BESCHWERDEKAMMERN BOARDS OF APPEAL OF CHAMBRES DE RECOURS
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PATENTAMTS OFFICE DES BREVETS

Datasheet for the decision
of 30 May 2008

Case Number: T 1709/06 - 3.5.03

Application Number: 94916545.0

Publication Number: 0803163

IPC: H04J 3/16

Language of the proceedings: EN

Title of invention:
A multiplexer system using constant bit rate encoders

Applicant:
Thomson Inc.

Opponent:
-

Headword:
Multiplexer System/THOMSON

Relevant legal provisions:
EPC Art. 56, 111(1), 113(1)
EPC R. 103(1)(a), 111(2)
RPBA Art. 11

Relevant legal provisions (EPC 1973):
EPC R. 67, 68(2)

Keyword:
"Infringement of the right to be heard (yes)"
"Reasoned decision (no)"
"Substantial procedural violation (yes)"
"Reimbursement of the appeal fee (yes)"
"Remittal without substantive examination of the appeal (no)"
"Inventive step (yes, following amendment)"

Decisions cited:
G 0010/93, T 0740/93, T 1309/05, T 1356/05

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Case Number: T 1709/06 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 30 May 2008

Appellant: Thomson, Inc.
                                 10330 North Meridian St.
                                 Indianapolis
                                 IN 46290-1024   (US)

Representative: Ruellan-Lemonnier, Brigitte
                                 THOMSON multimedia
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Decision under appeal: **Decision of the Examining Division of the**
                                 European Patent Office posted 2 June 2006
                                 refusing European application No. 94916545.0
                                 pursuant to Article 97(1) EPC 1973.

Composition of the Board:

Chairman: A. S. Clelland
Members: T. Snell
                   R. Moufang

Summary of Facts and Submissions

I.   This appeal is against the decision of the examining
       division refusing European patent application
       No. 94916545.0, published as international application
       No. WO-A-95/29559.

II.   In the course of the examining procedure, the examining
       division issued first, second and third communications
       under Article 96(2) EPC 1973, dated respectively
       12.06.02, 19.08.03 and 30.12.04.

       In the above communications, the examining division
       referred to the following two documents:

       D1: US-A-5115309
       D2: Reininger et al: "Rate Control for VBR MPEG Video
            on Local Area Networks", Proceedings of SPIE, Vol.
            2188, pp 153-162

III.   The applicant responded to the above communications
       with first, second and third replies dated respectively
       04.04.03, 13.02.04, and 11.07.05. With each reply, an
       amended set of claims was filed.

IV.   In the first communication of the examining division,
       objections were raised under the terms of Article 52(1)
       EPC, *inter alia* on the grounds that claims 1 and 2 did
       not meet the requirement of novelty, or at least
       inventive step, having regard to D1, that claim 1 did
       not meet the requirement of inventive step having
       regard to D2, and that claim 19 (dependent on claim 2)
       did not meet the requirement for an inventive step
       having regard to D1 and the algorithm set out in D2.

In the second communication, new claim 1 was attacked for lack of inventive step based on D2 as closest prior art, combined with D1. Various objections under Article 84 EPC were also raised.

In the third communication, further objections under Article 84 EPC were raised. The applicant's analysis of D2 submitted in the applicant's second reply was contested.

V.   In a communication annexed to a summons to attend oral proceedings dated 08.02.2006 (to be referred to as the "fourth communication"), the examining division stated that claim 1 was not allowable "as per the objections of the first official communication with respect to the then claim 19". Thereafter, lack of inventive step with respect to D1 (taken alone) was argued; as part of the reasoning the examining division referred to "a result to be achieved" and to the Guidelines C-III, 4.7. The communication stated further: "For completion, and as described in detail in the second official communication, D2 applies such a principle of bandwidth sharing to a multiplex of MPEG streams".

VI.   The fourth communication additionally contained the following advice to the applicant: "If the applicant simply disagrees with the analysis of the examining division and intends to submit argumentation to that effect without substantive and significant changes to the claims addressing the objections raised, he is encouraged to request an appealable decision according to the state of the file in accordance with the Guidelines E-X, 4.4".

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VII.   In a reply to the summons to oral proceedings under
        Rule 71a(1) EPC 1973 received on 13.04.06 and dated
        (obviously erroneously) 13.04.05 (to be referred to as
        the "fourth reply"), the applicant submitted further
        observations in support of inventive step with respect
        to D1 and D2.

VIII.   In a further submission dated 12.05.06, the applicant
        withdrew the request for oral proceedings and requested
        a decision "on the basis of the file as it stands".

IX.   The examining division issued the impugned decision in
        a standard form. The decision refers to the first,
        second and fourth communications. The full text of the
        grounds for the decision reads as follows:

        "In the communication(s) dated 08.02.2006, 19.08.2003,
        12.06.2002 the applicant was informed that the
        application does not meet the requirements of the
        European Patent Convention. The applicant was also
        informed of the reasons therein.

        The applicant filed no comments or amendments in reply
        to the latest communication but requested a decision
        according to the state of the file by a letter received
        in due time on 12.05.2006.

        The application must therefore be refused."

X.   In the statement of grounds of appeal the appellant
        requested that the board reconsider the application and
        allow the application to issue as a patent.

The appellant submitted the following observations on the procedure followed by the examining division:

"The decision to refuse the European patent application was based on grounds the applicant has not filed comments or amendments in reply to the latest communication. This latest communication was the summons to attend oral proceedings, dated February 8, 2006.

The applicant sent an answer to this letter on April 13, 2006. No counter arguments were given by the Examiner in answer to these new arguments. Consequently, the applicant considers the grounds on which the decision is based are not valid and respectfully requests the Board of Appeal to reconsider the case".

The statement of grounds further contained detailed arguments as to why the subject-matter of claim 1 involved an inventive step with respect to D1 and D2, corresponding essentially to the fourth reply filed during the examining procedure.

As a precautionary measure, oral proceedings were requested.

XI.   In a communication accompanying a summons to oral proceedings the board noted that although the appellant had challenged the validity of the decision on procedural grounds, no reimbursement of the appeal fee had been requested under Rule 67 EPC 1973 (Rule 103(1)(a) EPC). In any event, given the age of the application the board proposed to examine the case in

substance rather than consider remittal to the examining division. The board gave a preliminary opinion in which objections under Articles 123(2), 84, and 52(1) in combination with Article 56 EPC were raised.

XII.   In response to the board's communication, the appellant filed a new set of claims 1-18 intended to replace the previous set of claims on file as a main request. An alternative version of claim 1 was filed as an auxiliary request. Supporting arguments were also submitted.

XIII.   Oral proceedings were held on 30.05.08. The appellant requested that the decision be set aside and a patent be granted on the basis of a single set of claims 1-18 filed during the oral proceedings (termed "main request"). Implicitly the request included the description and drawings currently on file, namely:

Description:
pages 1-3, 5 and 7-39 as published; pages 4, 4a, 6 received on 13.02.2004.

Drawings:
Sheets 1/3-3/3 as published.

The appellant requested further that the appeal fee be reimbursed. After deliberation, the board's decision was announced at the end of the oral proceedings.

XIV.   Claim 1 of the appellant's request reads as follows:

"A multiplexing system, comprising:

- a plurality of sources (5) of data signals representing respective sequences of pictures extending over a given GOP time period;

- a multiplexer (20) having a plurality of input terminals (1-K), and an output terminal (15),

- a plurality of channel processors (10), each having a data input terminal coupled to a respective one of the sources (5), a complexity output terminal adapted to produce a signal representative of the complexity of the entire sequence of pictures represented by the data signal at the data input terminal, a control input terminal, and a data output terminal coupled to a respective one of the input terminals (1-K) of the multiplexer (20) and adapted to produce an encoded signal at a constant bit rate set in response to the signal at the control input terminal; and

- a bit rate allocator (30), having a plurality of pairs of associated input and output terminals, each pair associated with a respective one of the channel processors, the input terminal of each pair coupled to the complexity output terminal of the associated channel processor, and the output terminal of each pair coupled to the control input terminal of the associated channel processor and adapted to generate a bit rate quota signal such that each channel processor (10) is allocated a bit rate related to the complexity represented by the signal at the associated input terminal and to the combined complexity represented by the signals at the input terminals of all of the plurality of pairs, wherein

- said multiplexer (20) is adapted to produce a signal
at its output terminal (15) having a predetermined
constant bit rate,
- each data signal source (5) is adapted to produce a
data signal that is a video signal comprising picture
data of said sequence of pictures comprising a number
of frames, wherein said given GOP time period is the
same for each of the plurality of channel processors,
- each channel processor (10) is adapted to generate
the complexity representative signal during encoding of
the sequence of pictures represented by the data signal
at the channel processor data input terminal; and
- the bit rate allocator (30) is adapted to generate a
separate bit rate quota signal for each channel
processor, the separate bit rate quota signals being
valid for the entire GOP time period following the
given GOP time period, in response to the complexity
representative signals, such that each channel
processor (10) is allocated a proportion of the
predetermined constant bit rate based on the proportion
of the complexity represented by the signal at the
associated input terminal of each pair to the combined
complexity represented by the signals at the input
terminals of all of the plurality of pairs."

Reasons for the Decision

1.   *Procedural matters*

1.1   *Article 113(1) EPC*

1.1.1 The impugned decision is in the form of a so-called
      "decision according to the state of the file". The
      decision includes the statement:

      "The applicant filed no comments or amendments in reply
      to the latest communication but requested a decision
      according to the state of the file by a letter received
      in due time on 12.05.2006".

1.1.2 This statement is factually incorrect, since the fourth
      reply of the applicant, including extensive comments in
      respect of the patentability of the claims, was filed
      after the last communication of the examining division.

1.1.3 The examining division's fourth and final communication
      included an objection of lack of inventive step based
      on document D1 taken alone. The matter distinguishing
      the claim from D1 was considered to be a mere re-
      statement of the objective technical problem in the
      form of a result to be achieved "without defining any
      technical structural features which would serve to
      distinguish the invention in an inventive manner from
      the prior art". It was however also argued that D1 at
      column 9, line 62 - column 10, line 3 would lead a
      skilled person to adapt the apparatus of D1 without the
      need for an inventive step. This argumentation based on
      D1 alone was presented by the examining division for
      the first time.

1.1.4   In the fourth reply of the applicant, filed in response
        to this communication, the following arguments are
        raised, at least in part, for the first time:

(i)   "The specification then points out that by using a GOP,
        the problems of buffer management and bit rate
        oscillations are reduced - that is, the technical
        solution (the use of GOPs as claimed) provides
        technical advantages."

(ii)   "Document D1 discloses at least some of the problems
        mentioned in our specification such as buffer underflow
        and overflow, rate oscillations. Nevertheless, document
        D1 only discloses a rate allocation at an image level.

        The one skilled in the art having to solve such a
        problem of bit rate oscillation or buffer overflow
        would not be enticed to use our invention, i.e. a rate
        control at a gop level as another [sic] solutions are
        given in document D1".

(iii)   "As in our patent application, problems raised in D2
        relate to image quality, buffer overflow (last
        paragraph of page 159). Nevertheless, the document
        proposes a bit rate control at an "instant" level as
        $R_i(t+1-T)$ corresponds to an instant t+1-T, or more
        precisely at an [sic] "multiplexing epoch" level.

        Consequently, although D2 discloses the use of GOP
        structures for determination of a cyclostationary
        period, to estimate R, this document doesn't propose a
        bit rate control at a gop level for solving such
        problems.

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In fact, if D2 discloses the GOP structure, it's only to benefit of its cyclostationary characteristic. An epoch duration is less than a frame period, a fortiori a gop period. In an example, a gop duration corresponds to 90 multiplexing epoches [sic].

The one skilled in the art having to solve such problems would be taught away, through the teaching of D2, from our invention, i.e. a rate control at gop level as such a solution is not suggested in D2 although buffer overflow, statistical multiplexing and gop structure are disclosed."

1.1.5   In accordance with Article 113(1) EPC, the decisions of the European Patent Office may only be based on grounds or evidence on which the parties concerned have had an opportunity to present their comments. In accordance with established case law, this means that not only must an opportunity to present comments be given, but these comments must also be actually taken into account. As the decision "on the state of the file" expressly states that no submissions of the applicant were filed after the final communication, and that the decision was based only on the first, second and fourth communications all issued before the date of the applicant's final submission, objectively considered, the fourth reply of the applicant has not been taken into account. Since the applicant's fourth reply contains a number of new arguments, it follows that the examining division did not consider these arguments when taking their decision. Moreover, at least some of these comments may be seen as a response to the examining division's having presented a new factual

basis for objecting to the claims in its fourth
communication.

In consequence, by ignoring potentially significant
arguments presented in a reply following a
communication containing a new objection, the applicant
has been denied its right to comment on all the grounds
for refusing the application. Hence, the board
concludes that the applicant's right to be heard
enshrined in Article 113(1) EPC has not been respected.

1.2   *Rule 68(2) EPC 1973 (now Rule 111(2) EPC)*

1.2.1   In accordance with Rule 68(2) EPC 1973 (now Rule 111(2)
        EPC), all decisions issued by the EPO must be reasoned.
        Although the Guidelines E-X, 4.4, suggest a procedure
        for issuing a decision "on the state of the file"
        taking a standard form, a number of decisions of the
        EPO Boards of Appeal (cf. T 1309/05, T 1356/05) have
        pointed out that a standard decision form for issuing a
        decision "on the state of the file" which refers to
        several communications, leaving it up to the board of
        appeal to construct the applicable reasons by
        "mosaicing" various arguments from the file, or which
        leaves it in doubt which arguments apply to which claim
        version, does not meet the "reasoned" requirement of
        Rule 68(2) EPC 1973.

1.2.2   In the present case, the wording of the impugned
        decision does not allow the applicant or the board to
        properly discern the grounds on which the examining
        division has refused the application. In the three
        communications referred to in the decision, ie the
        first, second and fourth communications, numerous

objections are raised against three different versions
of the claims. In the fourth communication, the final
version of claim 1 is attacked on the basis of D1 alone,
and apparently (by means of a reference to original
claim 19 dealt with in the first communication) on the
basis of D1 as closest prior art combined with D2.
There is also a reference to a "result to be achieved",
which conventionally refers to an objection under
Article 84 EPC (although Article 84 is not mentioned in
the communication). In addition, the fourth
communication (point 2.2) seems to suggest that D2
could if necessary be combined with D1 to render the
distinguishing features identified with respect to D1
obvious, for reasons "as described in detail in the
second official communication". In the second
communication on the other hand lack of inventive step
based on D2 as closest prior art combined with D1 is
alleged, ie these two approaches are not consistent.
There are also objections to claim 1 in the second
communication relating to a lack of clarity under
Article 84 EPC, but it is unclear from the decision
whether these objections were still considered to apply
at the time the impugned decision was taken. In the
first communication (based on substantially different
claims), lack of novelty is alleged with respect to D1;
in addition, lack of inventive step based on D2 alone
is alleged, although with only minimal substantiation.

Hence the decision potentially encompasses a plurality
of objections, and it is unclear which of the whole
gamut of objections were applicable to the final
version of the claims. Moreover the objection of lack
of inventive step based on a combination of D1 and D2

is pieced together from different communications with
no common chain of argumentation.

1.2.3   In view of the above, the board takes the same view as
        in above-cited cases T 1309/05 and T 1356/05 that the
        form of decision adopted by the examining division in
        the present case was not appropriate for meeting the
        requirements of a reasoned decision within the meaning
        of Rule 68(2) EPC 1973 (now Rule 111(2) EPC).

1.2.4   In addition, it is the consistent case law of the
        boards of appeal (cf. eg T 740/93, point 5.4 of the
        reasons for the decision) that a "reasoned" decision
        should deal with all important issues of dispute. In
        the present case, none of the three communications
        referred to in the decision respond explicitly to the
        applicant's arguments submitted in the first to third
        replies, whilst as noted above the decision does not
        deal with the new arguments provided in the applicant's
        fourth reply. Indeed, the only communication directly
        responding to arguments put forward by the applicant is
        the third communication, which is not referred to in
        the impugned decision. The board thus considers that
        the failure to deal with the arguments submitted by the
        applicant also infringes Rule 68(2) EPC 1973 (cf.
        Rule 111(2) EPC).

1.2.5   Accordingly, the board concludes that a substantial
        procedural violation has been committed.

1.3   *Reimbursement of the appeal fee*

       In the light of the board's conclusion that a
       substantial procedural violation has been committed,
       and considering that for the reasons given below the
       appeal is allowable, the board deems that reimbursement
       of the appeal fee as requested by the appellant in the
       oral proceedings is equitable in the present case (cf.
       Rule 67 EPC 1973, Rule 103(1)(a) EPC).

1.4   *Remittal of the file to the department of first
       instance*

       According to Article 11 RPBA, a board shall remit a
       case to the department of first instance if fundamental
       deficiencies are apparent in the first instance
       proceedings, unless special reasons present themselves
       for doing otherwise. In the present case, the board
       takes the view that remittal to the examining division
       would be inappropriate given the already advanced age
       of the application and the considerable further delay
       which would ensue from remittal. Moreover, the
       appellant made clear in the oral proceedings its desire
       for the board to decide on the case. Therefore, the
       board has exercised its discretion to decide on the
       merits of the case itself, as it is empowered to do
       under Article 111(1) EPC (cf. G 10/93, OJ EPO 1995,
       172, paragraph 5 of the reasons for the decision).

2.   *Compliance with Article 123(2) EPC*

2.1   In the following analysis, the board refers to the
       published application WO-A-95/29559, unless otherwise
       indicated. Line numbers refer to the numbering in the

left margin of the published application rather than
the actual line numbers.

2.2   Claim 1 is based on claims 2 and 19 as filed with the
        following modifications and additional features derived
        from the description:

        The features "data signals representing respective
        sequences of pictures extending over a given GOP time
        period" and "said given GOP time period is the same for
        each of the plurality of channel processors" are
        derived from the embodiment described on page 27,
        line 18 - page 28, line 13 of the description. In this
        embodiment, the given GOP period, which is the same in
        each channel, extends across a GOP boundary in some
        channels. Consequently the sequence of pictures need
        not belong to a single GOP, but only extend over a GOP
        period. Hence these features are disclosed in the
        application as filed.

        The feature "a complexity output terminal adapted to
        produce a signal representative of the complexity of
        the entire sequence of pictures represented by the data
        signal at the data input terminal" is based on original
        claim 19, which provides support for a single signal
        representative of the complexity of an entire group of
        pictures, in combination with page 28, lines 4-7 of the
        description, from which it is inherent that a sequence
        of pictures extending over one GOP period may be
        derived from two GOPs.

        The feature "the bit rate allocator is adapted to
        generate a separate bit rate quota signal for each
        channel processor, the separate bit rate quota signals

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being valid for the entire GOP time period following
the given GOP time period" is disclosed on page 11,
lines 9-11 together with page 19, lines 12-14 of the
description.

The amendment to replace the wording "equal to" by
"based on" in claim 1 (cf. claim 1, second page,
line 5) is disclosed on page 18, line 21 of the
description.

Hence the board is satisfied that claim 1 meets the
requirements of Article 123(2) EPC.

3.   *Compliance with Article 84 EPC*

The board considers that claim 1 as amended clearly
expresses the matter for which protection is sought. In
particular it is now clearly expressed that the
complexity output terminal of each channel processor is
adapted to produce a signal representative of an entire
sequence of pictures extending over a given GOP time
period, and that the bit rate quotas are valid for the
entire following GOP time period. Moreover, with regard
to the argument raised in the fourth communication of
the examining division, the board is satisfied that
claim 1 in its present form neither defines "a result
be achieved" nor is merely a statement of the
underlying technical problem.

4.   *Claim 1 - novelty and inventive step (Articles 52(1),*
        54 and 56 EPC)

4.1   The present invention relates to a multiplexing
        system for multiplexing several video sources into an
        output bit stream with a constant bit rate, whereby the
        bit allocation for each individual source is allocated
        dynamically. The signals to be multiplexed comprise
        respective sequences of pictures extending over a given
        GOP (GOP = "group of pictures"; this term comes from
        MPEG coding, whereby a GOP consists generally of 12 or
        15 pictures or frames). A "constant" bit rate encoding
        principle is used (i.e. for a particular rate setting,
        a constant bit rate is output), but the bit rate is set
        dynamically according to a "complexity representative
        signal" determined from the sequence of signals
        extending over a GOP interval, for use in the following
        GOP interval.

4.2   *Novelty with respect to D1 (Articles 52(1) and 54 EPC)*

        D1 differs from the subject-matter of claim 1 in that
        there is no mention of a video coding method making use
        of a group of pictures, and hence no complexity signal
        representative of an entire sequence of pictures
        extending over a GOP time period, or of a bit rate
        allocation valid for an entire GOP time period. Hence
        the subject-matter of claim 1 is novel with respect to
        D1.

4.3   *Novelty with respect to D2 (Articles 52(1) and 54 EPC)*

4.3.1   The board considers D2 to be the document representing
        the closest prior art, since, unlike D1, it discloses a

multiplexing system with data signal sources
representing respective sequences of pictures extending
over the same GOP period (page 155, lines 11-12). It is
therefore a more plausible starting point than D1,
which apart from a short reference near the end of the
document suggesting that individual video signals from
separate sources may be multiplexed (cf. col. 9,
line 62 - col. 10, line 3), deals entirely with the
multiplexing of sub-images of a single HDTV image,
without any suggestion of GOP-based processing.

4.3.2   More particularly, D2 discloses a statistical
multiplexer operating normally in variable rate mode.
However, in situations of buffer overflow, the system
is constrained to operate in constant rate mode
(page 157, lines 4-10). This is the mode that comes
closest to the present invention.

4.3.3   As in the presently claimed invention, signals are
produced representative of the complexity of the source
data signals, and bit rates R are allocated to each
signal channel in accordance with the relative
complexities X of each video source signal (cf. D2,
page 156, equation 2.4; although this equation is
presented in association with the variable rate mode of
operation, it appears to apply implicitly to both
variable and constant rate modes).

In the constant rate mode of D2, bit rate allocation is
carried out afresh for each multiplexing period, or
"epoch" (page 157, line 6; page 158, paragraph c)). A
signal is produced representative of the complexity of
each source every epoch. An epoch is defined to be one-
sixth of a frame period, i.e. in the example given in

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D2 of a GOP consisting of 15 frames, there are <u>ninety</u> updates of bit rate per GOP time period (page 157, last section and page 158, paragraph c)).

Hence the subject-matter of claim 1 differs from the disclosure of D2 in that, as claimed, there is one update per GOP time period based on signals representative of the complexity of the entire picture sequence of the GOP, whereas according to D2 both the complexity representative signals and the update period are based on one-ninetieth of a GOP time period.

Hence the subject-matter of claim 1 is novel with respect to D2.

4.4   *Claim 1 - inventive step (Articles 52(1) and 56 EPC)*

4.4.1   Starting from the disclosure of D2, the objective technical problem can be considered as being to provide simplified processing and improved bit rate fluctuation behaviour in an environment of video coding using dynamic bit rate allocation.

4.4.2   The board is not aware of any prior art document which solves this problem by performing updates only once per GOP period, based on complexity signals representative of a whole sequence of pictures extending over a GOP period.

4.4.3   With regard to D2, the appellant in the statement of grounds argued the following:

"As in our patent application, problems raised in D2 relate to image quality, buffer overflow (last

paragraph of page 159). Nevertheless, the document proposes a bit rate control at an "instant" level as $R_i(t+1-T)$ corresponds to an <u>instant</u> t+1-T, or more precisely at a "multiplexing epoch" level.

Consequently, although D2 discloses the use of GOP structures for determination of a cyclostationary period, to estimate R, this document doesn't propose a bit rate control at a <u>gop</u> level for solving such problems.

In fact, if D2 discloses the GOP structure, it's only to benefit of its cyclostationary characteristic. An epoch duration is less than a frame period, a fortiori a gop period. In an example, a gop duration corresponds to 90 multiplexing epoches [sic].

The one skilled in the art having to solve such problems would be taught away, through the teaching of D2, from our invention, i.e. a rate control at a gop level as such a solution is not suggested in D2 although buffer overflow, statistical multiplexing and gop structure are disclosed."

The board finds this argumentation persuasive. D2 makes use of the GOP period to achieve cyclostationary buffer behaviour by basing its complexity calculation for a particular epoch on the bit rate allocations of an epoch occurring exactly one GOP period earlier, but fails to recognise that the processing can be simplified by producing one complexity signal representative of the whole GOP period, in order to calculate bit allocations valid for the whole following GOP period. Indeed, the invention apparently retains

GOP-based cyclostationary properties achieved by D2, but with a drastically reduced number of bit rate computations per GOP.

4.4.4   The board considers further that whilst a skilled person would obviously be aware that any choice of a longer multiplexing epoch could reduce the processing to be performed, a change from the very short multiplexing epoch of D2 to the GOP period cannot be regarded as a mere obvious choice of an arbitrarily longer period. In this respect, the GOP period is one to two orders of magnitude greater than the multiplexing epoch proposed in D2, so that it is unlikely to be arrived at in the course of routine experimentation. This is even more evident from the passage on page 158, paragraph c) of D2, which states: "Thus, to limit the degradation caused by keeping the rate control active outside congestion intervals, the multiplexing epoch must approximately match the extend [sic] of the congestion duration. In this study the multiplexing epoch is set to 1/6th of a frame, or 5.5 msec". This clear guidance as to the approximate duration of the multiplexing period would lead a skilled person away from experimenting with much longer periods. Therefore, a skilled person using common knowledge or attempting routine experimentation on the arrangement of D2 would not arrive at the claimed invention.

4.4.5   It is further noted that even if the teaching of D1 were considered, either alone or in combination with D2, a skilled person would not arrive at the claimed solution. D1, which is not concerned with video sources which are coded using a "group of pictures"-based

technique, but with HDTV coding, could at most provide
a hint to recalculate bit rates every frame, not every
GOP period. Moreover, the skilled person would have no
reason to combine D1 and D2 given that D1 is based on
HDTV coding and D2 on MPEG-2 signals.

4.4.6   The board concludes that the subject-matter of claim 1
is not obvious having regard to the state of the art.
Hence claim 1 meets the requirements for an inventive
step (Articles 52(1) and 56 EPC).

5.   *Further prosecution*

The board has considered dependent claims 2-18 and
finds no reason to raise any objection.

However, the description is currently not adapted to
the claims on file. Moreover, the reference to D2 on
page 4a does not appear to reflect accurately the
relevant prior art contained therein.

The board however considers that these matters are best
dealt with by the examining division.

Order

For these reasons it is decided that:

1.   The decision under appeal is set aside.

2.   The case is remitted to the examining division with the
      order to grant a patent on the basis of the main
      request filed at the oral proceedings and a description
      yet to be adapted.

3.   The appeal fee is reimbursed.

The Registrar: The Chairman:

D. Magliano   A. S. Clelland