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**Datasheet for the decision  
of 20 June 2024**

**Case Number:** T 0179/21 - 3.5.04

**Application Number:** 10743990.3

**Publication Number:** 2400763

**IPC:** H04N19/176, H04N19/122,  
H04N19/61, H04N19/103,  
H04N19/14

**Language of the proceedings:** EN

**Title of invention:**

VIDEO ENCODING METHOD FOR ENCODING DIVISION BLOCK, VIDEO  
DECODING METHOD FOR DECODING DIVISION BLOCK, AND RECORDING  
MEDIUM FOR IMPLEMENTING THE SAME

**Applicant:**

Korea Advanced Institute of Science and Technology  
Korean Broadcasting System

**Headword:**

**Relevant legal provisions:**

EPC Art. 56, 123(2)  
RPBA 2020 Art. 12(6), 13(2)

**Keyword:**

Main request - inventive step (no)

Auxiliary request 1 - error in use of discretion at first instance (no)

Auxiliary request 2 - should have been submitted in first-instance proceedings (yes)

Auxiliary request 3 - added subject-matter (yes)

Auxiliary request 4 - exceptional circumstances (no), should have been submitted in first-instance proceedings (yes)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
**Chambres de recours**

Boards of Appeal of the  
European Patent Office  
Richard-Reitzner-Allee 8  
85540 Haar  
GERMANY  
Tel. +49 (0)89 2399-0  
Fax +49 (0)89 2399-4465

Case Number: T 0179/21 - 3.5.04

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.04**  
**of 20 June 2024**

**Appellant:** Korea Advanced Institute of Science and  
(Applicant 1) Technology  
373-1 Gusung-dong  
Yuseong-gu  
Daejeon 305-701 (KR)

**Appellant:** Korean Broadcasting System  
(Applicant 2) 18 Bun-Ji Yeouido-dong  
Yeongdeugpo-gu  
Seoul 150-790 (KR)

**Representative:** Vossius & Partner  
Patentanwälte Rechtsanwälte mbB  
Siebertstrasse 3  
81675 München (DE)

**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 8 October 2020  
refusing European patent application  
No. 10743990.3 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chair** B. Willems  
**Members:** F. Sanahuja  
B. Müller

## Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse European patent application No. 10 743 990.3.

II. The documents cited in the decision under appeal included the following:

D3 CA 2 659 351 A1

D5 S. Ma et al., "*High-definition Video Coding with Super-macroblocks*", Proc. SPIE-IS&T Electronic Imaging, SPIE vol. 6508, 650816, 29 January 2007, XP030081117, DOI: 10.1117/12.707582

1.1 The application was refused on the following grounds:

(a) The subject-matter of claim 1 of the main request and of auxiliary request 3 lacked inventive step over the disclosure of document D3 combined with the disclosure of document D5 and the common general knowledge of the person skilled in the art (Article 56 EPC).

(b) Auxiliary requests 1, 1a, 2 and 4 were not admitted into the proceedings under Rule 137(3) EPC.

(c) The subject-matter of claim 1 of auxiliary request 3 extended beyond the content of the application as filed (Article 123(2) EPC).

III. The applicant (appellant) filed notice of appeal. With its statement of grounds of appeal, the appellant filed a main request and auxiliary requests 1 to 3 and

provided arguments to support its opinion that the subject-matter of claim 1 of each of the requests was new and involved an inventive step, and that the subject-matter of claim 1 of auxiliary requests 1 and 3 met the requirements of Article 123(2) EPC. The appellant supported its arguments by referring to document D7.

IV. The appellant was summoned to oral proceedings. In a communication under Article 15(1) RPBA the board introduced document

D6 G. Sullivan et al., "*Editors' Text for ISO/IEC 14496-10:2005 (AVC 3rd Edition)*", Motion Picture Expert Group of ISO/IEC JTC1/SC29/WG11, 72nd MPEG Meeting, Busan, KR, 18 to 22 April 2005, N7081, 10 August 2005

into the proceedings and gave the following preliminary opinion.

(a) The subject-matter of claim 1 of the main request and of auxiliary request 3 lacked inventive step over the combined disclosures of documents D3 and D5 (Article 56 EPC).

(b) The board was minded not to admit auxiliary requests 1 and 2 into the appeal proceedings (Article 12(6) RPBA).

(c) Claim 1 of auxiliary request 3 did not meet the requirements of Article 123(2) EPC.

V. With its reply dated 21 May 2024 the appellant filed an amended set of claims according to auxiliary request 4. It provided arguments to counter the objections raised by the board under Articles 56 and 123(2) EPC and

submitted reasons why auxiliary requests 1, 2 and 4 should be admitted into the proceedings.

VI. On 20 June 2024, the board held oral proceedings as requested by the appellant.

VII. The appellant's final requests were that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to the main request filed with the statement of grounds of appeal or, alternatively, according to one of auxiliary requests 1 to 3 filed with the statement of grounds of appeal or auxiliary request 4 filed with the letter dated 21 May 2024.

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

*"A method for video encoding, the method comprising:*

*dividing a coding unit block into four of first sub-blocks;*

*dividing at least one of the first sub-blocks within the coding unit block into four of second sub-blocks,*

*wherein a prediction mode for each of the second sub-blocks has intra prediction mode or inter prediction mode;*

*performing prediction on each of the first sub-blocks, which are not further divided, according to a prediction mode for the each of the first sub-blocks,*

*wherein the prediction mode for each of the first sub-blocks, which are not further divided, has intra prediction mode or inter prediction mode;*

*performing prediction on the each of the second sub-blocks according to the prediction mode for the each of the second sub-blocks;*

*transforming at least one of the first sub-blocks which are not further divided; and*

*transforming the at least one of the second sub-blocks; wherein the performing prediction on each of the first sub-blocks, which are not further divided, includes performing intra prediction on a first sub-block, which is not further divided, having the intra prediction mode and performing inter prediction on a first sub-block, which is not further divided, having the inter prediction mode,*

*wherein the performing prediction on the each of the second sub-blocks according to the prediction mode for the each of the second sub-blocks includes performing intra prediction on a second sub-block having the intra prediction mode and performing inter prediction on a second sub-block having the inter prediction mode,*

*wherein the coding unit block is a square block of a larger size than a size of 16x16,*

*wherein at least one of variable block-size transform kernels is used for transforming at least one of the sub-blocks,*

*wherein a size of the at least one of variable block-size transform kernels is defined by a number of vertical pixels and a number of horizontal pixels of the at least one of variable block-size transform kernels;*

*wherein a size of the at least one of the sub-blocks is defined by a number of vertical pixels and a number of horizontal pixels of the at least one of the sub-blocks; and*

*wherein the at least one of variable block-size transform kernels is a square transform kernel with a number of vertical pixels and of horizontal pixels that is smaller than the smaller one of the number of vertical pixels and the number of horizontal pixels of the at least one of the sub-blocks."*

- IX. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the text after the phrase "the coding unit block is a square block of a larger size than a size of 16x16" has been amended as follows (additions underlined and deletions ~~struck through~~):

"wherein variable block-size transform kernels are selectively applied through the coding unit block and the sub-blocks according to the sizes of the blocks,

— wherein, for a sub-block, a variable block-size transform kernel is applied having a size smaller than the size of the sub-block,

~~wherein at least one of variable block-size transform kernels is used for transforming at least one of the sub-blocks,~~

*wherein a size of the at least one of variable block-size transform kernels is defined by a number of vertical pixels and a number of horizontal pixels of the at least one of variable block-size transform kernels;*

wherein a size of the at least one of the sub-blocks is defined by a number of vertical pixels and a number of horizontal pixels of the at least one of the sub-blocks; and

~~wherein the at least one of variable block size transform kernels is a square transform kernel with a number of vertical pixels and of horizontal pixels that is smaller than the smaller one of the number of vertical pixels and the number of horizontal pixels of the at least one of the sub blocks."~~

- X. Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that the text after the phrase "the coding unit block is a square block of a larger size than a size of 16x16" has been amended as follows (additions underlined and deletions ~~struck through~~):

"wherein variable block-size transform kernels are selectively applied through the coding unit block and the sub-blocks according to the sizes of the blocks,

~~wherein, for a sub block, a variable block size transform kernel is applied having a size smaller than the size of the sub block,~~

wherein a size of the at least one of variable block-size transform kernels is defined by a number of vertical pixels and a number of horizontal pixels of the at least one of variable block-size transform kernels;

wherein a size of the at least one of the sub-blocks is defined by a number of vertical pixels and a number of

*horizontal pixels of the at least one of the sub-blocks; and*

*wherein one of the variable block-size transform kernels is a square transform kernel with a number of vertical pixels and of horizontal pixels that is smaller than the smaller one of the number of vertical pixels and the number of horizontal pixels of the at least one of the sub-blocks.*"

- XI. Claim 1 of auxiliary request 3 differs from claim 1 of the main request in that the text after the phrase "*the coding unit block is a square block of a larger size than a size of 16x16*" has been amended as follows (additions underlined and deletions ~~struck through~~):

*"wherein at least one of variable block-size transform kernels is used for transforming at least one of the sub-blocks,*

*wherein a size of the at least one of variable block-size transform kernels is smaller than the size of the at least one of the sub-blocks,*

*wherein a size of the at least one of variable block-size transform kernels is defined by a number of vertical pixels and a number of horizontal pixels of the at least one of variable block-size transform kernels;*

*wherein a size of the at least one of the sub-blocks is defined by a number of vertical pixels and a number of horizontal pixels of the at least one of the sub-blocks,*

*wherein at least one of the first sub-blocks, which are*

not further divided, is transformed by applying a first transform kernel,

wherein at least one of the second sub-blocks is transformed by applying a second transform kernel,

wherein a size of the first transform kernel is smaller than the size of the each of the first sub-blocks, and

wherein a size of the second transform kernel is smaller than the size of the each of the second sub-blocks; and

~~wherein the at least one of variable block-size transform kernels is a square transform kernel with a number of vertical pixels and of horizontal pixels that is smaller than the smaller one of the number of vertical pixels and the number of horizontal pixels of the at least one of the sub-blocks."~~

- XII. Claim 1 of auxiliary request 4 differs from claim 1 of the main request in that the following phrase has been amended as follows (additions underlined):

"wherein the at least one of variable block-size transform kernels is a non-square transform kernel with a number of vertical pixels and of horizontal pixels that is equal or smaller than the smaller one of the number of vertical pixels and the number of horizontal pixels of the at least one of the sub-blocks."

### **Reasons for the Decision**

1. The appeal is admissible.

2. *The invention*

The invention relates to video coding. An image to be encoded is divided into multiple blocks or coding unit blocks. Each coding unit block may be further divided into four first sub-blocks, and each of the first sub-blocks may be further divided into four second sub-blocks for prediction. Each sub-block may be predicted from neighbouring pixels (intra prediction) or images (inter prediction).

A difference image is obtained by subtracting the predicted image from pixel data of the original image. The difference image is then divided into transform blocks and transformed using a variable block-size transform kernel.

The transform block is a square or non-square block whose size is smaller than the smaller one of the number of horizontal and vertical pixels of the prediction sub-blocks.

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

3.1 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).

3.2 The examining division identified document D3 as the closest prior art for the assessment of inventive step (see point 16.1 of the decision under appeal). The appellant did not dispute this, and the board considers that this document is a suitable starting point for the

assessment of inventive step of the subject-matter of claim 1.

3.3 It is undisputed that document D3 does not anticipate the following features of claim 1 (see point 16.5 of the decision under appeal and section II.2.1 of the statement of grounds of appeal):

(a) the size of the coding unit block is larger than 16x16

(b) the at least one of variable block-size transform kernels is a square transform kernel with a number of vertical pixels and of horizontal pixels that is smaller than the smaller one of the number of vertical pixels and the number of horizontal pixels of the at least one of the sub-blocks

3.3.1 According to the appellant (see section II.2.1 of the statement of grounds of appeal), claim 1 comprised other distinguishing features because document D3 did not disclose:

(c) performing prediction on each of the first sub-blocks including performing intra prediction on a first sub-block having the intra prediction mode and performing inter prediction on a first sub-block having the inter prediction mode

(d) performing prediction on each of the second sub-blocks including performing intra prediction on a second sub-block having the intra prediction mode and performing inter prediction on a second sub-block having the inter prediction mode

(e) using a variable block-size transform

- 3.4 The appellant argued that features (c) and (d) allowed switching between intra and inter prediction encoding at each of first and second sub-blocks of a coding unit block (see first paragraph on page 12 of the statement of grounds of appeal).

Document D3, in particular page 58, lines 17 to 25, provided a general disclosure for switching between intra and inter prediction coding at different block sizes, but did not disclose when that switching occurred within a coding unit block. Thus it could not anticipate a coding unit block including a mix of intra and inter predicted sub-blocks, i.e. a coding unit block which mandatorily includes both intra and inter predicted sub-blocks.

- 3.4.1 The board considers that features (c) and (d) define performing intra or inter prediction coding on different first sub-blocks in a coding unit block, depending on the first sub-blocks "having the intra prediction mode" or "having the inter prediction mode". The same applies to two different second sub-blocks. This is disclosed in document D3, as set out in the decision under appeal (see point 16.3).
- 3.4.2 Document D3 discloses partitioning a 16x16 pixel block (macroblock/coding unit block) into four 8x8 pixel blocks or first sub-blocks. Similarly, partitioning a first sub-block creates four 4x4 pixel blocks or second sub-blocks (see, for instance, Figure 3C and page 15, lines 10 to 15). Thus, document D3 anticipates the hierarchical structure of the claimed first and second sub-blocks. Further, as acknowledged by the appellant (see last paragraph on page 11 and first figure on

page 12 of the statement of grounds of appeal), document D3 teaches that switching between intra and inter prediction encoding may be performed in units of 8x8 pixel blocks (see page 58, lines 17 to 23).

- 3.4.3 In the board's view, the disclosure of D3 and features (c) and (d) have to be interpreted in the same manner: when an intra or inter prediction mode has been selected for a sub-block, then the sub-block is coded performing the selected prediction. The selection of a prediction mode depends, both in the application and in D3, on rate-distortion optimisation algorithms. Hence, the selection of a prediction mode depends on the visual content of the video to be encoded in both cases.

Therefore, by disclosing first and second sub-blocks, enabling switching between prediction modes at blocks of 8x8 pixels, and selecting an intra or an inter prediction mode for first sub-blocks and groups of second sub-blocks depending on the content of the video, document D3 anticipates features (c) and (d).

- 3.5 For the sake of argument, the board accepts in the appellant's favour that document D3 does not disclose feature (e).
- 3.6 Both the examining division and the appellant considered that the distinguishing features achieved the technical effect and solved the technical problem of improving the coding efficiency for high-resolution video (see points 16.5 and 16.6 of the decision under appeal and last paragraph in point II.2.2 of the statement of grounds of appeal).

- 3.6.1 The board finds that the problem has to be formulated in less ambitious terms, as determined by the effect of each of the distinguishing features of the claim.
- 3.6.2 Feature (a) does indeed address the properties of high-resolution video. Thus, it may contribute to adapting the H.264 video coding standard to the characteristics of high-resolution video.
- 3.6.3 The set of features (b) and (e) allows the energy compaction of a block's residual data in the transform domain to be increased (see point II.2.2 of the statement of grounds of appeal). Thus, the problem can be formulated as how to increase the energy compaction of a block's residual data in the transform domain.
- 3.6.4 In view of points 3.6.2 to 3.6.3 above, feature (a) and the set of features (b) and (e) amount to measures which may be implemented in an entirely independent way to solve unrelated problems. They do not mutually influence each other to achieve a technical success over and above the sum of their respective individual effects. Thus, it is to be established whether each set of features is separately obvious in the light of the state of the art (see Case Law of the Boards of Appeal of the European Patent Office, 10th edition, 2022, "Case Law", I.D.9.3.2).
- 3.7 The appellant submitted that larger coding blocks led to residuals in the block which were more distributed. The distinguishing features improved coding efficiency by transforming only non-zero residuals using suitable sizes of the transform kernels. Hence, all the distinguishing features synergistically contributed to achieving the technical effect of improving coding efficiency.

It is not apparent to the board that larger coding blocks generate more distributed residuals, as the residual depends on the visual content of the video and the prediction method used. Moreover, claim 1 does not define any features for identifying non-zero residuals and selectively transforming them. Hence, the appellant has not convinced the board that the two groups of distinguishing features contribute to achieving a technical effect over and above the sum of their individual technical effects.

- 3.8 The appellant also argued that the formulation of the objective technical problem solved by the set of features (b) and (e) included a pointer to the solution.

The objective technical problem should be one which the skilled person knowing only the prior art would wish to solve. In most cases it can be formulated as how to achieve the technical effect (see Case Law, I.D.4.2 and I.D.4.2.1).

The board considers that compacting the energy of a block's residual data in the transform domain into a reduced number of coefficients is a fundamental principle of video coding. Thus, at the time of priority of the present application, it was an objective known to the person skilled in the art. Therefore, formulating a partial objective problem as how to improve this fundamental principle cannot be regarded as including a pointer to the solution.

- 3.9 With regard to the adaptation of the H.264 video coding standard to the characteristics of high-resolution video (feature (a)), the board agrees with the

examining division that the person skilled in the art would arrive at document D5, which addresses this problem by, among other measures, increasing the block size to 32x32 pixels (see abstract, lines 1 to 3 and first paragraph in section 3). The person skilled in the art would thus have incorporated the larger block size in the method of D3 using only ordinary skill.

- 3.10 Regarding the problem of increasing the energy compaction of a block's residual data in the transform domain (set of features (b) and (e)), the board also concurs with the examining division that document D5 discloses the use of variable square transform kernels for transforming the sub-blocks, with at least one of the square transform kernels being smaller than one of the sub-blocks (see points 16.9 and 16.10 of the decision under appeal).

The method of document D5 may partition a block of 32x32 pixels into sub-blocks down to 4x4 and use transform kernel sizes of 4x4, 8x8 and 16x16 pixels (see Figure 1 on page 4 and Table 1 on page 9). The optimal mode (the partition of a block into sub-block sizes, see Figure 1) and the transform kernel size are selected on the basis of rate-distortion optimisation algorithms (see first paragraph in section 2.2. and last paragraph in section 3). Hence, the transform size is not uniquely coupled to the mode.

- 3.10.1 The appellant contested that the person skilled in the art would have considered document D5 in order to increase the energy compaction of a block's residual data in the transform domain. The teaching of D5 was to introduce a larger coding unit.

However, the disclosure of document D5 is not limited to a larger coding unit. It also proposes an additional larger transform kernel and selecting a transform kernel size based on rate-distortion optimisation (see second and last paragraphs in section 3). Document D5 thus teaches evaluating the coding efficiency of different transform kernels, i.e. their capability of compacting the energy of the residual data. The board considers that the person skilled in the art would recognise that such a selection of a transform kernel addresses the problem of increasing the energy compaction of a block's residual data in the transform domain.

3.10.2 The appellant submitted that the adaptive block transform (ABT) row in Table 1 in section 5 of D5 did not disclose a variable block-size transform kernel for a sub-block. Instead, a predetermined size of the transform kernel was bound to sub-block size. The appellant supported its argument by referring to the following publication:

D7 M. Wien and C. Mayer, "*Adaptive block transforms for hybrid video coding*", Proc. of SPIE Visual Communications and Image Processing VCIP'01, SPIE vol. 4310, San Jose, CA, USA, pages 153 to 162, 29 December 2000, DOI: 10.1117/12.411793

Document D7 states that in ABT "*[f]or each block size allowed for motion compensation, a transform of corresponding size is given, which is neither 'variable' nor 'selectable'*" (see last paragraph on page 15 to second full paragraph on page 18 of the statement of grounds of appeal). The same applied to

the transform kernel selection in H.264 (see page 13 of the appellant's reply of 21 May 2024).

- 3.10.3 The board is not convinced by this argument. Firstly, as acknowledged by the appellant, document D5 refers to the framework of the H.264 specification, in particular to that of document D6 (see paragraph bridging pages 15 and 16 of the statement of grounds of appeal and first sentence in section 5 and citation [1] of D5). Secondly, the coding scheme of D5 was implemented in the H.264 JM reference software. According to table 1 of D5, the JM reference software also uses ABT. Thus, the concept of ABT used in document D5 has to be evaluated in view of document D6, rather than document D7.

For coding unit blocks consisting of sub-blocks of at least 8x8 pixels, document D6 allows selecting between transform kernel sizes of 8x8 and 4x4 pixels (see sections 7.3.5.3, 7.4.5 and 7.4.5.3 for the syntax and semantics and sections 8.5.1 and 8.5.3 for details of the transformation). The flags `transform_8x8_mode_flag` and `transform_size_8x8_flag` respectively enable and signal the use of an 8x8 transform kernel instead of a 4x4 one. A 4x4 kernel size may be used with all sub-block sizes. Document D5 adds an additional transform size of 16x16 to be used in modes with pixel blocks of size 16x16 or higher (see second paragraph in section 3 and first paragraph in section 5).

Document D6 does not prescribe which transform size to use since it concerns only the decoding process. However, given that two transform kernel block sizes - or three in the case of D5 - are available for selection, the person skilled in the art, using their common general knowledge, would have implemented in the

encoding method a selection which optimises the rate distortion and would have signalled the selected size according to the specification.

A 4x4 square transform kernel is smaller than an 8x8 second sub-block to which it may be applied. Hence, document D5, when interpreted in the context of document D6, clearly discloses selecting from among transform kernels of different sizes (i.e. variable transform kernel sizes), including transform kernels which are smaller than the first and second sub-blocks. The person skilled in the art, using only ordinary skills, would have incorporated the adaptive transform block selection of the H.264 specification to increase the energy compaction of a block's residual data in the transform domain.

- 3.10.4 The appellant submitted that document D5 disclosed the use of a transform kernel size smaller than a block size only for a block of 32x32 pixels. Using a 16x16 transform kernel was mandatory for sub-blocks larger than 16x16 pixels. Hence, document D5 did not disclose variable kernel sizes for these sub-blocks. This was clear from the statement that "*[i]n the test, only 32x32, 32x16, 16x32, 16x16 modes were used with 16x16 transform*" in the first paragraph in section 5 of D5.

In the board's view, this passage of D5 reflects the H.264 practice of using transform kernels equal to or smaller than the sub-blocks (e.g. not using an 8x8 transform kernel on a 4x4 sub-block). A correct grammatical and technical reading is that the 16x16 transform kernel was only used for 32x32, 32x16, 16x32 or 16x16 sub-blocks, rather than for transforming these sub-blocks using only the 16x16 transform kernel.

3.11 According to the appellant, documents D3 and D5 presented conflicting disclosures since, while D3 first partitioned the block and then selected a prediction mode for each partition (as shown in Figure 24), document D5 first selected a prediction mode and then partitioned the block (see section IV.2.A of its reply of 21 May 2024).

The board is of the view that document D3 considers different partitions of a coding unit block into sub-blocks and prediction modes for each of the sub-blocks (see page 15, lines 10 to 15 in combination with page 58, lines 17 to 25). The specific example of Figure 24 does not limit the general teaching of D3.

3.12 In view of the above, the subject-matter of claim 1 of the main request lacks inventive step over the combined disclosures of documents D3 and D5 (Article 56 EPC).

4. *Auxiliary request 1 - admittance (Article 12(6) RPBA)*

4.1 Under Article 12(6), first sentence, RPBA, the board should not admit requests, facts, objections or evidence which were not admitted in the proceedings leading to the decision under appeal, unless the decision not to admit them suffered from an error in the use of discretion or unless the circumstances of the appeal case justify their admittance.

In exercising its discretion under Rule 137(3) EPC, the examining division is required to consider all relevant factors (see decision G 7/93, point 2.5 of the Reasons).

A board of appeal should only overrule the way in which the first-instance department has exercised its

discretion if the board comes to the conclusion either that the first-instance department has not exercised its discretion in accordance with the right principles or that it has exercised its discretion in an unreasonable way, and has thus exceeded the proper limits of its discretion (see decision G 7/93, point 2.6 of the Reasons).

- 4.2 On 21 September 2020, after the final date set for making written submissions prior to the oral proceedings before the examining division, the applicant submitted, *inter alia*, a main request addressing an objection under Article 123(2) EPC.
- 4.2.1 During a telephone conversation on 22 September 2020, the first examiner sent a new prior-art document (D5) to the representative by e-mail (see point 10 of the decision under appeal). This document was combined with prior-art document D3 to argue lack of inventive step in the decision under appeal.
- 4.2.2 At the oral proceedings on 24 September 2020, the appellant filed auxiliary request 1.
- 4.2.3 Exercising its discretion under Rule 137(3) EPC, the examining division decided not to admit auxiliary request 1. In the examining division's view, the request was late-filed and *prima facie* clearly not allowable, *inter alia* because the amendment reintroduced wording which the examining division had objected to under Article 123(2) EPC (see point 17.2 in combination with the second paragraph under the heading "Main request" of the decision under appeal and the last paragraph under the heading "Auxiliary request 1,

filed during the OP" of the minutes of the oral proceedings).

- 4.3 Auxiliary request 1 at hand corresponds to auxiliary request 1 on which the decision under appeal was based.
- 4.4 The appellant submitted that it had been unduly put at a disadvantage and had had insufficient time to respond to the examining division's new objections raised on the basis of document D5 only 2 days before the oral proceedings (see section VI of the letter of 21 May 2024). The amendments to auxiliary request 1 were intended to overcome these objections.
  - 4.4.1 If the appellant considered that it had been adversely affected by the introduction of document D5, it should have requested a postponement or an adjournment of the oral proceedings.
  - 4.4.2 Furthermore, claim 1 reintroduces a feature that the examining division had already objected to under Article 123(2) EPC (see point 4.2.3 above). The disclosure of document D5 is not relevant in determining whether the claimed subject-matter extends beyond the content of the application as filed. Hence, the time at which document D5 was introduced for the purpose of assessing patentability of the claims is immaterial to the discussion on the admittance of a claim request including a known objection under Article 123(2) EPC.
  - 4.4.3 During the oral proceedings, the appellant had the opportunity to file new claim requests, in particular auxiliary requests 1 and 3 at hand, whose admittance was assessed by the examining division. It is the appellant's responsibility to define the subject-matter

of these amended claim requests, and it is a matter for the examining division to rule on their admittance. However, under Rule 137(3) EPC, the examining division has discretion to consent to these amended claim requests, this being tantamount to admitting or not admitting them.

- 4.5 It is not apparent to the board that the examining division had not based its discretionary decision on the right principles or that it had acted in an unreasonable way.

Relevant factors the examining division may take into account in exercising its discretion under Rule 137(3) EPC include the stage reached in the proceedings, whether the applicant had already had sufficient opportunity to amend the application and whether the amendments manifestly - i.e. unequivocally and in an immediately apparent way - give rise to new ones (see Case Law, IV.B.2.4.1).

- 4.5.1 The board is of the view that the examining division had duly assessed the relevant factors identified in point 4.5 above.
- 4.5.2 In view of points 4.2 to 4.4.3, there is no indication that the examining division had applied the above criteria in an unreasonable way.
- 4.6 The board cannot identify other circumstances of the appeal case that might justify the admittance in appeal of this request. Consequently, the board did not admit auxiliary request 1 into the appeal proceedings (Article 12(6) RPBA).

5. *Auxiliary request 2 - admittance (Article 12(6) RPBA)*

5.1 Under Article 12(6), second sentence, RPBA, the board should not admit requests, facts, objections or evidence which should have been submitted, or which were no longer maintained, in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance.

5.2 The amended claims according to auxiliary request 2 were filed for the first time with the statement of grounds of appeal.

5.3 The appellant submitted similar arguments in favour of admittance of auxiliary request 2 to those submitted for auxiliary request 1 (see point 4.4 above). It argued that the amendments addressed the objection under Article 123(2) EPC raised by the examining division against claim 1 of auxiliary request 1 (see section IV of the statement of grounds of appeal). Auxiliary request 2 was a direct response to the introduction of document D5 in the first-instance proceedings and had only been filed in appeal proceedings because the appellant (then applicant) had had to be consulted.

5.4 The board considers that this auxiliary request should have been submitted in the proceedings leading to the decision under appeal.

5.4.1 In the communication annexed to the summons to oral proceedings, the examining division expressed the view that the wording "*a size of the at least one of variable block-size transform kernels is smaller than the size of the at least one of the sub-blocks*" did not have a basis in the application as filed (see point 1).

During the first-instance oral proceedings, the examining division maintained that "[a variable block-size transform kernel being] smaller than [sic] the size of the sub-block" was not disclosed in the application as filed (see sixth paragraph on page 3 of the minutes). The appellant was therefore aware of the examining division's view. Moreover, the appellant was given the opportunity to file a further request (see section "Decision" on page 6 of the minutes).

- 5.4.2 If the appellant considered that the amendments to the claims of auxiliary request 2 overcame the objection of added subject-matter, it should have filed an auxiliary request with such claims during the first-instance proceedings.

If the filing of such requests required consultation with the appellant, a request for postponement or adjournment should have been submitted.

- 5.4.3 For similar reasons to those set out in point 4.4.2 above, the board sees no causal link between the filing of a claim request directed at overcoming an objection under Article 123(2) EPC and the introduction of document D5 in the first-instance proceedings for the assessment of patentability. Therefore, the argument that auxiliary request 2 was a direct response to the introduction of document D5 is not convincing.

- 5.5 The board cannot identify any circumstances of the appeal case which might justify admittance of this request.

5.6 In view of the above, the board did not admit auxiliary request 2 into the proceedings under Article 12(6), second sentence, RPBA.

6. *Auxiliary request 3 - amendments (Article 123(2) EPC)*

6.1 The European patent application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

6.2 Claim 1 of auxiliary request 3 specifies that "*a size of the at least one of variable block-size transform kernels is smaller than the size of the at least one of the sub-blocks*".

6.3 The examining division found that this wording had no basis in the application as filed, and the board concurs for the following reasons.

6.3.1 In the statement of grounds of appeal, the appellant argued that the claimed feature identified in point 6.2 above did not go beyond the disclosure as originally filed, and made reference to three passages of the corrected description filed on 21 September 2020 to support its argument (see second paragraph in section "V. Auxiliary Request 3" referencing the last paragraph on page 19 and the first four paragraphs on page 20).

6.3.2 The contested feature includes square and non-square transform kernel shapes. The first and third passages cited by the appellant concern only square transform kernels. Hence, these passages do not provide a direct and unambiguous basis for non-square transform kernels. Only the second passage cited by the appellant describes size restrictions for square and non-square

transform kernels (see page 9, lines 21 to 25 of the corrected description). It states that "*the size of the square or non-square transform kernel is smaller than or equal to the smaller one of the number of vertical pixels and the number of horizontal pixels of the division block*". Similar terms are used in page 4, lines 17 and 18 of the corrected description.

- 6.3.3 The board agrees with the examining division that these passages compare magnitudes of different geometrical measurements (see point 21.3 of the decision under appeal). Size generally refers to length for one-dimensional objects and to area for two-dimensional objects. Thus, in the case at hand, a size of a two-dimensional transform kernel refers to its area and is compared with the number of pixels (or length) in one of a block's dimensions.

As set out in the decision under appeal (see point 21.4), a reasonable interpretation of this passage is that "*[f]or the smallest dimension of the block (i.e. width or height), the corresponding side of the transform kernel is smaller than this smallest dimension*".

For a non-square transform kernel, this limits the magnitude of one of its dimensions. However, the magnitude of the other dimension remains undefined. Consequently, a non-square transform kernel is not restricted in size, in particular so as to be smaller than the size of at least one of the sub-blocks as claimed.

- 6.4 In view of the above, claim 1 of auxiliary request 3 does not meet the requirements of Article 123(2) EPC.

7. *Auxiliary request 4 - admittance (Articles 13(2) and 12(6) 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, paragraph 1 should, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

In applying Article 13(2) RPBA, the board may also rely on the criteria set out in Article 13(1) RPBA (see Supplementary publication 2 of the Official Journal EPO 2020, explanatory notes to Article 13(2), page 60, fourth paragraph). Article 13(1) RPBA specifies that Article 12(4) to (6) RPBA applies *mutatis mutandis*.

Reference is made to the legal provision of Article 12(6) RPBA in point 5.1 above.

7.2 The claims of auxiliary request 4 were filed after notification of the summons to oral proceedings.

7.3 Claim 1 has been amended to specify, among other things, that "*the at least one of variable block-size transform kernels is a non-square transform kernel*" (emphasis added by the board).

7.4 In its letter of 21 May 2024 (see section VIII.1), the appellant argued for the admittance of auxiliary request 4 in similar terms as for auxiliary request 1 (see point 4.4 above). During the oral proceedings, the appellant submitted that the introduction of document D6 in the board's communication under Article 15(1)

RPBA raised new issues which constituted exceptional circumstances within the meaning of Article 13(2) RPBA.

7.5 These arguments are not persuasive.

7.5.1 Document D5 and the objections on the basis of this document were discussed at the oral proceedings in the first-instance proceedings. The appellant has not indicated, and it is not apparent to the board, how these facts in the first-instance proceedings constitute exceptional circumstances under Article 13(2) RPBA which lead to the filing of a claim request at such a late stage in appeal proceedings, i.e. only after notification of the board's communication under Article 15(1) EPC.

7.5.2 Regarding the introduction of document D6, the appellant submitted document D7 together with its statement of grounds of appeal and, on the basis of that document, contested the examining division's interpretation of the disclosure of document D5.

Document D6 is referenced in document D5 and describes the video coding standard on which the method of document D5 was implemented. Document D6 merely supports the examining division's interpretation of document D5. Hence, the introduction of document D6 does not change the essence of the examining division's reasoning.

Since the board confirmed the essence of the examining division's reasoning, the board is not convinced that the mere introduction of document D6 constitutes exceptional circumstances within the meaning of Article 13(2) RPBA.

7.5.3 For the above reasons, the board considers that there are no exceptional circumstances within the meaning of Article 13(2) RPBA which might justify the admittance of auxiliary request 4 into the appeal proceedings.

7.6 Furthermore, it is apparent from the decision under appeal (see e.g. point 16.10.3) that only square transform kernel sizes were considered for the assessment of novelty and inventive step. If the board were to take into account auxiliary request 4, it would have to decide for the first time on patentability of claims restricted to the use of non-square transforms or to remit the case to the examining division for examination. Both options would be contrary to the principle of procedural economy.

7.7 In view of the above, the board exercised its discretion under Article 13(2) RPBA by not admitting auxiliary request 4 into the proceedings.

## 8. *Conclusion*

8.1 Since the main request and auxiliary request 3 are not allowable and auxiliary requests 1, 2 and 4 were not admitted into the appeal proceedings, 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