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Datasheet for the decision
of 6 May 2010

Case Number: T 0360/06 - 3.5.04

Application Number: 98903261.0

Publication Number: 0927488

IPC: H04N 5/14

Language of the proceedings: EN

Title of invention:
Video signal analysis and storage

Applicant:
Koninklijke Philips Electronics N.V.

Headword:
-

Relevant legal provisions:
EPC R. 103(1)
RPBA Art. 15(3)

Relevant legal provisions (EPC 1973):
EPC Art. 54(1)
EPC R. 71(2)

Keyword:
"Novelty (no)"

Decisions cited:
J 0011/80, J 0011/87

Catchword:
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Case Number: T 0360/06 - 3.5.04

D E C I S I O N
of the Technical Board of Appeal 3.5.04
of 6 May 2010

Appellant:
Koninklijke Philips Electronics N.V.
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Decision under appeal:
Decision of the Examining Division of the
European Patent Office posted 11 November 2005
refusing European patent application
No. 98903261.0 pursuant to Article 97(1) EPC
1973.

Composition of the Board:

Chairman: F. Edlinger
Members: A. Teale
                  T. Karamanli

C3601.D

Summary of Facts and Submissions

I.   This is an appeal by the applicant against the decision by the examining division refusing European patent application No. 98 903 261.0.

II.   The claims forming the basis of the appealed decision comprised two independent claims, claim 1 reading as follows.

"Video scene change detection apparatus comprising: an input for a video signal with accompanying audio soundtrack (Av_{in}), and means for detecting scene changes in the video signal received via said input, said means being adapted to receive said audio soundtrack and to determine an audio signal level associated with the audio soundtrack, and further comprising first storage means (22) adapted to maintain a record of the last determined audio signal level, and comparator means (24) adapted to compare determined audio signal levels, characterised in that the means for detecting scene changes further comprises a filtering arrangement (20) adapted to filter said received audio soundtrack to periodically determine a background audio signal level (A1) as the said determined audio signal level, wherein said first storage means (22) is adapted to maintain a record of the last determined background audio signal level, and wherein said comparator means (24) is adapted to flag a scene change when the current determined background audio signal level (A2) differs from the stored (22) last background audio signal level (A1) by more than a predetermined amount."

III.	According to the reasons for the appealed decision, the meaning of the term "background audio signal level", used *inter alia* in claim 1, was broad and subjective. The "signal level" as claimed might relate to a level of a single audio signal or to the level of an ensemble of audio signals, an objective criterion for a signal being background or foreground not being provided. Nevertheless the term was sufficiently clear, but its broad scope was to be borne in mind when considering *inter alia* novelty. The examining division also found that the subject-matter of claim 1 lacked novelty, Article 54 EPC 1973, in view of the disclosure of the following document:

D1:	JP 61034764 A.

D1 disclosed an input, first storage means (2), a filtering arrangement (3) and comparator means (5) as claimed. D1 stated that the current state of the audio signal was calculated by averaging over 5 seconds. The nature of averaging implied suppression of high frequency components, and thus functional block 3 effectively constituted a low pass filter. The present application disclosed a background detection involving its "underlying amplitude" parameter, but the objective derivation of said parameter was mere speculation, since the application was silent about the way in which the "underlying amplitude" of the background audio signal was determined. Calculation of averages in the particular example of figure 1 of the present application would result in horizontal levels in approximation to the levels A1 and A2 of figure 1. This approximation might have its limitations, but provided

an estimate of "underlying amplitude" and thus "audio background".

IV.   In a notice of appeal and a subsequently filed statement of grounds of appeal the appellant requested that the decision be set aside and that a patent be granted on the basis of sets of claims filed as a main and first and second auxiliary requests (in this order) with the statement of grounds of appeal. The appellant also requested an opportunity to amend the description in conformity with any allowed request at a later date.

V.   The claims according to the main request comprise two independent claims, claim 1 reading as follows.

"Video scene change detection apparatus comprising: an input for a video signal with accompanying audio soundtrack (Av_{in}), and means for detecting scene changes in the video signal received via said input, said means being adapted to receive said audio soundtrack and to determine an audio signal level associated with the audio soundtrack, and further comprising first storage means (22) adapted to maintain a record of the last determined audio signal level, and comparator means (24) adapted to compare determined audio signal levels, wherein the means for detecting scene changes further comprises a filtering arrangement (20) adapted to filter said received audio soundtrack to periodically determine a background audio signal level (A1) as the said determined audio signal level, and wherein said first storage means (22) is adapted to maintain a record of the last determined background audio signal level, and wherein said comparator means (24) is adapted to flag a scene change when the current

determined background audio signal level (A2) differs
from the stored (22) last background audio signal level
(A1) by more than a predetermined amount."

VI.   The claims according to the first auxiliary request
        comprise two independent claims, claim 1 reading as
        follows.

        "Video scene change detection apparatus comprising: an
        input for a video signal with accompanying audio
        soundtrack (Av_{in}), and means for detecting scene changes
        in the video signal received via said input, said means
        being adapted to receive said audio soundtrack and to
        determine an audio signal level associated with the
        audio soundtrack, and further comprising first storage
        means (22) adapted to maintain a record of the last
        determined audio signal level, and comparator means (24)
        adapted to compare determined audio signal levels,
        wherein the means for detecting scene changes further
        comprises a filtering arrangement (20) adapted to
        filter said received audio soundtrack to periodically
        determine a background audio signal level (A1)
        comprising an underlying audio amplitude of said audio
        soundtrack, wherein said first storage means (22) is
        adapted to maintain a record of the last determined
        background audio signal level, and wherein said
        comparator means (24) is adapted to flag a scene change
        when the current determined background audio signal
        level (A2) differs from the stored (22) last background
        audio signal level (A1) by more than a predetermined
        amount."

VII. The claims according to the second auxiliary request
      comprise two independent claims, claim 1 reading as
      follows.

      "Video scene change detection apparatus comprising: an
      input for a video signal with accompanying audio
      soundtrack (Av_{in}), and means for detecting scene changes
      in the video signal received via said input, said means
      being adapted to receive said audio soundtrack and to
      determine an audio signal level associated with the
      audio soundtrack, and further comprising first storage
      means (22) adapted to maintain a record of the last
      determined audio signal level, and comparator means (24)
      adapted to compare determined audio signal levels,
      wherein the means for detecting scene changes further
      comprises a filtering arrangement (20) adapted to
      filter said received audio soundtrack to periodically
      determine a background audio signal level comprising an
      underlying audio amplitude corresponding to a local
      minimum in the level of said audio soundtrack, wherein
      said first storage means (22) is adapted to maintain a
      record of the last determined background audio signal
      level, and wherein said comparator means (24) is
      adapted to flag a scene change when the current
      determined background audio signal level (A2) differs
      from the stored (22) last background audio signal level
      (A1) by more than a predetermined amount."

VIII. In the statement of grounds of appeal the appellant
      argued essentially that background audio levels were
      good indicators of scene changes in an A/V stream. The
      concept of background audio was well known to those
      skilled in the art of sound encoding, decoding and
      reproduction. For example, when one was seated in one's

office, and stopped speaking, the background noise became apparent. In an office environment the background audio comprised such elements as the whine of a computer on the desk, air conditioning or heating system sound, and perhaps noise from the road outside if a window was open. In a scene from a movie or film, the background noise was that present in the ambient environment when the main content such as dialogue, etc was absent. Hence an engineer could measure a background audio level in the absence of speech or dialogue, preferably during "quiet" periods in an environment or in a recording of an environment. The invention as claimed comprised the features of filtering a received audio sound track to periodically determine a background audio signal level, and comparing this background level with a stored background level in order to flag a scene change. The appellant also argued that the claimed subject-matter of all requests was novel and inventive. D1 did not disclose the measuring of a background audio level but compared overall audio signal levels. The filtering arrangement of the present application relied on a purposeful selection and was not the same as averaging.

IX.   In a letter dated 18 September 2009 the appellant stated that "I hereby withdraw the EP Patent Applications indicated in the attached list, on the condition that any fee is refunded. It is understood that if no refund is possible, the application is not withdrawn." The attached list indicated the present application.

X.   The board issued a summons to oral proceedings accompanied by an annex according to Article 15(1) RPBA

(see OJ EPO 2007, 536) setting out the board's
preliminary opinion on the appeal. The board questioned
whether the conditional withdrawal of the application
was clear or even possible, the conditions under
Rule 103(1) EPC for reimbursement of the appeal fee not
being fulfilled. The board also raised clarity
objections, Article 84 EPC 1973, against the
independent claims according to the main and first and
second auxiliary requests and questioned whether the
independent claims according to the second auxiliary
request satisfied Article 123(2) EPC regarding added
subject-matter. Furthermore the board questioned
whether the subject-matter of the independent claims
according to the main and first and second auxiliary
requests was novel having regard to D1, Article 54(1)
EPC 1973.

XI.   In a letter dated 5 February 2010 in reply to the
       summons the appellant stated that he would not be
       represented at the oral proceedings and requested "a
       decision on the file as it stands". The appellant did
       not provide any arguments regarding the substance of
       the case.

XII.   Oral proceedings were held on 6 May 2010 in the absence
       of the appellant, as announced in advance, in
       application of Article 15(3) RPBA and Rule 71(2) EPC
       1973.

XIII. At the end of the oral proceedings the board announced
       its decision.

Reasons for the Decision

1.   *Admissibility of the appeal*

      The appeal is admissible.

2.   *The conditional withdrawal of the application*

      In the letter dated 18 September 2009 the appellant
      withdrew the application "on the condition that any fee
      is refunded", emphasizing that if no refund was
      possible, the application was not withdrawn.

      The wording of the condition "that any fee is refunded"
      is ambiguous, since it is not clear which fees are to
      be refunded. For example, the question arises whether
      the appellant is referring to all fees paid for the
      present application. Moreover it is questionable
      whether such a conditional withdrawal is acceptable at
      all (see, for example, decisions J 11/80, OJ EPO 1981,
      141 and J 11/87, OJ EPO 1988, 367). In any case, the
      board finds that the conditions of Rule 103(1) EPC for
      reimbursement of the appeal fee are not fulfilled.

      Consequently the board finds that the appellant's
      declaration of conditional withdrawal has no legal
      effect.

3.   *The invention*

      According to page 1, lines 4 to 21, of the (amended)
      description, the invention concerns the automatic
      detection of scene changes in an audio plus video data
      stream based on the audio information. A scene change

is accompanied by a change of context of the displayed
material. For example, a scene may show two actors
talking, with repeated shot changes between two cameras
focused on the respective actors' faces and perhaps one
or more additional cameras giving wider or different
angled shots. A scene change only occurs when there is
a change in the action location or time. In essence,
the invention relies on changes in "background audio
levels" to detect such scene changes; see page 5a,
lines 8 to 11, of the description. In the light of
page 6, lines 1 to 6, of the description, the
background audio level is the minimum signal amplitude,
shown as "A1" and "A2" in figure 1, a filtering stage
periodically sampling the amplitude of the audio
waveform and, at regular intervals, outputting a
derived value for the background audio amplitude level;
see page 7, lines 9 to 13, of the description.

The board construes claim 1 of the main and first and
second auxiliary requests so that they make technical
sense and are not inconsistent with the description,
namely an underlying audio signal level which is
supposed to vary with scene changes and upon which
peaks will be superimposed (e.g. actors speaking; see
page 6, lines 1 to 6). Filtering the audio signal for
the purpose of detecting scene changes based on the
underlying audio signal level may therefore be based on
detecting individual sampled minimum levels (see, for
example, page 7, lines 9 to 21) and on detecting a
minimum level (such as A_1 and A_2 in figure 1) by
monitoring the overall audio signal level and
determining an average over predetermined periods of
time. It follows from figure 1 that detecting the
average overall audio signal level would show a

different value before and after time t_{AD}, the moment at which a transition between minimum levels A_1 and A_2 occurs, and would thus also be suitable for the stated purpose.

4.   *Novelty, Article 54(1) EPC 1973*

4.1   *The main request*

The subject-matter of claim 1 is essentially the same as that set out in claim 1 upon which the appealed decision is based.

In the light of its English abstract, D1 relates to means for avoiding recording commercials when recording a video signal based on the average level of the audio signal. The board finds that the transition at the start or the end of a commercial constitutes a scene change (flagged by comparator 5; see figure of abstract). The board also finds that the averaging and weighting circuits (2,4) known from D1 can be read onto the storage means set out in claim 1, since they are suitable for maintaining a record of the last background audio signal level as set out above at point 3. In the board's view, the averaging referred to in D1 implies storage. Likewise the 5 second averaging circuit 3 of D1 can be read onto the filtering arrangement set out in claim 1.

In terms of claim 1, D1 consequently discloses a video scene change detection apparatus comprising: an input for a video signal with accompanying audio soundtrack, and means (1-5) for detecting scene changes in the video signal received via said input, said means being

adapted to receive said audio soundtrack and to determine an audio signal level associated with the audio soundtrack, and further comprising first storage means (2,4) adapted to maintain a record of the last determined audio signal level, and comparator means (5) adapted to compare determined audio signal levels, wherein the means for detecting scene changes further comprises a filtering arrangement (3) adapted to filter said received audio soundtrack to periodically determine a background audio signal level as the said determined audio signal level, and wherein said first storage means (2,4) is adapted to maintain a record of the last determined background audio signal level, and wherein said comparator means (5) is adapted to flag a scene change when the current determined background audio signal level differs from the stored last background audio signal level by more than a predetermined amount (see penultimate sentence of abstract).

The appellant has argued that the claimed filtering does not cover the averaging known from D1. However, since averaging an audio signal in general may be considered as a kind of filtering amplitude values which reduces the influence of peaks (or high frequency components, and can be achieved by a low pass filter, as correctly stated in the decision under appeal), the board finds that the averaging known from D1 is an instance of the claimed filtering.

Consequently the board sees no reason to deviate from the position taken in the appealed decision regarding the then claim 1 and comes to the conclusion that the

subject-matter of claim 1 of the present main request lacks novelty, Article 54(1) EPC 1973, in view of D1.

4.2   *The first and second auxiliary requests*

The expressions added to claim 1 according to these requests, namely "comprising an underlying audio amplitude of said audio soundtrack" and "comprising an underlying audio amplitude corresponding to a local minimum in the level of said audio soundtrack", respectively, merely set out explicitly features which are implicit in any audio signal of the kind referred to in claim 1 but which do not limit the features of the apparatus, in particular the filtering arrangement.

It follows that the subject-matter of claim 1 according to the first and second auxiliary requests lacks novelty, Article 54(1) EPC 1973, in view of D1 for the same reasons as set out above in connection with the main request.

5.   *Conclusion*

None of the appellant's main and first and second auxiliary requests is allowable. Consequently the appellant's request concerning the amendment of the description does not come into play. It also follows that the appealed decision cannot be set aside.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Fernández Gómez   F. Edlinger