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Datasheet for the decision of 16 May 2023

Case Number: T 0843/19 - 3.5.04

Application Number: 14152254.0

Publication Number: 2733951

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Language of the proceedings: EN

Title of invention:
Method for decoding moving picture using adaptive scanning

Applicant:
Electronics and Telecommunications Research Institute

Headword:

Relevant legal provisions:
EPC Art. 56
RPBA 2020 Art. 13(2)

Keyword:
Main request, first and second auxiliary requests - inventive step - (no)
First and second auxiliary requests - amendment after summons - exceptional circumstances (yes) - admitted

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Decisions cited:

Catchword:

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Case Number: T 0843/19 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 16 May 2023

Appellant: (Applicant)	Electronics and Telecommunications Research Institute 161, Gajeong-dong Yuseong-gu Daejeon-si 305-700 (KR)
Representative:	Peterreins Schley Patent- und Rechtsanwälte PartG mbB Hermann-Sack-Straße 3 80331 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 19 October 2018 refusing European patent application No. 14152254.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

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

Summary of Facts and Submissions

I. The appeal is against the examining division's decision to refuse European patent application No. 14 152 254.0, published as EP 2 733 951 A1.

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

D1: US 6,148,109 A

D2: X. Fan et al., "A novel coefficient scanning scheme for directional spatial prediction-based image compression", International Conference on Multimedia and Expo, vol. 2, XP010650616, July 2003, 557-60

III. The decision under appeal was based on the ground that the subject-matter of claim 1 of the sole request then on file did not involve an inventive step within the meaning of Article 56 EPC.

IV. The applicant (appellant) filed notice of appeal and a statement of grounds of appeal. The appellant requested that the decision under appeal be set aside and that a European patent be granted on the basis of the sole request which had formed the basis for the decision under appeal. It provided arguments to support its opinion that claim 1 of this request met the requirements of Article 56 EPC.

V. Summons to oral proceedings were issued. In a communication under Article 15(1) RPBA 2020, the board gave the preliminary opinion that the subject-matter of claim 1 of the request which had formed the basis for

the decision under appeal lacked inventive step over the combined disclosures of documents D1 and D2 and the common general knowledge of the person skilled in the art (Article 56 EPC).

VI. By letter dated 14 April 2023, the appellant maintained the request which had formed the basis for the decision under appeal as the main request and filed amended claims according to auxiliary requests 1 and 2. It provided arguments to support its opinion that the subject-matter of claim 1 of all requests involved an inventive step.

VII. On 16 May 2023, the board held oral proceedings.

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 on which the decision under appeal was based or, alternatively, on the basis of the claims of auxiliary requests 1 or 2 filed by letter dated 14 April 2023.

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

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

"A method for decoding moving pictures based on adaptive scanning, comprising the steps of:

(a) performing entropy decoding onto encoded bitstream to produce entropy-decoded signals;

(b) determining (S610; S630) a scanning method for the entropy-decoded signals adaptively based on the entropy-decoded signals; and

(c) outputting a recovered picture based on the entropy-decoded signals and the scanning method,

wherein, an intra prediction mode determines both of the scanning method for the entropy-decoded signals and a direction for intra prediction to generate a prediction block,

wherein, when the intra prediction mode is a vertical mode, according to the scanning method determined in the step b), a first row of coefficients is scanned from the entropy-decoded signals with priority, such that the first row of the coefficients is scanned from the entropy-decoded signals prior to the other rows of the coefficients, and a predicted pixel value of each of pixels of a column of the prediction block of the intra prediction generated according to the vertical mode is determined based on a pixel value of a pixel adjacent to a top of the column,

wherein, when the intra prediction mode is a horizontal mode, according to the scanning method determined in the step b), a first column of the coefficients is scanned from the entropy-decoded signals with priority, such that the first column of the coefficients is scanned from the entropy-decoded signals prior to the other columns of the coefficients, and a predicted pixel value of each of pixels of a row of the prediction block of the intra prediction generated according to the horizontal mode is determined based on a pixel value of a pixel adjacent to a left of the row,

wherein, the coefficients represent a transformed and quantized residue block,

wherein, a residue block represents a difference between a block of the recovered picture and the prediction block,

wherein, the coefficients are inversely transformed and dequantized to produce the residue block."

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

"A method for decoding moving pictures based on adaptive scanning, comprising the steps of:

(a) performing entropy decoding onto encoded bitstream to produce entropy-decoded signals;

(b) determining (S610; S630) a scanning method for the entropy-decoded signals adaptively based on the entropy-decoded signals; and

(c) outputting a recovered picture based on the entropy-decoded signals and the scanning method,

wherein, an intra prediction mode determines both of the scanning method for the entropy-decoded signals and a direction for intra prediction to generate a prediction block,

wherein, when the intra prediction mode is a vertical mode where the significant coefficient mainly appears around a first row, according to the scanning method determined in the step b), a first row of coefficients is scanned from the entropy-decoded signals with priority, such that the first row of the coefficients is scanned from the entropy-decoded signals prior to

the other rows of the coefficients, and a predicted pixel value of each of pixels of a column of the prediction block of the intra prediction generated according to the vertical mode is determined based on a pixel value of a pixel adjacent to a top of the column,

wherein, when the intra prediction mode is a horizontal mode where the significant coefficient mainly appears around a first column, according to the scanning method determined in the step b), a first column of the coefficients is scanned from the entropy-decoded signals with priority, such that the first column of the coefficients is scanned from the entropy-decoded signals prior to the other columns of the coefficients, and a predicted pixel value of each of pixels of a row of the prediction block of the intra prediction generated according to the horizontal mode is determined based on a pixel value of a pixel adjacent to a left of the row,

wherein, the coefficients represent a transformed and quantized residue block,

wherein, a residue block represents a difference between a block of the recovered picture and the prediction block,

wherein, the coefficients are inversely transformed and dequantized to produce the residue block."

X. Claim 1 of auxiliary request 2 reads as follows (features added compared with claim 1 of the main request are underlined):

"A method for decoding moving pictures based on adaptive scanning, comprising the steps of:

(a) performing entropy decoding onto encoded bitstream to produce entropy-decoded signals;

(b) determining (S610; S630) a scanning method for the entropy-decoded signals adaptively based on the entropy-decoded signals; and

(c) outputting a recovered picture based on the entropy-decoded signals and the scanning method,

wherein, an intra prediction mode determines both of the scanning method for the entropy-decoded signals and a direction for intra prediction to generate a prediction block, wherein the intra prediction mode was selected based on rate-distortion optimization,

wherein, when the intra prediction mode is a vertical mode, according to the scanning method determined in the step b), a first row of coefficients is scanned from the entropy-decoded signals with priority, such that the first row of the coefficients is scanned from the entropy-decoded signals prior to the other rows of the coefficients, and a predicted pixel value of each of pixels of a column of the prediction block of the intra prediction generated according to the vertical mode is determined based on a pixel value of a pixel adjacent to a top of the column,

wherein, when the intra prediction mode is a horizontal mode, according to the scanning method determined in the step b), a first column of the coefficients is scanned from the entropy-decoded signals with priority, such that the first column of the coefficients is scanned from the entropy-decoded signals prior to the other columns of the coefficients, and a predicted

pixel value of each of pixels of a row of the prediction block of the intra prediction generated according to the horizontal mode is determined based on a pixel value of a pixel adjacent to a left of the row,

wherein, the coefficients represent a transformed and quantized residue block,

wherein, a residue block represents a difference between a block of the recovered picture and the prediction block,

wherein, the coefficients are inversely transformed and dequantized to produce the residue block."

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

Main request

(a) The example provided by the board to dispute the technical effect of claim 1 was just one special case. It was known that there was a variation among the blocks in an image frame and that a gain was achieved only on average over the statistical variation of frames occurring in a sequence of images.

(b) The experimental results showed a gain in the standard video test sequences used by the ITU Video Coding Expert Group to evaluate coding efficiency. These video test sequences were intentionally chosen by the standardisation committee because they contained a realistic mixture of blocks.

(c) The results in Table 2 of document D2 were not comparable with the results in Table 2 of the current application because several coding parameters and the choice of entropy coder were different.

(d) If the samples in the first column were similar to the samples in subsequent columns, the horizontal mode was used for intra prediction. Conversely, if the samples in the first row were similar to the samples in subsequent rows, the vertical mode was used for intra prediction. As a result, the significant coefficients were generally located in the first row for the vertical mode and in the first column for the horizontal mode.

Auxiliary request 1

(e) The amendments of claim 1 expressed functional limitations in that:
- intra prediction in the vertical mode was selected under the condition that the significant coefficients mainly appeared around a first row
- intra prediction in the horizontal mode was selected under the condition that the significant coefficients mainly appeared around a first column

Auxiliary request 2

(f) A selection of coding modes based on rate-distortion optimisation was not obvious because this was computationally intensive. In practice, other criteria were used.

(g) The board was obliged to provide evidence that using rate-distortion optimisation for the selection of scanning modes was common general knowledge.

Reasons for the Decision

1. The appeal is admissible.

2. Main request - inventive step (Article 56 EPC)

2.1 The first group of embodiments of document D1 may be regarded as the closest prior art for the assessment of inventive step of the subject-matter of claim 1.

2.2 The first group of embodiments of document D1 (see column 23, line 1 to column 30, line 3) discloses:

a method for decoding moving pictures (see Figure 12: "*Image Predictive Decoding Apparatus*") based on adaptive prediction (see column 28, lines 60 to 63: "*image data of the optimum prediction small region is determined by the controller 908 on the basis of a control signal from the data analyzer 902*"), comprising the steps of:

(a) performing entropy decoding onto encoded bitstream to produce entropy-decoded signals (although not shown in Figure 12, it is implicit that variable length decoding of DCT coefficients takes place to invert the corresponding operation in the encoder, see column 23, lines 43 to 48: "*The quantized image data of the small region is outputted to the output terminal 106 via a line 116, further transformed into a code of a variable length*")

(b) determining a prediction method for the entropy-decoded signals adaptively based on the entropy-decoded signals (see column 28, lines 60 to 63: "*image data of the optimum prediction small region is determined by the controller 908 on the basis of a control signal from the data analyzer 902*")

(c) outputting a recovered picture based on the entropy-decoded signals and the prediction method (see Figure 12: 917)

wherein, an intra prediction mode determines a direction for intra prediction to generate a prediction block (see Figures 2, 4, 5)

wherein, when the intra prediction mode is a vertical mode, a predicted pixel value of each of pixels of a column of the prediction block of the intra prediction generated according to the vertical mode is determined based on a pixel value of a pixel adjacent to a top of the column (see Figures 2, 5 and column 24, lines 39 to 46)

wherein, when the intra prediction mode is a horizontal mode, a predicted pixel value of each of pixels of a row of the prediction block of the intra prediction generated according to the horizontal mode is determined based on a pixel value of a pixel adjacent to a left of the row (see Figures 2, 4 and column 24, lines 27 to 35)

wherein, the coefficients represent a transformed and quantised residue block (see column 23, lines 29 to 41)

wherein, a residue block represents a difference between a block of the recovered picture and the prediction block (see column 23, lines 29 to 34)

wherein, the coefficients are inversely transformed and dequantised to produce the residue block (see Figure 12: "*Inverse Quantizing*" 904 and "*Inverse DCT*" 905)

2.3 The subject-matter of claim 1 thus differs from the disclosure of the first group of embodiments of document D1 in that the former specifies that:

(a) an adaptive scanning method is determined by the intra prediction mode

(b) when the intra prediction mode is a vertical mode, according to the determined scanning method, a first row of coefficients is scanned from the entropy-decoded signals with priority, such that the first row of the coefficients is scanned from the entropy-decoded signals prior to the other rows of the coefficients

(c) when the intra prediction mode is a horizontal mode, according to the determined scanning method, a first column of the coefficients is scanned from the entropy-decoded signals with priority, such that the first column of the coefficients is scanned from the entropy-decoded signals prior to the other columns of the coefficients

2.4 According to the paragraph bridging pages 4 and 5 of the description, adaptively scanning a block according to an intra prediction mode improves the compression rate.

2.5 It is common general knowledge that when converting a 2D array of coefficients into a 1D vector, it is advantageous to concentrate the non-zero coefficients at the beginning, producing long runs of zeros at the end of the vector. This makes run-length coding very efficient (see, for example, document D2, section 4, first paragraph). In regular blocks, the dominant coefficients are located in the upper-left part of the 2D matrix and therefore a zigzag scan is used prior to run-length coding (see, for example, document D1, column 3, lines 51 to 53).

2.6 According to the description, page 9, lines 8 to 12, in the vertical intra prediction mode, the significant coefficients mainly appear around a first row. In the horizontal intra prediction mode, the significant coefficients mainly appear around a first column.

Scanning the first row prior to the other rows would thus be appropriate for the vertical intra prediction mode where the significant coefficients are mainly positioned in around the first row (see description, page 9, lines 22 to 25; page 10, lines 5 to 11 and Figure 6).

Scanning the first column prior to the other columns would thus be appropriate for the horizontal intra prediction mode where the significant coefficients are mainly positioned in around the first column (see description, page 9, lines 25 to 28; page 10, lines 20 to 25 and Figure 7).

2.7 However, the board is of the opinion that the initial assumption recited in the first paragraph of point 2.6 above is not generally valid.

The description, page 9, lines 5 to 12 sets out: "*However, when the vertical mode or a horizontal mode is selected as an intra prediction mode, the correlation property of the residue signal may increase in a vertical or a horizontal direction. In the case of the vertical mode, the significant coefficient mainly appears around a first row. And, in the case of the horizontal mode, the significant coefficient mainly appears around a first column.*"

The board finds it helpful to consider the following simple example.

The pixel values in the last row of the top adjacent block are 1, 2, 2, 1, and the pixel values in the block to be predicted are:

1, 2, 2, 1
1.1, 2.1, 2.1, 1.1
0.9, 1.9, 1.9, 0.9
1, 2, 2, 1

Hence, the residue block has the following values:

0, 0, 0, 0
0.1, 0.1, 0.1, 0.1
-0.1, -0.1, -0.1, -0.1
0, 0, 0, 0

In this example, after vertical prediction, the correlation in the horizontal direction is clearly larger than the correlation in the vertical direction. In fact, the residue values in horizontal direction are all the same, and thus the DCT coefficients of the residue signal in the first row are all zero.

In this example, a vertical prediction thus leads to a situation in which the dominant DCT coefficients after vertical prediction are located in the first column and not in the first row.

This runs counter to the statement in the description on page 9, lines 8 to 10: "*In the case of the vertical mode, the significant coefficient mainly appears around a first row.*"

2.8 The appellant argued that the example provided by the board was just one special case. It was known that there was a variation among the blocks in an image frame and that a gain was achieved only on average over the statistical variation of frames occurring in a sequence of images (see point XI.(a) above).

The appellant submitted that the application provided experimental results according to which a gain was achieved in the standard video test sequences used by the ITU Video Coding Expert Group to evaluate coding efficiency. These video test sequences were intentionally chosen by the standardisation committee because they contained a realistic mixture of blocks (see point XI.(b) above).

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

(a) The board is of the opinion that the chosen example is typical in that vertical prediction is selected when the spatial prediction in the vertical direction is more similar to the current block than in the other directions. So if there is a variation in the horizontal direction among the pixel values

of the current block, vertical prediction is preferably selected if the lowest row of the block serving as the prediction source has that same horizontal variation of pixel values. After subtraction of the block serving as the prediction source from the current block, the variation of the pixel values in the horizontal direction is thus reduced. This leads to a higher correlation in the horizontal direction. Depending on the initial correlation of pixel values in the row direction, the correlation in the horizontal direction may become dominant.

(b) The board does not put into question the gain according to the experimental results contained in the current application but is of the opinion that claim 1 does not contain all the features necessary for achieving this gain. This is illustrated by the fact that the same video test sequences are used in document D2 where an average gain is achieved using, generally speaking, the opposite scanning mode selection procedure (see Table 2 of D2). In particular, according to document D2, Figure 4(a), the coefficients of a first column are scanned with priority in the vertical prediction mode.

2.10 The appellant argued that the results in document D2 were not comparable to the results in the current application for the following reasons (see point XI.(c) above).

- Document D2 used the test model JM3.9, while the current application used the test model JM96.
- The quantisation parameters were different.
- The number of required bits was very different. The lower number of bits per frame in document D2 suggested that only a part of the frame was used.

- Different entropy coders were used, namely CAVLC in document D2 and CABAC in the current application.

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

- The test models used in document D2 and the current application are from the same coding standard H.264.
- The quantisation parameters cover at least a similar range (24 to 36 in document D2 and 25 to 40 in the current application).
- The by far larger number of required bits in the current application may be explained in that the current application provides the number of bits for an entire video sequence (see Table 2: "bits"), while document D2 provides the number of bits per frame (see D2, Table 2 "bits/frame").
- CABAC and CAVLC are both entropy-coding modes in H.264 and yield comparable performance.

More importantly, if the result of the claimed method were to depend critically on any of these aspects, these aspects would be essential and would have to be included in the claimed subject-matter.

2.12 The appellant further argued that if the samples in the first column were similar to the samples in subsequent columns, the horizontal mode was used for intra prediction. Conversely, if the samples in the first row were similar to the samples in subsequent rows, the vertical mode was used for intra prediction. As a result, the significant coefficients were generally located in the first row for the vertical mode and in the first column for the horizontal mode (see point XI.(d) above).

2.13 The board is not convinced by this argument for the following reasons.

(a) This argument mentions only the samples in the columns/rows of a current block to be encoded and their similarity to each other. However, a typical decision about a prediction direction is not based on the relative similarity of columns/rows within a block to be encoded but on where the best match is found, i.e. whether the samples in the block resemble the lowest row in the block above it or the right-most column in the block to its left.

(b) The example provided by the appellant applies to a situation in which the first column is similar to the samples in the three subsequent columns but not to the samples in columns 4 to 8 (for an 8x8 block). This situation would mean that there is a vertical edge in the block to be encoded. If that vertical edge persisted after the prediction, it would mean that the dominant coefficients are in the first row and not in the first column.

2.14 Therefore, the board is of the opinion that the technical effect can only be achieved if the blocks serving as the prediction sources are chosen in a very specific manner.

However, claim 1 does not specify how to select between intra prediction in the vertical and horizontal modes, i.e. which criterion is applied to decide whether a top or a left adjacent block is suitable as a prediction source.

Therefore, the board is of the opinion that the technical effect set out in the description on page 9,

lines 5 to 12 is not achieved over the entire range covered by claim 1. Hence, the objective technical problem should be reformulated in less ambitious terms (see Case Law of the Boards of Appeal of the European Patent Office, 10th edition 2022 ("Case Law"), I.D.4.4.1). The board is of the opinion that on the basis of the technical effect set out in the description (i.e. the paragraph bridging pages 4 and 5), the objective technical problem should be reformulated as how to improve a compression rate.

2.15 Faced with this problem, the person skilled in the art would have considered document D2 because it relates to intra prediction using the directional modes of AVC/H.264 (see D2, Figure 1).

2.16 Document D2 discloses improving the compression rate (see the experimental results in D2, Table 2) by adapting the transform coefficient scanning order to the prediction mode (see D2, Figure 4: "*Transform coefficient scanning order of (a) vertical prediction mode, and (b) horizontal prediction mode*").

2.17 By applying the teaching of document D2 to a decoder according to document D1, the person skilled in the art would have arrived at a decoder using intra prediction and adapting the scanning order to the intra prediction mode such that dominant coefficients would be scanned with priority. The intra prediction mode is generally selected on the basis of properties of the block to be coded and neighbouring blocks. Since, however, the claim does not specify under which circumstances the horizontal or the vertical intra prediction mode is to be selected (see also point 2.14 above), the selection of a corresponding scanning mode giving priority to either the first row or the first column is arbitrary.

The board is of the opinion that such a non-purposeful selection of scanning modes cannot contribute to inventive step.

2.18 In view of the above, the board finds that no inventive step can be seen in the claimed subject-matter.

3. Auxiliary requests 1 and 2 - admittance (Article 13(2) RPBA 2020)

3.1 Auxiliary requests 1 and 2 were filed after notification of the summons to oral proceedings. These auxiliary requests are therefore amendments within the meaning of Article 13(2) RPBA 2020.

3.2 The board raised a new objection of lack of inventive step in its communication under Article 15(1) RPBA 2020. In response to this communication, the appellant filed auxiliary requests 1 and 2 with the aim of overcoming this new objection. The board considers this to represent exceptional circumstances within the meaning of Article 13(2) RPBA 2020. Exercising its discretion under this provision, the board thus decided to admit auxiliary requests 1 and 2 into the appeal proceedings.

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

4.1 Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the former further specifies that:

(a) intra prediction is a vertical mode "*where the significant coefficient mainly appears around a first row*"

(b) intra prediction is a horizontal mode "*where the significant coefficient mainly appears around a first column*"

4.2 The appellant argued that these amendments express functional limitations in that (see point XI.(e) above):

(a) intra prediction in the vertical mode is selected under the condition that the significant coefficients mainly appear around a first row

(b) intra prediction in the horizontal mode is selected under the condition that the significant coefficients mainly appear around a first column

4.3 However, once it is known that the significant coefficients mainly appear around a first row or a first column, it would have been obvious to the person skilled in the art, based on their common general knowledge (see point 2.5 above), that these significant coefficients must be scanned with priority.

4.4 Hence, the person skilled in the art would have arrived at the distinguishing features identified under point 2.3 above in a straightforward manner.

4.5 Therefore, the board finds that the subject-matter of claim 1 according to auxiliary request 1 does not involve an inventive step within the meaning of Article 56 EPC.

5. Auxiliary request 2 - inventive step (Article 56 EPC)

5.1 Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the former further specifies that "*the intra prediction mode was selected based on rate-distortion optimization*".

5.2 Rate-distortion optimisation is a known strategy for selecting among various modes in video coding. Rate-distortion optimisation is known to be the most accurate criterion for selecting coding modes at the expense of significant computational complexity.

This was not contested by the appellant.

5.3 Document D2 discloses another, simpler criterion for deciding between the scanning modes, namely the minimisation of the mean square error (MSE).

5.4 For the person skilled in the art, it would have been obvious to choose the known rate-distortion optimisation as an alternative selection criterion with the aim of improving the accuracy of the selection of the scanning mode.

5.5 The appellant argued that selection of coding modes based on rate-distortion optimisation was not obvious because this was computationally intensive. In practice, other criteria were used (see point XI.(f) above).

5.6 The board is not convinced by this argument for the following reasons. It is true that there are numerous methods for selecting between different video coding modes. These methods differ in how accurately they select a coding mode and in their computational complexity. In other words, they have known pros and cons. At least one obvious choice among these methods is rate-distortion optimisation because it provides the most accurate selection of coding modes at the expense of the highest computational complexity.

If there are a number of solutions that are equally obvious, it is sufficient that the person skilled in the art can recognise the solutions concerned without inventive effort: a separate pointer is not required (see Case Law, I.D.5, last paragraph).

5.7 The appellant requested that the board provide evidence that using rate-distortion optimisation for the selection of scanning modes was common general knowledge (see point XI.(g) above).

5.8 The board finds that it does not need to provide such evidence for the following reasons.

In document D2, the different scanning modes are selected on the basis of the criterion of minimum MSE. The appellant did not contest that rate-distortion optimisation is a known alternative to the criterion of minimum MSE for selecting video coding modes (see point 5.2 above). Hence, the only question is whether the person skilled in the art would have applied this known alternative criterion for the selection of video coding modes to the specific selection of prediction modes and the consequential selection of scanning modes. This question, i.e. whether an undoubtedly known principle is applied to a particular situation, resembles the question of whether the person skilled in the art would have combined the disclosures of two documents. This question is thus a matter of assessing inventive step and not establishing facts for which evidence may need to be provided.

5.9 In view of the above, the board finds that the subject-matter of claim 1 of auxiliary request 2 does not involve an inventive step within the meaning of

Article 56 EPC for the same reasons as those set out under point 2. for the main request.

6. Conclusion

The main request and auxiliary requests 1 and 2 are not allowable because the subject-matter of claim 1 of each of these requests does not involve an inventive step within the meaning of Article 56 EPC. Since none of the appellant's requests is allowable, the appeal must 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