EPO 2020, page 60, right-hand column, fourth paragraph).

Under Article 13(1) RPBA, any amendment to a party's appeal case after it has filed its grounds is subject to the party's justification for its amendment and may be admitted only at the discretion of the board. The board is to exercise its discretion in view of, inter alia, the current state of the proceedings, the suitability of the amendment to resolve the issues raised by the board, whether the amendment is detrimental to procedural economy, and, in the case of an amendment to a patent application, whether the party has demonstrated that any such amendment, prima facie, overcomes the issues raised by the board and does not give rise to new objections.

7.2 Auxiliary requests 5 and 6 were filed after notification of the board's communication under Article 15(1) RPBA. These auxiliary requests therefore constitute amendments within the meaning of Article 13(2) RPBA.

7.3 The appellant argued that auxiliary requests 5 and 6 should be admitted into the appeal proceedings because they were a reaction to the new reasoning given in point 4.6 of the board's preliminary opinion concerning the objection of added subject-matter against claim 1 of the main request. This reasoning differed from the corresponding reasoning provided under point 1.4 of the decision under appeal.

7.4 The board acknowledges that the reasoning given in point 4.6 of its preliminary opinion differs from the corresponding reasoning provided under point 1.4 of the decision under appeal. This situation may be considered

exceptional circumstances within the meaning of Article 13(2) RPBA.

7.5 Claim 1 of auxiliary request 6 differs from claim 1 of auxiliary request 1 only in that the former further specifies a step of "*requesting, by the client device, the segment from a streaming server*".

This additional feature is disclosed by document D1, paragraph [0047], stating "*client requests the first and second sub-chunks by requesting the IP-file*". It is implicit that this request is directed to a streaming server in the same way as set out in paragraph [0038] of document D1, reading: "*transceiver 204 may request an I-file from server 100 comprising one or more I-frames (and possibly predicted frames as well)*".

Hence the amendment to claim 1 of auxiliary request 6, prima facie, does not overcome the objection of lack of inventive step raised by the board against claim 1 of auxiliary request 1 (see point 4. above).

Therefore the board does not take auxiliary request 6 into account in exercising its discretion under Article 13(2) RPBA, taking into account the criteria set out in Article 13(1) RPBA.

7.6 Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 1 in that the former further specifies the following features:

(a) "*requesting, by the client device, the segment from a streaming server*"

(b) "*monitoring, at the client device, a timer to determine an expiry of a prescribed time period*"

(c) "*up until expiry of the prescribed time period, wherein when the prescribed time period expires, no further information regarding the segment is stored in the buffer*"

(d) "*wherein if all segment layers of the segment are received and stored in buffer within the prescribed time period, then the method performs the sending, or pauses until the expiry of the prescribed time period*".

7.7 Feature (a) is disclosed in document D1 (see point 7.5 above).

Feature (c) is a mere clarification. To buffer as much of the enhancement layer segment as was received in the prescribed time period implies that, when the prescribed period expires, no further data of the enhancement layer or any other information regarding the segment is stored in the buffer.

Feature (d) is disclosed in paragraph [0035] of document D1. This paragraph discloses that downloaded sub-chunks of video (which correspond to segment layers of a segment in claim 1) are made available to a combiner. A combined video sequence or video chunk is then made available to a decoder. Hence once all the sub-chunks have been received and stored they are made available or sent to a decoder.

Feature (b) is the only feature which may be suitable to overcome the objection of lack of inventive step raised by the board against claim 1 of auxiliary request 1.

7.8 Regarding feature (b), the appellant argued that monitoring a timer to determine an expiry of a prescribed time period was not disclosed in any of the prior-art documents on file and thus could not be regarded as obvious.

The board is not convinced by this argument, because the use of a timer to determine an expiry of a time period is routine to the person skilled in the art on the basis of their common general knowledge.

7.9 Therefore the amendments to claim 1 of auxiliary request 5, prima facie, do not overcome the objection of lack of inventive step raised by the board against claim 1 of auxiliary request 1 (see point 4. above).

7.10 In view of the above, the board does not take auxiliary request 5 into account in exercising its discretion under Article 13(2) RPBA, taking into account the criteria set out in Article 13(1) RPBA.

8. Reimbursement of the appeal fee (Rule 103(1)(a) EPC)

8.1 Under Rule 103(1)(a) EPC, the appeal fee is reimbursed in full where the board deems an appeal to be allowable, if such reimbursement is equitable by reason of a substantial procedural violation.

8.2 Since the board treats the main request and auxiliary request 4 as being admitted into the proceedings by the examining division (see point 1. above), the substantial procedural violation invoked by the appellant does not have an impact.

8.3 Moreover, since the board finds that neither the main request nor any of the auxiliary requests are to be

admitted, to be taken into account or allowable (see points 3. to 7. above), the criterion for reimbursement that the appeal is allowable is not met.

8.4 Therefore the board refuses the request for reimbursement of the appeal fee.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

2. The request for reimbursement of the appeal fee is refused.

The Registrar: The Chair:

K. Boelicke B. Willems

Decision electronically authenticated