Internal distribution code:

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

Datasheet for the decision of 31 January 2023

Case Number: T 2020/18 - 3.5.04

Application Number: 11826583.4

Publication Number: 2621176

IPC: H04N19/51, H04N19/105

Language of the proceedings: EN

Title of invention:
IMAGE ENCODING METHOD, IMAGE DECODING METHOD, IMAGE ENCODING APPARATUS, AND IMAGE DECODING APPARATUS

Applicant:
Sun Patent Trust

Headword:

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

Keyword:
All requests - clarity (no)
Amendment after summons - exceptional circumstances (yes)

Decisions cited:

Catchword:

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
Fax +49 (0)89 2399-4465

Case Number: T 2020/18 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 31 January 2023

Appellant: (Applicant)	Sun Patent Trust 450 Lexington Avenue, 38th Floor New York, NY 10017 (US)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 29 March 2018 refusing European patent application No. 11826583.4 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. 11 826 583.4.

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

D1 Anonymous, "Test Model under Consideration", Joint Collaboration Team on Video coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/ SC29/WG11, 2nd Meeting, Geneva, CH, 21 to 28 July 2010, document no. JCTVC-B205, server date: 28 July 2010, XP030007704

III. The application was refused on the following grounds.

(a) Claims 1 and 3 to 5 of the main request and the auxiliary request pending at that time were not clear (Article 84 EPC).

(b) The subject-matter of claims 1 and 3 to 5 of the main request pending at that time extended beyond the content of the application as filed (Article 123(2) EPC).

(c) The subject-matter of claims 1 and 3 to 5 of the main request and the auxiliary request pending at that time was not new (Article 54 EPC).

IV. The applicant ("appellant") filed notice of appeal. With the statement of grounds of appeal, it filed a main request and an auxiliary request and stated that this main request corresponded to the auxiliary request

on which the decision under appeal was based, and that claim 1 of the auxiliary request corresponded to a combination of claims 1 and 2 of the main request filed with the statement of grounds of appeal. The appellant provided arguments to support its opinion that the independent claims of the main request and the auxiliary request were clear and that their subject-matter was new and involved an inventive step.

V. 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 claims of the auxiliary request. The appellant also requested oral proceedings should neither request be allowable (see page 1 of the statement of grounds of appeal, the section entitled "I. Requests").

VI. A summons to oral proceedings was issued on 1 February 2022.In a communication under Article 15(1) RPBA 2020, the board expressed its preliminary view that, *inter alia*, the expression "skip mode" did not have a generally accepted meaning in the art of image coding, and thus a person skilled in the art would not know which technical aspects of image coding would be affected by a "skip mode" (Article 84 EPC).

VII. With its letter dated 16 December 2022, the appellant filed sets of claims of a second and a third auxiliary request. It stated that the claims of the second and third auxiliary requests were based on corresponding claims of the main request and the first auxiliary request, with the "skip mode" defined as in the H.264 video coding standard. The appellant submitted reasons to support its opinion that the second and third auxiliary requests should be admitted into the appeal

proceedings. It also asserted that the claims of the main request and first auxiliary request met the requirements of Article 84 EPC by referring to an excerpt of a book entitled "High Efficiency Video Coding (HEVC)".

VIII. The board issued a second communication under Article 15(1) RPBA 2020, giving its preliminary opinion on the admittance of the second and third auxiliary requests filed by letter dated 16 December 2022 and on clarity issues.

IX. On 31 January 2023, the board held oral proceedings.

X. During the oral proceedings the appellant submitted the following documents, which the board identified as D4 and D5.

D4 V. Sze et al. (eds.), "*High Efficiency Video Coding (HEVC): Algorithms and Architectures*", Springer International Publishing, 2014

D5 J. Jung et al., "*Competition-Based Scheme for Motion Vector Selection and Coding*", Video Coding Experts Group (VCEG) of ITU-T, Study Group 16 Question 6, 29th Meeting, Klagenfurt, AT, 17 to 18 July 2006, document VCEG-AC06

XI. The appellant's final requests were that the decision under appeal be set aside and that a European patent be granted on the basis of the claims of the main request filed with the statement of grounds of appeal, or alternatively on the basis of the claims of the first auxiliary request filed with the statement of grounds of appeal or the second or third auxiliary request

filed with the letter dated 16 December 2022.

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

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

An image coding method for performing prediction coding of moving pictures, the image coding method comprising:

generating first information indicating whether or not a motion vector predictor is to be selected from among one or more motion vector predictor candidates;

when the first information indicates that a motion vector predictor is to be selected, performing the steps of:

generating second information indicating whether or not a motion vector predictor is to be selected, in skip mode, from among the one or more motion vector predictor candidates, for coding a current block to be coded;

generating a coded signal in which the first information and the second information are included in a slice header, and

including, in the coded signal, index information indicating a motion vector predictor to be selected from among the one or more motion vector predictor candidates, when the second information indicates that a motion vector predictor is to be selected, in the coding of the current block in the skip mode, and not including index information indicating a motion vector predictor to be selected when the second information

does not indicate that the motion vector predictor is to be selected in the coding of the current block in the skip mode; and

when the first information indicates that a motion vector predictor is not to be selected, performing the step of

generating a coded signal in which the first information is included but the second information is not included in the slice header.

XIV. Claim 1 of the **first auxiliary request** differs from claim 1 of the main request in that the step of generating second information is defined as follows (with additions being underlined):

generating second information indicating whether or not a motion vector predictor is to be selected, in skip mode, from among the one or more motion vector predictor candidates, for coding a current block to be coded, wherein, in the coding of the current block in the skip mode, in the step of generating second information, a value of the second information is determined based on a target bit rate in the coding or a value of a quantization parameter in quantization of the current block;

XV. Claim 1 of the **second auxiliary request** differs from claim 1 of the main request in that the step of generating second information is defined as follows (with additions being underlined):

generating second information indicating whether or not a motion vector predictor is to be selected, in skip mode as defined in H.264 video coding standard, from

among the one or more motion vector predictor candidates, for coding a current block to be coded;

XVI. Claim 1 of the **third auxiliary request** differs from claim 1 of the first auxiliary request in that the step of generating second information is defined as follows (with additions being underlined):

generating second information indicating whether or not a motion vector predictor is to be selected, in skip mode as defined in H.264 video coding standard, from among the one or more motion vector predictor candidates, for coding a current block to be coded, wherein, in the coding of the current block in the skip mode, in the step of generating second information, a value of the second information is determined based on a target bit rate in the coding or a value of a quantization parameter in quantization of the current block;

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

(a) Main request and first auxiliary request

(i) The person skilled in the art was aware that the term "skip mode" was generally used before the priority date of the present application to designate a coding mode for a block, in which motion data was inferred instead of explicitly signalled and the prediction residual was zero, i.e. no transform coefficients were transmitted. This was illustrated by document D4 (page 125, third paragraph). It was apparent from the present application,

figures 35 and 36 and paragraph [0007] that this was the meaning of the term "skip mode" in the present application.

(ii) Documents D1 and D5 disclosed a "skip mode" in which index information was signalled. Index information identifying a motion vector predictor would not have been understood as motion data by the person skilled in the art. Thus, the "skip mode" versions in the H.264 standard, D1 and D5 did not signal motion data and complied with the generally recognised meaning of "skip mode".

(b) Second and third auxiliary requests

(i) The reference to the "H.264 video coding standard" provided a clear and unambiguous definition for the term "skip mode". Even if the term was not explicitly cited in H.264, the person skilled in the art was aware that P-Skip and B-Skip were particular cases of what was called "skip mode" in the standard.

(ii) The expression "in skip mode as defined in H.264 video coding standard" in claim 1 should not be understood as a "skip mode" exactly as in H.264, but as an extension of the "skip mode" in H.264. The extension claimed included additional features but still inferred motion data. Thus, the claims were free of contradiction.

Reasons for the Decision

1. *Main request and first auxiliary request - clarity (Article 84 EPC)*

1.1 According to Article 84 EPC, the claims must be clear.

A claim cannot be considered clear within the meaning of Article 84 EPC if it comprises a technical feature for which no unequivocal generally accepted meaning exists in the relevant art (see Case Law of the Boards of Appeal of the European Patent Office, 10th edition, July 2022, "Case Law", II.A.3.1).

1.2 Claim 1 of the main request and of the first auxiliary request specifies "*including, in the coded signal, index information indicating a motion vector predictor to be selected from among one or more motion vector predictor candidates*" in "skip mode".

The expression "skip mode" does not have a generally accepted meaning in the art of image coding. Although the expression may have a particular meaning in a given version of a video coding standard, the claimed subject-matter is not limited thereto. Thus, a person skilled in the art would not know which technical aspects of image coding would be affected by a "skip mode". There is no unequivocal generally accepted set of technical features that may be regarded as defining a "skip mode".

1.3 The board is not convinced by the appellant's argument that the term "skip mode" was generally used in the art to designate a coding mode for a block in which, *inter alia*, motion data is inferred instead of explicitly

signalled (see point XVII.(a)(i) above).

1.3.1 The H.264 specification defines a skipped macroblock as a macroblock for which no data is coded other than an indication that the macroblock is skipped, i.e. without including motion data or prediction residuals for the macroblock.

1.3.2 However, other proposals for video coding standards (see for example document D1, section 4.1.10 or document D5, section 3.2) include in the coded signal an index indicating a motion vector predictor for decoding a skipped block or coding unit. In the board's view, this index constitutes motion data, as it serves the purpose of identifying a motion vector for decoding a skipped block or coding unit. Thus, this strategy is at odds with the appellant's claim that, in skip mode, motion data is inferred instead of explicitly signalled.

1.3.3 Hence, the standard contributions available at the priority date propose coding skipped blocks or coding units using different types of data. In particular, an index indicating a motion vector predictor may or may not be included in the stream. Thus, it is not clear which coding information a skipped block or coding unit may or may not include. In other words, there is no unequivocal generally accepted set of technical features that may be regarded as defining a "skip mode".

1.4 The appellant disagreed that an index indicating a motion vector predictor would be understood as motion data by the person skilled in the art (see point XVII.(a)(ii) above). It argued that motion data explicitly included motion vectors, coded as a

difference to a motion vector predictor, and reference indices as described in D4 (see the first full paragraph on page 114 and the first paragraph of the section entitled "*5.2.1 Advanced Motion Vector Prediction*" on page 115). The index identifying the motion vector predictor on its own - without the differences - could not be considered as providing a definition of motion data.

The "skip mode" described in documents D1 and D5 (see section 3.2) signalled the index identifying the motion vector predictor. Nonetheless, it shared the same set of technical features as the "skip mode" in H.264, since in both cases neither motion data nor the prediction residual were coded. Thus, according to the appellant, both "skip mode" versions were consistent with the generally recognised meaning of "skip mode".

1.4.1 Motion data may be signalled in various ways. In motion vector competition, the decoder generates a set of motion vector predictor candidates (see document D5, section 3.2). In contrast with H.264, where a single predictor is used (see document D5, section 3.2), the decoder requires information to select a motion vector predictor from the available set of motion vector predictor candidates for decoding a block or coding unit. In the board's view, an index serving the purpose of identifying a motion vector predictor from the set for using it as a motion vector is to be regarded as motion data.

1.4.2 Therefore, the board maintains its view that a "skip mode" is not defined by an unequivocal generally accepted set of technical features.

1.5 In view of the above, claim 1 of the main request and of the first auxiliary request does not meet the requirements of Article 84 EPC.

2. *Second and third auxiliary requests - admittance (Article 13(2) RPBA 2020)*

2.1 The summons to oral proceedings was notified after the date on which the Rules of Procedure of the Boards of Appeal 2020 (RPBA 2020, OJ EPO 2021, A35) entered into force, i.e. 1 January 2020 (Article 24(1) RPBA 2020). Thus, in accordance with Article 25(1) and (3) RPBA 2020, Article 13(2) RPBA 2020 applies to the question of whether to admit the second and third auxiliary requests, which were filed after notification of the summons to oral proceedings and are therefore amendments within the meaning of Article 13(2) RPBA 2020. Where an amendment is made to a party's appeal case at this advanced stage of the proceedings, Article 13(2) RPBA 2020 states that it will, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

2.2 The board accepts that its preliminary view regarding the expression "skip mode", put forward for the first time in the board's communication, constituted "exceptional circumstances" within the meaning of Article 13(2) RPBA 2020. Thus, the board admitted the second and third auxiliary requests into the appeal proceedings.

3. *First and second auxiliary requests - clarity (Article 84 EPC)*

3.1 Reference is made to the principles on how to apply Article 84 EPC from the case law (see point 1.1 above).

In addition, to be clear, the claims per se must be free of contradiction (see Case Law, II.A.3.1).

3.2 Claim 1 of both the second and the third auxiliary request specifies the skip mode "as defined in H.264 video coding standard".

The H.264 standard specifies coding a flag to skip macroblocks. However, none of the H.264 video coding standard versions defines the expression "skip mode". Thus, a reference to the "H.264 video coding standard" cannot provide a clear and unambiguous definition for the term "skip mode".

3.3 For the sake of argument, even if the board accepted that the person skilled in the art would understand the term "skip mode" in the context of the H.264 standard as the strategy of coding P-Skip and B-Skip blocks (see point XVII.(b)(i) above), this strategy differs from the coding in "skip mode" specified in claim 1 of the second and third auxiliary requests.

3.3.1 As apparent from document D4 (see page 125, third paragraph), H.264 describes coding P-Skip and B-Skip blocks by indicating that the motion data is inferred instead of explicitly signalled.

3.3.2 However, claim 1 of both the second and the third auxiliary request specifies "including, in the coded signal, index information indicating a motion vector predictor" in "skip mode". Since the board considers the index information to be motion data (see point 1.4 above), claim 1 explicitly signals motion data in the

coded signal.

3.3.3 In view of the above, the "skip mode" specified in claim 1 of both the second and the third auxiliary request, including index information indicating a motion vector predictor, is incompatible with the "skip mode" allegedly defined in the H.264 video coding standard. Specifying both the inclusion of motion data in the coded signal and the omission of motion data from the coded signal (as specified in H.264 for the "skip mode") introduces a contradiction into the claim.

3.4 According to the appellant, the person skilled in the art would understand the claimed "skip mode" as an extension of the "skip mode" defined in H.264 (see point XVII.(b)(ii) above). In this extension, which included motion vector competition, index information might need to be included in the coded signal. However, motion vectors would still be inferred and thus claim 1 was free of contradiction.

3.4.1 In the board's view, the expression "in skip mode as defined in H.264 video standard" limits the technical scope of the term "skip mode" to what the person skilled in the art might have understood to be specified by this term in the H.264 video coding standard (see for example point 3.3.1 above). The board sees no reason to disregard this clear limitation.

3.4.2 Since the "skip mode" in H.264 does not specify coding index information identifying a motion vector predictor but claim 1 does (see point 3.3.2 above), the board maintains that claim 1 of both the second and the third auxiliary request is not free of contradiction (see point 3.3.3 above).

3.5 In view of the above, claim 1 of both the second and the third auxiliary request lacks clarity within the meaning of Article 84 EPC.

4. *Conclusion*

4.1 Since none of the requests is 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