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D E C I S I O N
of 16 November 2005

Case Number: T 1180/01 - 3.5.01

Application Number: 95935250.1

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Language of the proceedings: EN

Title of invention:

Delay detector apparatus and method for plural image sequences

Applicant:

PIXEL INSTRUMENTS CORPORATION

Opponent:

-

Headword:

Delay detector/PIXEL INSTRUMENTS

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

"Novelty (main and first auxiliary requests - no) "

"Remittal (second auxiliary request) "

Decisions cited:

-

Catchword:

-



Case Number: T 1180/01 - 3.5.01

D E C I S I O N
of the Technical Board of Appeal 3.5.01
of 16 November 2005

Appellant: PIXEL INSTRUMENTS CORPORATION
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 24 April 2001
refusing European application No. 95935250.1
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. Steinbrener
Members: R. Wibergh
M.-B. Tardo-Dino

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse European patent application No. 95935250.1.
- II. According to the decision appealed, the subject-matters of independent claims 1 and 20 in the version of 7 December 2000 did not involve an inventive step (Article 56 EPC). Without citing any prior art documents the examining division considered the invention to lie within the common general knowledge of the person skilled in the art. The dependent claims were regarded as concerning routine matters.
- III. With the statement of grounds of appeal, the appellants requested grant of a patent based on the claims on file or on claims according to three auxiliary requests filed together with the grounds of appeal, or else that the case be remitted for further examination on the basis of claims 2, 4-19, and 23-27 of the main request (fourth auxiliary request).
- IV. Claims 1 and 20 of the *main request* read (excluding the reference signs):
1. An apparatus for determining the best match between a first image and a plurality of other images, the apparatus comprising in combination:
 - (a) an element for obtaining a first set of samples of said first image at known image locations,
 - (b) an element for obtaining other sets of samples consisting of samples from said plurality of other images at similar known image locations,

- (c) an element for comparing said first set of samples to said other sets of samples,
- (d) an element for determining which one of said other sets of samples most closely matches said first set of samples.

20. A method for determining the best match between a first image and a plurality of other images, the method comprising the steps of:

obtaining a first set of samples of said first image at known image locations,

obtaining other sets of samples from said plurality of other images at similar said known image locations, comparing said first set of samples to said other sets of samples,

determining which one of said other sets of samples most closely matches said first set.

V. Claim 1 of the *first auxiliary request* essentially differed from the main request in being directed to an apparatus for determining a match between a first image and a *substantially identical image included among a plurality of other images*.

VI. Claim 1 of the *second auxiliary request* read (excluding the reference signs):

1. An apparatus for determining the best match between a first image and a plurality of other images, the apparatus comprising in combination:

- (a) an element for obtaining a first set of samples of said first image at known image locations,

- (b) an element for obtaining other sets of samples consisting of samples from said plurality of other images at similar known image locations,
- (c) an element for comparing said first set of samples to said other sets of samples,
- (d) an element for determining which one of said other sets of samples most closely matches said first set of samples

the apparatus being further operative for determining the delay of a relatively delayed version of a sequence of said images with respect to a relatively undelayed version of a sequence of said images including in combination:

in element (a) obtaining said first set of samples of one of said images from one of said delayed or said undelayed sequences of said images, in element (b) obtaining said other sets of samples for each of a plurality of said images of the other of said delayed or said undelayed sequences.

The *third and fourth auxiliary requests* concerned other limiting features.

VII. In a communication from the Board the opinion was expressed that the invention might not be new with respect to

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a document which had been cited by the examining division in a communication.

VIII. Oral proceedings were held on 16 November 2005. The appellants requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request as annexed to the minutes of the oral proceedings before the examining division, or alternatively on the basis of the first, second and third auxiliary requests filed with the grounds of appeal. As a fourth auxiliary request they requested that the case be remitted to the department of first instance for further examination of the merits of claims 2, 4-19, and 23-27.

IX. At the end of the oral proceedings the Board announced its decision.

Reasons for the Decision

The main request

1. *Novelty*

1.1 D1 (Figure 1 and associated text) describes a method for determining the best match between a block of pixels (containing for examples sixteen values) and a plurality of stored code book entries (vectors) corresponding to predetermined pixel combinations. The block of pixels consists of digitized samples of an "image" (picture) taken at predetermined image locations. The samples are compared with code vectors and the closest match is determined.

- 1.2 If a block to be encoded in D1 can be identified with the "first image" in claim 20 of the present application, and the vectors in the code book with the "other images", then the subject-matter of claim 20 is not new. It should therefore be examined whether this identification is justified, ie if the skilled person would interpret the claim wording in such a broad way as to encompass the teaching of D1.
- 1.3 This is denied by the appellants. In the appellants' view, an "image" in the sense of the present application cannot refer to the limited set of samples constituting a block in D1. The word "image" in D1 related to the original picture which was digitized and split up into much smaller "blocks", or vectors, of data. The blocks were not pictures and could not be referred to as images. Similarly, the code book entries in D1 were data vectors or code words representing patterns, not images. They consisted of pre-ordained data and therefore did not constitute representations of variable images. Furthermore, the expression "set of samples" in claim 1 could only refer to samples of an image. It could not be taken to mean the complete image, as would be the case if the block of samples in D1 were considered to be the "image".
- 1.4 The main question is how the word "image" in claim 20 should be construed. In the preferred embodiment an image is represented by an analog or digital video field (see eg p.17 of the present application). The Board agrees that this is not the same thing as a block in D1. But the present description explicitly mentions that protection is sought also for other kinds of images (cf p.14, 1.19-28). The appellants have chosen

not to limit claim 20 to any particular kind of representation, and the skilled person would therefore have no reason to assume that the word "image" must be understood (by implication) in a limited sense. In particular, the claim imposes no size limit on the image. Nor does it impose any restriction as to the kind of picture being represented (which would in any case hardly be possible due to the generally non-technical character of data contents).

- 1.5 It follows from these considerations that the "image" in claim 1 cannot be distinguished from the block of samples in D1 on the basis of its size (number of samples). This is not surprising since there is no apparent reason why a method for finding a "best match" between images should depend on their size.

Furthermore, the appellants' observation that the skilled person studying D1 would never refer to a "block" as an "image" is not quite to the point. The Board accepts that an expert in video data compression, which is the technical field with which D1 is concerned, might attribute particular and mutually exclusive meanings to the expressions "image" and "block". But this expert is not the only possible skilled person in the present case since data compression, although mentioned in the description, is not referred to in the independent claims. In fact, claim 20 is so general, and its technical teaching so vague, that it is even difficult to determine in what technical area or areas the appropriate skilled person is supposed to work. It follows that there is no reason to assume that the word "image" in the claims must be given the special meaning it might have in D1.

Nor does the Board regard the expression "set of samples of said first image" in claim 20 as excluding the block to be encoded (in its entirety) in D1. It is foreseen in the present application that the image can be in the form of a video field consisting of sampled and digitized data (p.17), and the block in D1 also consists of sampled and digitized data. Furthermore, a "set" of samples is not necessarily a sub-set but could comprise *all* of the digitized values, as in D1.

For these reasons the Board concludes that the expression "first set of samples" in claim 1 covers the block of data to be encoded in D1.

- 1.6 Similarly, the Board regards the expression "other sets of samples" in claim 1 as covering the code book entries in D1. As before, a distinction based on the number of samples does not appear possible; the "sets" of samples are not necessarily sub-sets; and the "images" can be in the form of digitized data. To make a difference between "image matching" and "pattern matching", as suggested by the appellants, would again appear to involve an inadmissible comparison of data contents, even assuming there existed a generally accepted difference between images and patterns. Furthermore, although it is true that the code book entries have not been created by sampling variable images, they nevertheless *represent* pictures (picture elements), namely the picture elements making up the decoded image in the receiver. As already noted, this is not different from the present application, according to which images may also be represented by digitized samples.

1.7 Thus, the method of claim 20 is not new (Article 54 EPC). For the same reasons the apparatus of claim 1 is also not new.

2. *Inventive step*

The appellants have submitted that even if D1 were novelty-destroying it merely constituted an accidental anticipation. The Board, although having doubts about the truly accidental character of a very broad claim being anticipated by a document outside the limited technical area of the invention *as described*, agrees that it would probably be easy in this case to amend the claims in order to overcome the novelty objection. It should therefore be pointed out that even in the absence of D1 the Board would regard the subject-matter of claim 20 as lacking an inventive step (Article 56 EPC), basically because of the reasons given in the decision under appeal. A human being, faced with the problem of finding a given image in a set of images, would as a matter of course compare image details at certain locations in the given image with the details at the corresponding locations in the other images. This follows directly from the very meaning of "best match" (which includes complete identity), namely that all the details of the given image are present and properly located in the other image. A mechanized method - assuming that claim 20 can be regarded as limited to this, which is questionable - designed along the same lines would then not be inventive since it would be designed merely to imitate human behaviour. The appellants have argued that they are "unaware of any prior art technique in which a given image is

compared to a set of images comprising itself and other images" (statement of grounds, point 4(a)). Here the Board notes that although the problem of *how* to find the best match using technical means will involve technical considerations, the mere suggestion *that* images be compared generally does not (it could for example be part of a game). Only in very particular circumstances might this step be of a technical nature, for example if it is an integral part of a method for synchronising video and audio signals. This is in fact the technical application according to the preferred embodiment, but claim 20 is not limited to it. Thus, the claim is too generally worded to represent a solution to a technical problem, and the question whether an inventive step resides in the recognition of such a problem does not arise.

3. For these reasons the main request has to be refused.

The first auxiliary request

4. According to claim 1 of the first auxiliary request the apparatus is for determining a match between a first image and a *substantially identical image included among* a plurality of other images. The additional feature does not concern the claimed apparatus itself but the images (signals) applied to it. Since the apparatus according to claim 1 of the main request is undisputedly suitable for processing identical images, the auxiliary request does not imply any additional apparatus features. Thus the objections in respect of the main request apply equally to the first auxiliary request, which must therefore also be refused (Article 54 EPC).

The second auxiliary request

5. The independent claims of the second auxiliary request concern not just image comparisons in general but comparisons in order to determine a delay between image sequences. This particular application is not addressed in D1. The additional features were contained in claim 9 of the set of claims before the examining division. The examining division observed in their decision (point 13) that all dependent claims appeared to concern routine matters normally to be expected of a skilled person, but this view was not substantiated. The case should therefore be remitted to the examining division for examination of the invention in the form now requested by the appellants.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The main and first auxiliary requests are refused.
3. The case is remitted to the department of the first instance for further prosecution on the basis of the second auxiliary request filed with the grounds of appeal.

The Registrar:

The Chairman:

M. Kiehl

S. Steinbrener