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**Datasheet for the decision  
of 20 November 2013**

**Case Number:** T 2137/09 - 3.5.04

**Application Number:** 04712388.0

**Publication Number:** 1597909

**IPC:** H04N7/12, H04N7/26

**Language of the proceedings:** EN

**Title of invention:**

PICTURE CODING METHOD AND PICTURE DECODING METHOD

**Applicant:**

Panasonic Corporation

**Headword:**

**Relevant legal provisions:**

EPC Art. 123(2)  
EPC 1973 Art. 111(1)

**Keyword:**

Amendments - added subject-matter (yes)  
Remittal to the department of first instance

**Decisions cited:**

**Catchword:**



**Beschwerdekammern  
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Case Number: T 2137/09 - 3.5.04

**D E C I S I O N  
of Technical Board of Appeal 3.5.04  
of 20 November 2013**

**Appellant:** Panasonic Corporation  
(Applicant) 1006, Oaza Kadoma  
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**Representative:** Eisenführ, Speiser & Partner  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted on 5 June 2009  
refusing European patent application  
No. 04712388.0 pursuant to Article 97(2) EPC.

**Composition of the Board:**

**Chairman:** F. Edlinger  
**Members:** C. Kunzelmann  
B. Müller

## Summary of Facts and Submissions

- I. The appeal is against the decision of the examining division to refuse European patent application No. 04 712 388.0 under Article 97(2) of the European Patent Convention (EPC).
- II. The application was refused on the ground that the picture coding method of claim 1 of the main request and of all the auxiliary requests then on file was either not new (see Article 54 EPC 1973) over document

D1 = WIEN M. 'ABT Coding for Higher Resolution Video'.  
Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T  
VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q.6)  
2nd meeting: Geneva, CH, 29 January to 1 February  
2002, 1 February 2002, pages 1 to 30, document  
JVT-B053, XP 030005053

or did not involve an inventive step (see Article 56 EPC 1973) over D1 having regard also to a document mentioned in D1, namely

D4 = WIEN M. et al. 'Adaptive Block Transforms'.  
ITU-T SG16 Q.6, Video Coding Experts Group (VCEG)  
13th meeting: Austin, Texas, US, 2 to 4 April  
2001, 2 April 2001, pages 1 to 7, document  
VCEG-M62, XP 030003232.

- III. In further observations of the decision under appeal, the examining division drew attention to a document disclosing a signalling flag, namely

D2 = WIEGAND T. 'Text of Final Committee Draft of Joint Video Specification (ITU-T Rec. H.264 / ISO/IEC 14496-10 AVC) MPEG02/N4920', ISO/IEC JTC1/SC29/

WG11 MPEG02/N4920, Klagenfurt, AT, July 2002,  
pages 16 and 33 to 35, XP002430000.

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

"A picture coding method for coding picture data on a block-by-block basis, comprising:  
selecting one of a first size and a second size as an orthogonal transformation size of a block on which orthogonal transformation should be performed;  
orthogonal transforming a block having the selected orthogonal transformation size, and obtaining resulting transformation coefficients;  
quantizing the transformation coefficients; and  
variable length coding the quantized transformation coefficients, and outputting a resulting coded stream, characterized in that, when inter picture coding is performed on the block on which orthogonal transformation should be performed,  
said selecting step includes selecting the first size which is smaller than the second size as the orthogonal transformation size, in the case where a motion compensation block size is smaller than the second size,  
further characterized in that the quantizing the transformation coefficients is performed by use of a weighting matrix corresponding to the selected orthogonal transformation size."

V. The applicant appealed against the decision by the examining division and requested that the decision be set aside and a patent be granted on the basis of the main request which was also the main request dealt with in the decision under appeal. With the statement of grounds of appeal, the appellant filed claims 1 to 3

according to a first auxiliary request (auxiliary request I).

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

"A picture coding method for coding picture data on a block-by-block basis, comprising:  
selecting one of a first size and a second size as an orthogonal transformation size of a block on which orthogonal transformation should be performed;  
orthogonal transforming a block having the selected orthogonal transformation size, and obtaining resulting transformation coefficients;  
quantizing the transformation coefficients; and  
variable length coding the quantized transformation coefficients, and outputting a resulting coded stream, characterized in that, when inter picture coding is performed on the block on which orthogonal transformation should be performed,  
said selecting step includes selecting the first size which is smaller than the second size as the orthogonal transformation size, in the case where a motion compensation block size is smaller than the second size, and selecting the second size otherwise,  
further characterized in that the quantizing the transformation coefficients is performed by use of a weighting matrix corresponding to the selected orthogonal transformation size, and by  
inserting, to the coded stream, a size flag indicating whether orthogonal transformation sizes of all blocks included in a predetermined unit in the picture data are the first size or it is unknown whether the orthogonal transformation sizes within the predetermined unit are either of the first size or of the second size,

wherein the first size indicates a size of a block which is 4 pixels high and 4 pixels wide, and the second size indicates a size of a block which is 8 pixels high and 8 pixels wide, and wherein said weighting matrix corresponding to the selected orthogonal transformation size is inserted in the coded stream."

- VII. The board issued a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA), annexed to a summons to oral proceedings. In this communication the board *inter alia* raised an objection under Article 123(2) EPC against claim 1 of the main request.
- VIII. With a letter of reply dated 9 October 2013, the appellant maintained the main and the first auxiliary request and filed the claims of a second auxiliary request (auxiliary request I-a).
- IX. Oral proceedings before the board were held on 20 November 2013. The appellant's final requests were that the decision under appeal be set aside and that a patent be granted with the documents of the main request as indicated in the decision under appeal, and in the alternative, to remit the case to the examining division for further prosecution on the basis of the claims of either the first auxiliary request (auxiliary request I) submitted with the statement of grounds of appeal, or of the second auxiliary request (auxiliary request I-a) submitted with the letter of 9 October 2013.
- X. The reasons for the decision under appeal may be summarised as follows:

Document D1 disclosed a method having all the features specified in claim 1 of the main request. In D1, the first size was 8x8 pixels and the second size was one of 4x4, 4x8 and 8x4 pixels. Since claim 1 did not clearly define that only two sizes existed, the claimed method was not new (Article 54(2) EPC).

D1 disclosed a simplification of the method disclosed in D4 in that the modes 16x16, 16x8, and 8x16 were suppressed but the modes 8x8, 8x4, 4x8 and 4x4 were all maintained. Moreover, transforms based on square blocks were well-known from e.g. MPEG-1, MPEG-2, MPEG-4 or H.263, and in particular the transform based on 4x4 blocks was known from H.264. Thus it would have been a normal design option to replace the 4x8 and 8x4 transform modes disclosed in D1 with a 4x4 transform mode and so maintain only the 8x8 and 4x4 modes.

The feature of inserting, to the coded stream, the specified size flag represented a straightforward hierarchical signalling of information in view of reducing the size of side information. It had no functional relationship with the other features of claim 1. Thus the picture coding method of claim 1 of the first auxiliary request did not involve an inventive step (Article 56 EPC).

Moreover, such hierarchical signalling was disclosed in document D2.

The insertion of the weighting matrix corresponding to the selected orthogonal transformation size in the coded stream represented a normal signalling of a weighting matrix to allow correct image decoding.

XI. The appellant's arguments may be summarised as follows:

Claim 1 of the main request defined that either the first size or the second size was selected as the transformation block size. The first size was one single size (e.g. 4x4 pixels). The first size was selected for all motion compensation block sizes smaller than the second size, whereas the second size was selected if the motion compensation block size was not smaller than the second size, as disclosed in the example of page 15, line 27 to page 16, line 4, of the description as originally filed. The passage on page 15, lines 19 to 22, made clear that there should be a consistency between block sizes used as motion compensation size and an orthogonal transformation size. A person skilled in the art would understand from this general teaching and the specific example that the first size (e.g. 4x4 pixels) should be selected when a motion compensation block was smaller than the second size (e.g. 8x8 pixels). Therefore, claim 1 of the main request complied with Article 123(2) EPC.

According to document D1, there were four transformation block sizes, namely 4x4, 4x8, 8x4 and 8x8 pixels. Document D1 taught to select a number of different sizes (including the first size) instead of always selecting the single first size (e.g. 4x4 pixels) when the motion compensation block size was smaller than the second size (e.g. 8x8 pixels). Thus document D1 did not disclose the subject-matter of claim 1 of the main request.

The limitation to just the two orthogonal transformation block sizes as specified in claim 1 at least reduced the complexity of the orthogonal transformation when compared with the disclosure of D1.



This limitation was not a normal design option because D1, when read in conjunction with the documents mentioned therein (such as D4), taught that only the block sizes larger than 8x8 should be suppressed because they caused ringing artifacts, whereas all the smaller block sizes, including 4x8 and 8x4, should be maintained because they improved the coding flexibility.

Claim 1 of the first auxiliary request explicitly specified that the second size was selected as the orthogonal transformation block size if the motion compensation block size was not smaller than the second size. The first size was specified as 4x4 and the second size as 8x8 in terms of pixel height and width. Moreover, claim 1 of the first auxiliary request specified inserting a size flag in the coded stream. The size flag was a binary flag which allowed improving the coding efficiency in that it permitted indicating that the orthogonal transformation size of all blocks included in a predetermined unit in the picture data was 4x4. Thus a comparison of the motion compensation block size with the second size (i.e. 8x8) could be dispensed with within the predetermined unit in the picture data. Moreover, there was no need to indicate the orthogonal transformation size of an individual block because it could be derived from a motion compensation block size.

D2 merely related to an "adaptive\_block\_size\_transform\_flag" which indicated that either 4x4 transforms or transforms of size 4x4, 4x8, 8x4 and 8x8 were used for the luma residual.

## **Reasons for the Decision**

1. The appeal is admissible.
2. *Main request: added subject-matter (Article 123(2) EPC)*
  - 2.1 Claim 1 comprises the feature "selecting one of a first size and a second size as an orthogonal transformation size" and "selecting the first size ... in the case where a motion compensation block size is smaller than the second size". When read in context (see, for instance, page 9, lines 8 to 12 of the application: "a selection step of at least two sizes ...") and in view of the disadvantages of the prior art discussed in the application (see page 8, lines 10 to 12), selection of one of at least two orthogonal transformation sizes is desirable to improve coding efficiency for different images. Claim 1 does not exclude the possibility of further orthogonal transformation block sizes, at least one further block size for which a different criterion may be applicable (see e.g. page 10, line 28 to page 11, line 9). Indeed, claim 1 of the application as filed comprised the feature of "a selection step of selecting one of at least two sizes as a size of a block on which orthogonal transformation should be performed". The other independent claims of the application as filed relating to coding comprised a corresponding feature.
  - 2.2 Thus, in claim 1 the selection of the orthogonal transformation block size includes selecting the (small) first size, in the case where a motion compensation block size is smaller than the second (large) size, whereas the case where a motion compensation block size is larger than or equal to the second size is left open.

2.3 Hence the criterion to be applied for the selection of the orthogonal transformation block size is whether the motion compensation block size is smaller than the larger orthogonal transformation block size. Other criteria need not be considered for the selection of the orthogonal transformation block size.

2.4 This criterion is not directly and unambiguously disclosed in this generality in the application as filed. The reasons are as follows:

2.4.1 First, one criterion to be applied for the selection of the orthogonal transformation block size according to the application as originally filed is that the orthogonal transformation block size "becomes **smaller than** a motion compensation block size" (emphasis by the board; see page 15, lines 22 to 26). This is, however, not in line with the specific example on page 15, line 27 to page 16, line 4) which indicates that if the motion compensation block size is one of several sizes including the size of 8x8 pixels, the orthogonal transformation block size may equally be 8x8 pixels). Hence there is a certain ambiguity in the application as filed concerning the issue whether the motion compensation block size and the orthogonal transformation block size may both be of the second (large) size.

2.4.2 Second, an unambiguous criterion to be applied for the selection of the orthogonal transformation block size is originally disclosed only for a very specific example in which there are only two orthogonal transformation block sizes, namely 4x4 and 8x8 pixels (see page 15, line 27 to page 16, line 4). In this specific example the 8x8 pixels size is selected as the

orthogonal transformation block size for motion compensation block sizes of 16x16, 16x8, 8x16 and 8x8 pixels because higher efficiency can be achieved therewith. If the motion compensation block size is smaller than 8x8 pixels, the 4x4 pixels size is selected as the orthogonal transformation block size. But there is no concrete disclosure of how this specific example may be generalised to cases with orthogonal transformation block sizes other than 4x4 and 8x8 or to cases with more than two orthogonal transformation block sizes. Neither is there a disclosure of which criterion in general (i.e. outside the context set by the example) leads to the selection of the 4x4 pixels size as the orthogonal transformation block size.

2.4.3 As already said in point 2.1 above, the general teaching concerning the selection of the orthogonal transformation block size in the application as originally filed includes further criteria which may need to be considered, such as the resolution level, the bit rate, or the number of high frequency components (see, for instance, page 9, lines 19 to 25; page 10, line 28 to page 11, line 9 and page 14, line 11 to page 15, line 9).

2.5 In view of the above, the board finds that claim 1 of the main request contains subject-matter which extends beyond the content of the application as filed, and thus infringes Article 123(2) EPC.

3. *First auxiliary request*

3.1 Article 123(2) EPC

The above considerations do not apply to claim 1 of the first auxiliary request. This claim 1 is limited to the disclosed specific case of only two orthogonal transformation block sizes from which the selection is made, namely 4x4 pixels and 8x8 pixels as disclosed, for instance, on page 15, line 27 to page 16, line 4.

3.1.1 Claim 1 of the first auxiliary request comprises the further feature of "inserting, to the coded stream, a size flag, indicating whether orthogonal transformation sizes of all blocks included in a predetermined unit in the picture data are the first size or it is unknown whether the orthogonal transformation sizes within the predetermined unit are either of the first size or of the second size". This feature is also disclosed in the application as originally filed. Figure 8 and page 21, lines 7 to 25 generally disclose the incorporation of a size information flag to the coded stream, and page 21, lines 26 to 29 disclose a number of cases, not illustrated in figure 8, in which only two types of the size information (A), (B) and (C) (see page 21, lines 18 to 25) considered in the context of figure 8 are distinguished. The insertion of size information is disclosed in the specific context of only two orthogonal transformation block sizes from which the selection is made, namely 4x4 pixels and 8x8 pixels. Claim 1 of the first auxiliary request relates to the case of distinguishing only between (B) and (C), as disclosed on page 21, lines 26 to 29 or page 24, lines 23 to 31, of the application as filed.

3.1.2 The specific case claimed in claim 1 of the first auxiliary request is described in such a manner that it is implicit for a person skilled in the art that the further considerations which may be relevant in the context of the generalised claim 1 of the main request (see point 2.4.3 above) are optional in the specific case claimed in claim 1 of the first auxiliary request.

3.1.3 Claim 1 of the first auxiliary request furthermore specifies that the weighting matrix corresponding to the selected orthogonal transformation size is inserted in the coded stream, as disclosed, for instance, in figures 10A and 11A and the corresponding description.

3.1.4 In view of the above the board sees no reason to raise an objection under Article 123(2) EPC against claim 1 of the first auxiliary request.

### 3.2 *Article 56 EPC 1973*

3.2.1 The arguments given in the reasons for the decision under appeal did not convince the board that the subject-matter of claim 1 of the first auxiliary request lacks an inventive step. The reasons are as follows:

- As convincingly argued by the appellant, the subject-matter of claim 1 of the first auxiliary request not only reduces the complexity of the orthogonal transformation when compared with the disclosure of D1. It also has a further technical effect, namely that a comparison of the motion compensation block size with the second size (i.e. 8x8 pixels) may be dispensed with within the predetermined unit in the picture data if the size flag indicates that the orthogonal transformation sizes of all blocks included in the

predetermined unit have a size of 4x4 pixels. Indeed, if the size flag indicates that all orthogonal transformation blocks included in the predetermined unit in the picture data are of the 4x4 pixels size this comparison is superfluous. Thus this feature allows the specifying of whether the selection of the orthogonal transformation size needs to be made by comparison with the motion compensation block size. For this reason it is not a juxtaposed feature having no functional relationship with the other features of claim 1.

- Moreover, even in the case of the size flag indicating that "it is unknown whether the orthogonal transformation sizes within the predetermined unit are either 4x4 pixels or 8x8 pixels" (which actually means that in the predetermined unit not all orthogonal transformation block sizes are 4x4 pixels, see page 24, lines 28 to 31), there is no need to individually indicate the orthogonal transformation size of a block as this size may be derived based on the size of a motion compensation block (see page 27, lines 29 to 32 of the application).

These above effects in combination, go beyond a mere unspecified hierarchical signalling of information in view of reducing the size of side information.

- These effects are not discussed in the decision under appeal. Neither are they considered in the documents D1, D2 or D4 mentioned in the decision under appeal. Moreover, there is no indication on file that the combination of features specified in claim 1 of the first auxiliary request belongs to the common general knowledge.

- Claim 1 of the first auxiliary request furthermore specifies that the weighting matrix corresponding to the selected orthogonal transformation size is inserted in the coded stream. This feature concretises the functional relationship between the steps of quantising the transformation coefficients and of forming the coded stream in the method of claim 1 of the first auxiliary request (see e.g. page 19, paragraph 1, in conjunction with page 21, lines 7 to 17).

4. *Remittal (Article 111(1) EPC 1973)*

4.1 Claim 1 of the present first auxiliary request combines features of different auxiliary requests submitted in the first-instance proceedings. These features have been individually considered in the decision under appeal, but not in the combination as specified in claim 1 of the first auxiliary request. For the reasons given above, the board judges that in view of the facts and evidence adduced by the examining division, the decision under appeal has to be set aside on the basis of the first auxiliary request. In the present case the board sees no reason to go beyond its primary task of examining the contested decision. Full examination as to patentability requirements is the task of the examining division, and the appellant subsidiarily requested remittal of the case to the examining division for further prosecution on the basis of the claims of the first auxiliary request. Moreover, the supplementary European search report comprises further documents, which the board did not consider in the appeal proceedings as they were not discussed in the decision under appeal or in the appellant's submissions.



4.2 In view of the above, the board decided to exercise its discretion in remitting the case to the department of first instance for further prosecution.

4.3 Hence the appellant's further auxiliary request I-a need not be considered by the board.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar:

The Chairman:



K. Boelicke

F. Edlinger

Decision electronically authenticated