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**Datasheet for the decision
of 3 August 2006**

Case Number: T 0561/03 - 3.5.01

Application Number: 96940351.8

Publication Number: 0862837

IPC: H04N 7/58, H04N 7/173

Language of the proceedings: EN

Title of invention:
Method and apparatus for multiplexing video programs

Applicant:
IMEDIA CORPORATION

Opponent:
-

Headword:
Multiplexing video programs/IMEDIA CORPORATION

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step over prior art considered by first instance
(yes, after amendment)"
"Remittal to first instance for further prosecution"

Decisions cited:
-

Catchword:
-



Case Number: T 0561/03 - 3.5.01

D E C I S I O N
of the Technical Board of Appeal 3.5.01
of 3 August 2006

Appellant: IMEDIA CORPORATION
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 21 October 2002
refusing European application No. 96940351.8
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: S. Steinbrener
Members: W. Chandler
M. Vogel

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division to refuse the application on the grounds that, apart from being unclear and not concise, the subject-matter of the independent claims did not involve an inventive step (Article 56 EPC) having regard inter alia to EP-A-0 515 101 (D1), considered to be the closest prior art.
- II. In the grounds of appeal, the appellant (applicant) gave reasons why the decision should be set aside. In reply to the communication accompanying the summons to oral proceedings, in which the Board essentially agreed with the reasoning given in the decision, the appellant submitted a main request with amended independent claims and first to fourth auxiliary requests.
- III. At the oral proceedings, the appellant requested that the decision under appeal be set aside and a patent be granted on the basis of claims 1 to 21 filed during the oral proceedings (main request), or one of the first to third auxiliary requests, corresponding to the second to fourth auxiliary requests, respectively, filed with the reply to the summons, dated 28 July 2006. At the end of the oral proceedings, the Chairman announced the decision.
- IV. Claim 1 of the main request reads as follows:
"A method for multiplexing a set of n program streams (200) to form a multiplex (205) in a remote encoding situation, each program stream in said set having a corresponding channel, each program stream in said set being decodable by a corresponding decoder, each

corresponding decoder including a corresponding decoder buffer, said method including the step of partitioning each program stream in said set into packets (303), comprising the steps of:

(a) providing a multiplexer to determine a next packet to append to said multiplex by:

(a1) - referring to a record of estimated current decoder buffer fullness levels made by a model of decoder fullness maintained in said multiplexer;

(a2) - selecting a channel that has a decoder buffer that is not approaching a full state (405), said selecting based on said record of estimated current decoder buffer fullness level; and

(b) appending said next packet to said multiplex."

V. The appellant argued essentially as follows:

The new requests should be admitted into the proceedings because the amendments were reasonable and were made in reaction to the Board's communication.

D1 did not disclose the idea of selecting a packet for multiplexing based upon buffer fullness. Nor did it disclose how the packets forming the multiplex were to be chosen. Even if the skilled person were to choose the packets in the claimed manner as argued in the decision under appeal, there was no disclosure or suggestion of maintaining the model of the decoder buffer fullness in the multiplexer as specified in the amended claims. This latter difference solved the problem of simplifying the calculation of decoder buffer fullness.

Reasons for the Decision

1. The appeal complies with the requirements referred to in Rule 65(1) EPC and is, therefore, admissible.
2. The application relates to multiplexing packets of data from encoded program streams, e.g. MPEG encoded programs, into a single multiplex in such a way that the decoder buffers at the decoding end do not overflow. The basic idea of the invention before the examining division was to keep a record of estimated current decoder buffer fullness levels at the encoder end (now part of feature (a1) in claim 1) and to select the next packet to append to the multiplex from a channel that had a decoder buffer that was not approaching a full state (now feature (a2) in claim 1).
3. In appeal, the independent claims were amended essentially to specify that the record of the decoder buffer fullness was maintained *in the multiplexer* (remaining part of feature (a1) in claim 1).
4. It is common ground that D1 discloses a method of multiplexing a set of programs according to all the features of claim 1 with the exception of features (a1) and (a2).
5. However, the Board agrees with the examining division that D1 discloses the idea of referring to a record of estimated current decoder buffer fullness levels at the encoder end. Firstly, the Board judges that the idea in D1 at page 12, line 8 of selecting packets from other streams to avoid overflow implies a selection based upon buffer fullness, this buffer fullness being that

calculated in the encoder and described at page 11, last paragraph. Thus, as far as the features considered by the examining division are concerned (see point 2, above), the Board agrees with the examining division at point 4 of the reasons that claim 1 differs from D1 by the feature of selecting a channel that has a decoder buffer that is not approaching a full state.

6. The Board agrees with the appellant that D1 does not disclose the new feature of maintaining the record of buffer fullness in the multiplexer. In D1, it is calculated by the encoder rate controllers 103, which are part of the individual encoders, as is apparent from Figure 1. D1 also states at page 10, lines 43 to 44 that "Since decoder buffers 205 or 304 have only a finite capacity, it is the responsibility of encoder 100 (FIG. 2) to ensure that they do not overflow or underflow". Similar statements can be found at page 9, lines 24 to 25 and page 11, line 52.
7. In the Board's judgment, the above distinguishing features (see points 5 and 6, above) have no interaction that brings about a technical effect in excess of the sum of their individual effects. For the purposes of selecting the channel, it does not matter where the record of the decoder buffer fullness is maintained. Thus, the inventive step of the new feature can be judged independently from the previous feature, both being considered to solve independent partial problems.
8. The Board judges that the problem solved by the feature of selecting the channel is to avoid decoder buffer overflow. This is a well-known problem and is mentioned

in D1 at page 2, lines 15 to 18, for example. The Board agrees with the examining division at point 5.5 of the decision that if, as disclosed in D1, a packet from another stream is to be selected to avoid overflow (see point 5, above), then it would be self-evident to select it from a stream whose decoder buffer is not about to overflow. The Board thus judges that the examining division was correct in finding that the originally claimed features did not involve an inventive step.

9. The appellant considered that the new feature of maintaining a record of the decoder buffer fullness in the multiplexer solved the problem of simplifying the calculation of the buffer fullness. However, since the claim gives no details of how the calculation is performed, which could in fact be rather complicated, the Board judges that this problem is too specific. Rather, the Board judges that the problem solved is to provide an alternative way of estimating the decoder buffer fullness.
10. The Board agrees with the appellant that D1 does not disclose or suggest maintaining a record of decoder buffer fullness in the multiplexer. As mentioned above, D1 consistently points out that it is the encoder that keeps the record of the decoder buffer fullness. The Board therefore judges that D1 gives the skilled person no incentive to use the multiplexer to keep the record of the decoder buffer fullness, so that claim 1 involves an inventive step over D1.
11. However, the idea of estimating decoder buffer fullness in the multiplexer is a new aspect of the invention

that was not even present in the originally filed dependent claims and was therefore probably not considered by the examining division. Consequently, no other prior art has been consulted in connection with this idea. Since doing so essentially involves a resumption of examination in what is a rather complicated field of technology, the Board considers that it is necessary for the case to be remitted to the examining division for this to be done.

12. The Board does however note that the multiplexing apparatus of GB-A-2 289 194 (D3) appears to be relevant in that the amount of data to be transferred is determined in the control device 4 of the multiplexer 2, in order to avoid overflow in the decoder buffer (see Figures 1 and 8). Also document EP-A-0 705 042 appears to be relevant, which apart from being categorised in the International Search Report as an intermediate document, is also an earlier European patent and therefore prior art at least under Article 54(3) EPC for the common contracting states. This document discloses at page 4, lines 25 to 31, that the multiplexer avoids decoder buffer overflow by checking whether the total capacity of a buffer would be exceeded if data from that channel is added, which appears to be similar to the procedure shown in steps 429, 431 and 441 of Figure 4(b) of the application.
13. The allowability of the other independent claims, the dependent claims and the description must also be examined.

Order

For these reasons it is decided that:

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

The Registrar:

The Chairman:

P. Cremona

S. Steinbrener