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# Datasheet for the decision of 19 December 2023

**Case Number:** T 1010/19 - 3.5.04

**Application Number:** 14803921.7

**Publication Number:** 3005708

**IPC:** H04N21/2343, H04N21/23, H04N21/433, H04L29/06, H04N21/2743, H04N21/432, H04N21/436, H04N21/63

**Language of the proceedings:** EN

**Title of invention:**
METHODS AND APPARATUSES FOR STREAMING CONTENT

**Applicant:**
Western Digital Technologies, Inc.

**Headword:**

**Relevant legal provisions:**
EPC Art. 56

**Keyword:**
Inventive step - main request (no) - first auxiliary request (no) - second auxiliary request (no)

**Decisions cited:**

**Catchword:**

Europäisches Patentamt
European Patent Office
Office européen des brevets

**Beschwerdekammern**

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**Case Number: T 1010/19 - 3.5.04**

# D E C I S I O N
# of Technical Board of Appeal 3.5.04
# of 19 December 2023

| | |
|---|---|
| **Appellant:** (Applicant) | Western Digital Technologies, Inc.<br>3355 Michelson Dr., Suite 100<br>Irvine, CA 92612 (US) |
| **Representative:** | Murgitroyd & Company<br>Murgitroyd House<br>165-169 Scotland Street<br>Glasgow G5 8PL (GB) |
| **Decision under appeal:** | **Decision of the Examining Division of the European Patent Office posted on 11 October 2018 refusing European patent application No. 14803921.7 pursuant to Article 97(2) EPC.** |

**Composition of the Board:**

| | |
|---|---|
| **Chair** | B. Willems |
| **Members:** | F. Sanahuja |
| | T. Karamanli |

## Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse European patent application No. 14 803 921.7.

II. The following document was cited in the decision under appeal:

D1 US 2011/0164686 Al

III. The application was refused on the grounds that the subject-matter of claims 1 and 7 of the then main request and claims 1 and 6 of the then auxiliary request lacked inventive step over the disclosure of document D1 combined with the common general knowledge of the person skilled in the art (Article 56 EPC).

IV. The applicant (appellant) filed notice of appeal. With its statement of grounds of appeal, the appellant filed claims of a main request and first and second auxiliary requests and submitted that the main request and the first auxiliary request corresponded to the main request and the auxiliary request on which the decision under appeal was based. It provided arguments to support its opinion that the subject-matter of the independent claims of each request was new and involved an inventive step.

V. A summons to oral proceedings was issued on 25 July 2022. In a communication under Article 15(1) RPBA 2020, the board introduced the following document into the appeal proceedings on the basis of Article 114(1) EPC:

D10 US 2004/0213273 A1

and gave the preliminary opinion that, *inter alia*, the subject-matter of claims 1 and 7 of the main request and claims 1 and 6 of the first and second auxiliary requests lacked inventive step over the disclosure of document D1 combined with document D10 and the common general knowledge of the person skilled in the art (Article 56 EPC).

VI. On 19 December 2023, the board held oral proceedings using videoconferencing technology.

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 alternatively, the first or second auxiliary request, all requests filed with the statement of grounds of appeal.

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

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

"A method for a media player (180) to stream content including a base layer (110) and an enhancement layer (120), the method comprising:

using a Network Attached Storage, NAS, (170) to download the enhancement layer (120, 121) via the internet for storage on the NAS (170), wherein the NAS (170) is local storage in wireless communication with the media player (180) through a local area network (190);

fetching a first stream comprising the base layer (110) from an internet server (160) storing the base layer (110);

fetching, over the local area network, a second stream comprising the enhancement layer (120) from the NAS (170) storing the enhancement layer (120);

combining, at a re-multiplexer, the first stream comprising the base layer (110) and the second stream comprising the enhancement layer (120) into a layered data stream; and

decoding, at a decoder, the layered data stream to render the content."

VIII. Claim 1 of the **first auxiliary request** reads as follows:

"A method for a media player (180) to stream content including a base layer (110) and an enhancement layer (120), the method comprising:

downloading from a trickle down server (230) via the internet, the enhancement layer for storage on a Network Attached Storage, NAS, (170), wherein the NAS (170) is local storage in wireless communication with the media player (180) through a local area network (190);

streaming a first stream comprising the base layer (110) from an internet server (160) storing the base layer (110);

streaming, over the local area network, a second stream comprising the enhancement layer (120) from the NAS (170) storing the enhancement layer (120);

combining, at a re-multiplexer, the first stream comprising the base layer (110) and the second stream comprising the enhancement layer (120) into a layered data stream; and

decoding, at a decoder, the layered data stream to render the content,

wherein the trickle down server (230) is separate from the internet server storing the base layer (110), and wherein the step of downloading occurs before the step of streaming the first stream."

IX. Claim 1 of the **second auxiliary request** differs from claim 1 of the first auxiliary request in that the combining step is defined as follows (with additions underlined):

"during streaming of the first stream and the second stream, combining, at a re-multiplexer, the first stream comprising the base layer (110) and the second stream comprising the enhancement layer (120) into a layered data stream; and"

## Reasons for the Decision

1. The appeal is admissible.

2. *The invention*

The invention relates to streaming content (e.g. video) using a base layer and an enhancement layer. A base layer normally comprises a basic quality version of content. An enhancement layer, combined with the base layer, provides an improved quality version.

To avoid the negative effects that network congestion may have on streaming, a network-attached storage (NAS) in the local area network (LAN) of a media player downloads the enhancement layer in advance of playback. To play the content, the media player fetches the base layer from an internet server and the enhancement layer from the NAS, combines them and decodes the resulting stream for rendering.

3. *Disclosure of document D1*

3.1 Document D1 discloses transmitting an enhancement layer stream to an end-user terminal (e.g. a set-top box, STB) for storage in local memory ahead of playback (see paragraph [0023]). At the time of viewing, the end-user terminal receives a base layer stream, re-synchronises and combines it with the stored enhancement layer stream for decoding and presentation (see paragraph [0023]).

3.2 D1 additionally describes that any suitable means for storage and read out could be used for the base and enhancement layer streams (see paragraph [0021]). First and second servers could be provided for respectively

storing and transmitting base and enhancement layers to the end-user terminal (see paragraph [0022]).

4. *Main request - inventive step (Article 56 EPC)*

4.1 An invention is to be considered to involve an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art (Article 56 EPC).

4.2 Document D1 discloses a method for a media player to stream content including a base layer and an enhancement layer (see paragraph [0021], "*[t]he enhancement layer stream 226 may be sent to STB 250 at the time of encoding, whereas the base layer stream 224 ... is sent later in time ... at viewing time*"), the method comprising:

- fetching a first stream comprising the base layer from an internet server storing the base layer (paragraph [0021], "*the base layer stream 224 ... is sent later in time ... at viewing time*")

- fetching a second stream comprising the enhancement layer (see paragraph [0023], "*the enhancement layer stream 226 will be received at an earlier time than the base layer stream 224 ... [and] will be stored in memory 257 until it is time to combine the two streams at 255 for decoding by SVC decoder 259*")

- combining, at a re-multiplexer, the first stream comprising the base layer and the second stream comprising the enhancement layer into a layered data stream (see paragraph [0023], "*STB 250 re-synchronizes and combines the two streams*" and paragraph [0038], "*The base layer NALU(s) and the matching enhancement*

*layer NALU(s) are combined at 550, i.e., properly sequenced based on their timing information*")

- decoding, at a decoder, the layered data stream to render the content (see paragraph [0023], "*STB 250 re-synchronizes and combines the two streams for decoding and generates therefrom video 265 for presentation by display device 270*")

4.3 It is common ground that document D1 does not disclose the following features of claim 1 (see section 3.5 of the statement of grounds of appeal):

(a) using a NAS to download the enhancement layer via the internet for storage on the NAS, wherein the NAS is local storage in wireless communication with the media player through a LAN

(b) fetching, over the LAN, a second stream comprising the enhancement layer from the NAS storing the enhancement layer

4.4 In addition, the appellant contested that document D1 disclosed:

(c) combining, at a re-multiplexer, the first stream comprising the base layer and the second stream comprising the enhancement layer into a layered data stream

4.4.1 The appellant acknowledged that document D1 disclosed completely transmitting the enhancement layer stream to the end-user terminal and storing it there. However, the enhancement layer stream ceased to exist once it was stored. Stored data no longer constituted a data stream in the usual meaning of the term, i.e. a

sequence of data packets transmitted over a network. Combining base and enhancement layer streams in claim 1 required the simultaneous transmission of the two layers (see the paragraph bridging pages 4 and 5, the second to fifth paragraphs on page 6, the last full paragraph on page 7 and the third paragraph in section 5.1 of the statement of grounds of appeal). At the oral proceedings, the appellant pointed to paragraph [0044] of D1 to support its opinion that this document combined a base layer stream with stored data as opposed to combining it with another stream.

4.4.2 The board is of the view that the stored enhancement layer stream of D1 can be regarded as a stream within the usual meaning of the term. This is the case because document D1 explicitly combines the base and enhancement layer **streams**, even if the latter is stored (see e.g. paragraph [0023]). This demonstrates that the term "stream" has a broad meaning in the context of content transmission and storage.

Moreover, claim 1 does not define fetching or receiving the two streams at the same time, and the description does not elaborate on this aspect either. In addition, the subject-matter of claim 1 does not exclude receiving, at the media player, the base and enhancement layers at different times.

4.4.3 However, for the sake of expedience, the board interprets the subject-matter of claim 1 according to the appellant's view summarised in point 4.4.1 above.

4.5 The distinguishing feature of using a NAS for storing the enhancement layer enables, among other things, reproducing an increased number of programmes in high resolution at the end-user terminal.

Thus, the objective technical problem may be formulated as how to increase the number of high-resolution programmes that the end-user terminal of document D1 can reproduce.

4.6 The appellant was of the view that distinguishing features (a) to (c) solved a different objective technical problem.

4.6.1 The appellant submitted at the oral proceedings that fetching the second stream from the NAS enabled efficiently combining a pre-downloaded enhancement layer with a base layer in contrast to the laborious matching process in D1, which led to overhead and latency (see also the first full paragraph on page 8 of the statement of grounds of appeal).

4.6.2 In the board's view, the appellant has not demonstrated that generally combining two streams simultaneously received at a re-multiplexer is more efficient than the process described in D1.

For instance, receiving a stream may require reordering its packets since there is no guarantee that the packets arrive in order. In D1, this step is not necessary for the enhancement layer since its samples (data for a single picture) are stored in decoding order (see paragraph [0029]).

Even when receiving two streams at the same time, their samples must also be matched and properly sequenced based on their timing information as in D1.

Therefore, the efficiency of combining or synchronising data from two streams depends on the sorting and

matching strategies. However, neither claim 1 nor the description specify any implementation details.

4.6.3 At the oral proceedings, the appellant also submitted that the objective technical problem identified in its statement of grounds of appeal had been defined with respect to storing the enhancement layer on a separate server. The appellant argued that if the enhancement layer had been stored in memory in the end-user device, the distinguishing features increased the range of devices to which the base layer and enhancement layer streams could be presented. The objective technical problem should thus be formulated as to broaden the range of end-user devices in which logically separated steams could be received for recombination.

4.6.4 The board considers that this problem is formulated too broadly. The objective technical problem should be formulated in view of the technical effect of the distinguishing features.

The person skilled in the art faced with this problem would have been confronted with modifying all sorts of technical characteristics of end-user devices that are unrelated to the distinguishing features, in particular to the storage of enhancement layer streams in a NAS, and thus to their technical effect. To deliver logically separated streams for reception and recombination to more end-user devices, the person skilled in the art would have had to assess, for example, changes to delivery protocols, physical delivery channels, coding schemes, coding resolutions and end-user device capabilities, among other things. None of these aspects is related to the distinguishing features.

4.6.5 In these circumstances, the board sees no reason to depart from its formulation of the objective technical problem set out in point 4.5 above.

4.7 The board is of the view that the person skilled in the art would have arrived at the disclosure of document D10 when seeking to increase the number of high-resolution programmes that the end-user terminal of document D1 could reproduce in the related art. This document acknowledges that as the storage required per programme increases, the user must store fewer programmes (see paragraph [0008]). Thus, the storage capacity of an end-user terminal may be a limiting factor.

Document D10 proposes storing programme content in a NAS (see e.g. paragraph [0036]). At playback time, the NAS streams a stored programme to a playback device in real time over a wireless LAN (see e.g. paragraphs [0036] and [0043]).

The person skilled in the art would have immediately considered downloading and storing programme content in a NAS and streaming it at playback time as suggested by document D10 to increase the number of high-resolution programmes available to the end-user terminal of document D1. This would have required replacing or supplementing the storage/memory for storing the enhancement layer streams of the end-user terminal of D1 with a NAS, streaming the enhancement layer at the time of playback and multiplexing it with the base layer stream. These adaptations are well within the skills of the average practitioner. Hence, the person skilled in the art would have arrived at the

subject-matter of claim 1 without having to employ any inventive skill.

4.8 The appellant contested that the person skilled in the art would have arrived at the subject-matter of claim 1 and submitted the following arguments at the oral proceedings.

(a) Document D1 did not suggest discarding the local storage. The number of high-resolution programmes could be increased in several ways, for example, by compressing the enhancement layer more efficiently or providing more storage internally in the end-user terminals. Adding a NAS was an additional technical step. Providing a software upgrade would be more preferential to a user.

(b) The person skilled in the art would not consider document D10 because it disclosed that the complete programme content was stored in the NAS, not just the enhancement layer.

4.8.1 The board notes that in connection with the obviousness of a solution chosen from various possibilities, it is sufficient that the solution chosen is obvious, and it is not necessarily relevant that there are several other possible solutions (see Case Law of the Boards of Appeal of the European Patent Office, 10th edition, 2022, I.D.9.21.9 b)).

Thus, whether the possible solutions listed by the appellant (see point 4.8(a) above) would have been easier to implement or preferred by a user is inconsequential to the assessment of inventive step. The relevant question is whether the claimed solution would have been obvious to the person skilled in the

art having regard to the state of the art. The board is of the view that this is the case for the reasons set out in point 4.7 above.

4.8.2 The board accepts the appellant's argument that the NAS of document D10 is configured to store the complete programming content (see point 4.8(b) above). However, the person skilled in the art would have been merely looking to increase the number of high-resolution programmes that the end-user terminal of document D1 could reproduce while maintaining the advantages of delivering the base and enhancement layer streams to the end-user terminal at different times. Thus, in the NAS they would have stored only the stream delivered in advance, i.e. the enhancement layer.

4.9 In view of the above, the subject-matter of claim 1 lacks inventive step over the disclosure of document D1 combined with document D10 and the common general knowledge of the person skilled in the art (Article 56 EPC).

5. *First auxiliary request - inventive step (Article 56 EPC)*

5.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request in that:

(a) the enhancement layer stream is downloaded onto the NAS from a trickle down server separate from the internet server storing the base layer

(b) downloading occurs before the step of streaming the first (base layer) stream

(c) base and enhancement layer streams are streamed to the media player instead of being fetched

5.2 Using different servers for streaming the base layer stream and for downloading the enhancement layer stream (as in feature (a)) is disclosed in document D1 (see paragraph [0022], first and last sentences).

The board cannot identify any technical characteristics of a trickle down server that would distinguish it from the generic download server of D1. Thus, the appellant's argument that a trickle down server allowed downloading the enhancement layer at a lower rate than would be required for streaming is not convincing (see the paragraph bridging pages 10 and 11 of the statement of grounds of appeal).

5.3 Feature (b) is disclosed in document D1 (see e.g. paragraph [0023]), as acknowledged by the appellant in the statement of grounds of appeal (see e.g. the paragraph bridging pages 4 and 5).

5.4 The board already considered amended feature (c) in the assessment of inventive step for claim 1 of the main request (see points 4.4, 4.5 and 4.7 above).

5.5 Hence, in view of points 5.1 to 5.4 above, the assessment of inventive step for claim 1 of the main request in section 4. above equally applies to claim 1 of the first auxiliary request. Therefore, the subject-matter of claim 1 of the first auxiliary request lacks inventive step (Article 56 EPC).

6. *Second auxiliary request - inventive step (Article 56 EPC)*

6.1 Claim 1 of the second auxiliary request has been amended compared to claim 1 of the first auxiliary request to specify combining the first (base layer) and second (enhancement layer) streams "*during streaming of the first stream and the second stream*".

6.2 The board interpreted the subject-matter of claim 1 of the main request and the first auxiliary request as including the amended feature (see points 4.4 to 4.4.3 and section 5. above).

6.3 The appellant submitted that the amended feature implicitly defined combining the two streams in real time without - or with minimal - buffering.

The appellant's arguments are not convincing. Firstly, claim 1 does not specify timing or buffering requirements for combining base and enhancement layer streams. Thus, neither of these features is regarded as implicitly defined in the subject-matter of claim 1.

In addition, since there is no guarantee that the packets of each stream arrive in order or that matching packets of base and enhancement layer streams arrive simultaneously, the board doubts that combining streams without buffering may be achieved.

6.4 Therefore, the subject-matter of claim 1 of the second auxiliary request lacks inventive step for the same reasons as the subject-matter of claim 1 of the first auxiliary request (Article 56 EPC).

7. *Conclusion*

7.1 Since the main request and the auxiliary requests are not allowable, the appeal is to be dismissed.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar: The Chair:

K. Boelicke B. Willems

Decision electronically authenticated