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Datasheet for the decision of 29 June 2016

Case Number: T 1681/13 - 3.5.04

Application Number: 99909867.6

Publication Number: 1101356

IPC: H04N5/775

Language of the proceedings: EN

Title of invention:
Multimedia time warping system

Patent Proprietor:
TiVo, Inc.

Opponents:
Brunner/Williamson, John M. O./Claire Louise
Strawman Limited

Headword:

Relevant legal provisions:
RPBA Art. 12(4)
EPC 1973 Art. 100(a), 54(1), 54(2), 56

Keyword:

Late-filed auxiliary requests - admitted (yes)
Inventive step - (no)

Decisions cited:

Catchword:

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Case Number: T 1681/13 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 29 June 2016

Appellant: (Patent Proprietor)	TiVo, Inc. 894 Ross Drive Sunnyvale, CA 94089 (US)
Representative:	Lippich, Wolfgang Samson & Partner Patentanwälte mbB Widenmayerstraße 6 80538 München (DE)
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Respondent 02: (Opponent 2)	Strawman Limited Orchard Lea, Horns Lane, Combe, Witney, Oxfordshire OX29 8NH (GB)
Representative:	Gougé, Emmanuel Pinsent Masons LLP 23, rue Balzac FR-75008 Paris (FR)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 29 May 2013 revoking European patent No. 1101356 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	C. Kunzelmann
Members:	R. Gerdes
	B. Müller
	M. Paci
	T. Karamanli

Summary of Facts and Submissions

I. The appeal is against the decision of the opposition division revoking European patent No. 1 101 356.

II. Two oppositions were filed against the patent. They were based on the grounds of lack of novelty and inventive step (Article 100(a) EPC in conjunction with Articles 54 and 56 EPC), insufficiency of disclosure (Article 100(b) EPC) and added subject-matter (Article 100(c) EPC). The opposition division decided to revoke the patent on the grounds that the subject-matter of the independent claims of the main request lacked novelty over document

A1: US 5 371 551 A.

Auxiliary request I was not admitted into the proceedings, and the subject-matter of the independent claims of auxiliary request II was found to be insufficiently disclosed. Auxiliary requests III to X were found to infringe Article 123(2) EPC. The subject-matter of the independent claims of auxiliary request XI was found to lack inventive step over A1.

The decision also referred to the following document:

A2: Ceccarelli et al., "A sequence analysis system for video databases" in "Time-Varying Image Processing and Moving Object Recognition, 4", Elsevier Science B.V., 1997.

III. The patent proprietor filed an appeal against this decision and requested that the decision be set aside. It also requested that the patent be maintained on the basis of claims 1 to 26 as filed on 9 October 2008,

which were the claims of the main request underlying the decision under appeal. The appellant also filed claims of auxiliary requests 1 to 4 with the statement of grounds of appeal.

IV. Respondent/opponent 2 (O2) did not reply to the appellant's statement of grounds. Joint opponents 1 (henceforth respondent O1) requested that the appeal be dismissed and maintained all the grounds for opposition. They also requested that auxiliary requests 2 to 4 not be admitted into the proceedings under Article 12(4) RPBA. Respondent O1 also raised objections under Article 84 EPC against the auxiliary requests.

V. The appellant filed a further letter dated 27 November 2015, comprising inter alia arguments as to the admissibility of the auxiliary requests.

VI. The board issued a summons to oral proceedings, together with a communication giving the board's preliminary opinion on a number of the disputed issues.

VII. Respondent O1 replied with a letter dated 27 May 2016 and reaffirmed its arguments.

VIII. The appellant replied with a letter equally dated 27 May 2016 and filed auxiliary request 2a.

IX. Oral proceedings were held on 29 June 2016. The respondent/opponent 2 (O2) was not represented at them.

In the course of the oral proceedings, the appellant (patent proprietor) withdrew auxiliary requests 1, 2, 2a and 3.

The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request with claims 1 to 26 as filed on 9 October 2008 or of the auxiliary request, formerly labelled auxiliary request 4, with claims 1 to 22 as filed with the statement of grounds of appeal.

Respondent O1 requested that the appeal be dismissed.

X. Claim 1 of the main request reads as follows (features being identified with characters as indicated in the decision under appeal, see point 24.3.3):

"(a) A process for the simultaneous storage and play back of multimedia data, comprising the steps of:

(b) accepting television (TV) broadcast signals, wherein said TV signals are based on standards, including, but not limited to, any of: National Television Standards Committee (NTSC) broadcast, PAL broadcast, satellite transmission, DSS, DBS, or ATSC;

(c) tuning said TV signals to a specific program;

(d) providing at least one input section (101), wherein said input section converts said specific program to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation;

(e) providing a media switch (102), wherein said media switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;

(f) storing said video and audio components on a storage device;

(g) providing at least one output section (103), wherein said output section extracts said video and audio components from a storage device;

(h) wherein said output section assembles said video and audio components into an output MPEG stream;

(i) wherein said output section sends said output MPEG stream to a decoder;

(j) wherein said decoder converts said output MPEG stream into TV output signals;

(k) wherein said decoder delivers said TV output signals to a TV receiver;

(l) wherein the storing and extracting of said video and audio components from said storage device can be performed simultaneously; and

(m) accepting control commands from a user, wherein said control commands affect flow of said MPEG stream and said output MPEG stream."

XI. Claim 1 of the auxiliary request (corresponding to auxiliary request 4 filed with the statement of grounds) reads as follows, amendments with respect to claim 1 of the main request being underlined, deletions marked by strikethrough):

"(a) A process for the simultaneous storage and play back of multimedia data, comprising the steps of:

(b) accepting television (TV) broadcast signals, wherein said TV signals are based on standards, including, but not limited to, any of: National

Television Standards Committee (NTSC) broadcast, PAL broadcast, satellite transmission, DSS, DBS, or ATSC;

(c) tuning said TV signals to a specific program;

(d) providing at least one input section (101), wherein said input section converts said specific program to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation;

(e) providing a media switch (102), wherein said media switch parses said MPEG stream, said MPEG stream is separated into its video and audio components

(e') by looking for MPEG distinguished events in the stream, indicating the start of video or audio components, and

(e'') placing a corresponding event in an event buffer, including an address offset of each event, an event type and a time stamp,

(e''') wherein said time stamp is calculated or extracted from a digital TV stream and logically associated to said video and audio components by said media switch;

(f) storing said video and audio components on a storage device;

(g) providing at least one output section (103), wherein said output section extracts said video and audio components from ~~a~~ the storage device;

(h) wherein said output section assembles said video and audio components into an output MPEG stream;

(i) wherein said output section sends said output MPEG stream to a decoder;

(j) wherein said decoder converts said output MPEG stream into TV output signals;

(k) wherein said decoder delivers said TV output signals to a TV receiver;

(l) wherein the storing and extracting of said video and audio components from said storage device can be performed simultaneously; and

(m) accepting control commands from a user, wherein said control commands affect flow of said MPEG stream and said output MPEG stream;

(m') wherein said media switch operates asynchronously and autonomously with a CPU and wherein said media switch allows the CPU to queue up Direct Memory Access (DMA) transfers."

XII. The decision under appeal - as far as it is relevant for the present decision - may be summarised as follows:

The opposition division held that the independent claims of the main request lacked novelty in view of A1. A parsing function was disclosed in column 5, line 35 to 40 of A1. In order to store frames at equally spaced addresses, the MPEG stream generated by the compressor of A1 had to be analysed/parsed to find the starting points of relevant parts of the stream (see points 24.3.1, 24.3.3 and 24.3.4 of the decision).

XIII. The appellant's arguments relevant for the present decision may be summarised as follows.

With respect to the construction of claim 1 of the main request the appellant argued that the skilled person would be able to understand that the features of claim 1 related to a sequential series of process steps. In particular, the claim required that features (e) and (f) were carried out sequentially, with the separated audio and video components being stored on the storage device after the MPEG stream had been parsed.

The subject-matter of claim 1 of the main request was new and involved an inventive step in view of A1. Essentially, A1 did not disclose feature (e) of claim 1. A1 disclosed the retrieval of single-frame compressed data from equally spaced addresses in the random access memory to form a mosaic display frame consisting of reduced-size images. The user could select one of the reduced-size images, thereby causing the read point to be set to the appropriate memory location and to perform playback from that location (see column 5, lines 35 to 51). This passage had to be understood such that data were sequentially stored as they arrived or as they were compressed. Later, when frames were to be extracted to produce the mosaic display frame, data were sequentially parsed starting from equally spaced addresses in the storage until a frame was encountered, i.e. the storage was parsed locally until a frame was detected. This frame was then extracted and reduced in resolution to form the reduced-size image for the mosaic display frame. The retrieval of images for the mosaic display frame by parsing from an approximate position of a frame could best be described by the term "local parsing". Due to

the varying storage requirements for different frames and the sequential storage of frames it was not possible to exactly calculate the address at which frames started. The above interpretation of A1 was also compatible with the reverse mode that was described in A1 (see column 6, lines 9 to 21). Reverse parsing started from equally spaced addresses going back from the current readpoint, with the parsing being effected in a forward direction from those equally spaced addresses until a frame was encountered.

Hence, A1 had to be understood in the sense that parsing was carried out after the data were stored on disk, which was the opposite of the sequence of steps that was required by claim 1 (see features e and f). For this reason the subject-matter of claim 1 was new with respect to A1.

The appellant argued with reference to paragraph [0032] of the patent in suit that parsing of the MPEG stream before storage of its components allowed an efficient implementation of trick play modes. In contrast to A1 the whole MPEG stream and not only local segments of the stream were parsed. The parser detected the beginning of all important events in the MPEG stream, which information was used by the program logic for proper playback and for performing special effects on the stream such as fast forward, reverse, fast/slow play, etc. In addition, the claim also specified that the parsing was carried out by the media switch, resulting in a reduction of processing power required at the CPU. A1 did not show a media switch co-operating with the CPU. Starting from A1 the technical problem was therefore how to improve the playback of audio/ video data. In the written procedure the appellant also formulated the technical problem as to provide a

process for simultaneous storage and playback of multimedia data which was able to keep up with high video data rates with reduced microprocessor and system requirements. A1 did not disclose or suggest parsing before storage of audio/video data. There was no hint in A1 that an operation could be effected prior to storage, in particular to produce a kind of index to simplify access to MPEG events for later playback. Hence, the subject-matter of claim 1 involved an inventive step in view of A1.

With respect to the admissibility of the auxiliary request, the appellant argued that this request had been submitted as auxiliary request 4 together with the statement setting out the grounds of appeal. Claim 1 of the auxiliary request corresponded essentially to a combination of claims 1, 5 and 11 of the fourth auxiliary request underlying the decision under appeal. The claimed subject-matter of this request concerned the media switch and its parsing functionality which had been in the focus of the discussions in the first-instance proceedings. Respondent O1 could therefore not have been surprised by the auxiliary request.

Claim 1 of the auxiliary request had been amended to more clearly specify the parsing operation in terms of the data structure (event buffer) that was generated and to emphasise the technical effect that was provided with this structure. The event buffer allowed for direct access to the stored video and audio data, which improved trick play operations (see paragraphs [0032] and [0033] of the patent in suit). In addition, by specifying feature m', claim 1 clearly referred to a distributed system, wherein the task of real-time parsing of the MPEG stream was off-loaded from the CPU to the media switch. A1 did not provide an additional,

separate unit which controlled DMA transfers independently of the microcontroller, but essentially all functions of the video system were under the control of the microcontroller, including especially the reading and writing of the MPEG data in and out of the memory. All amendments allowed for improved access to the stored audio/video data, which simplified the playback of the data.

A2 was not relevant for the present invention, because it concerned content parsing, not the parsing of all important events of an MPEG stream for internal transfer and manipulation as the patent did. In the terms of claim 1, A2 did not disclose parsing of the MPEG stream looking for "MPEG distinguished events" but for scene changes in a video sequence, i.e. events on a different level of abstraction. Hence, A2 operated on a semantic level, focusing on the detection of scene changes as key events. A2 aimed to produce a video database for efficient browsing and retrieval, not to improve access to and playback of MPEG streams for trick play modes. A2 did not disclose the event buffer as specified in claim 1. The introduction of A2 also only referred to real-time analysis of video content "during the recording operation", which was contrary to what was specified in claim 1, where the parsing was carried out before the storage of the parsed data.

XIV. Respondent O1's arguments can essentially be summarised as follows.

Claim 1 of the main request did not specify a time sequence of process steps. In particular, the parsing of feature (e) was not necessarily carried out before the storing of data according to feature (f).

Even if this interpretation of claim 1 of the main request was not followed, A1 disclosed implicitly that frames were stored at fixed addresses. This in turn required that the incoming MPEG stream be parsed prior to storage. A1 referred to stop-action and slow-motion effects (see column 2, lines 17 to 22) by transmitting frames at an increased or decreased rate from the buffer. To achieve the effects, frames had to be equally spaced. For reverse order frame viewing (see column 2, lines 28 to 30) similar considerations applied, i.e. fixed addresses had to correlate to a fixed number of frames. Otherwise, it would not be known where the previous frame commenced in the buffer. A1 disclosed a circular buffer for storage of programming for a fixed, predetermined duration, which would not be the case if a variable-length encoded stream was sequentially stored on disk (see A1, column 1, lines 51 to 53).

Even if A1 was understood in the sense that it only disclosed parsing of the MPEG stream after storage of the audio/video components, the distinguishing feature relating to the parsing being carried out before storage had no associated technical effect or could only be considered as a plain alternative to parsing after storage. Claim 1 contained no indication of what was achieved with the parsing; not even the separation of audio and video components was tied to the parsing. The appellant had to resort to the description in order to support the effect of providing for efficient trick play. Also, the alleged effect of a reduction of the required processing power for the CPU due to the provision of a separate media switch was not reflected in the claim, since the claim only referred to the media switch and not to the CPU.

Respondent O1 requested that the board reject the claims of the auxiliary request as inadmissible because they had been filed late. The claims of these requests contained new amendments which had never been previously considered in the proceedings. All the reasons which could have caused this claim request to have been filed during the first-instance proceedings had been discussed as early as in the communication attached to the summons to oral proceedings of the opposition division dated 30 July 2010, see point 11. The respondents would be deprived of the opportunity to have their arguments considered by the department of first instance if the request were admitted in the appeal procedure.

Concerning inventive step of the subject-matter of the auxiliary request, respondent O1 argued that feature (m') relating to the asynchronous and autonomous operation of the media switch and the CPU as well as the use of DMA transfers was completely conventional in the art. In addition, this feature was without context, so that there was still no technical effect that could be derived from it. The further amended features (e') to (e''') could not render the claimed subject-matter inventive. An event buffer providing a correspondence between MPEG-distinguished events such as frames and their addresses in the storage was disclosed in A1, see claim 7. It would also have been obvious to associate time stamps with the events, for example in order to provide time tags with the reduced-size images of the mosaic display frame in A1.

Respondent O1 also argued that document A2, which was in the same technical field as A1 and the patent in suit, was concerned with advanced methods for automated

analysis of compressed video sequences. A2 disclosed an indexing module relying on the real-time analysis of video content, which analysis was "performed during the recording operation." A2 also referred to use of local storage devices for time-shifting and to trick modes. Finally, A2 also disclosed the use of time stamps in the generation of an index (see page 133 and figure 1 of A2). Hence, the skilled person trying to improve fast access and time-shifting for MPEG streams would combine A1 and A2 to arrive at the subject-matter of claim 1.

Reasons for the Decision

1. The appeal is admissible.

Main request - Claim construction

2. Steps (e) and (f) of claim 1 read as follows:

(e) providing a media switch (102), wherein said media switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;

(f) storing said video and audio components on a storage device.

2.1 It was disputed between the parties whether these steps implied a time sequence, with the storage of the audio/ video components being preceded by the parsing step.

2.2 The board considers a time sequence to be implied by the reference to the storage of "said video and audio components" in feature (f). Hence, the skilled person would understand feature (f) in the sense that the

audio/video components which were separated according to feature (e) were stored on the storage device. It follows that the parsing and separation of the MPEG stream are effected prior to the storage of the audio/video components.

2.3 This interpretation does not require the audio/video components to be stored in separate sections of the storage device; indeed, the storing step could reverse the separation of audio and video components of the previous step (e). Nor does this interpretation require that a complete MPEG stream be parsed and separated into its components before these components are stored on disk. Such an interpretation would be inconsistent with the description, which refers to the use of circular audio and video buffers for intermediate storage of audio/video components (see figure 4: 410, 411, figure 6: 612, 613 and paragraphs [0024] to [0026], [0028] and [0029] of the patent specification). As stated in paragraph [0028], a PES buffer containing the pointers to the audio/video components in the circular buffers is written to the storage device if the accumulated logical segments 603 in the PES buffer reach a fixed buffer size. The PES buffer is transferred to disk together with the associated audio/video components from the circular buffers such that "a single linear buffer of stream data" including audio and video components is generated on the storage device (see paragraph [0029]). Hence, the data block that can be parsed and separated into its audio and video components before these are stored on disk is limited in size by the fixed buffer size of the PES buffers determining the number of parsed events and possibly the capacity of the circular buffers. It follows that the skilled person would understand features (e) and (f) in the sense that the parsing and

storage operations are effected sequentially for a data block but in an interlaced manner for a stream.

Main request - Novelty, Articles 54(1) and (2) and 100(a) EPC 1973

3. The opposition division held in the decision under appeal that the subject-matter of the independent claims of the main request lacked novelty in view of A1.

3.1 A1 discloses a process for the simultaneous storage and playback of multimedia data having an RF tuner to select one of several input signals from an antenna or a cable TV source (see figure 2: 17 to 19 and column 4, lines 14 to 25). A selected input signal is - if not already input in compressed format - compressed by a compressor using, for example, an MPEG standard. The compressed data are stored in a storage device consisting of a primary high-speed random access semiconductor memory and a slower high-capacity magnetic disk device (see column 4, lines 25 to 31 and column 4, line 57 to column 5, line 1). The stored signals may be extracted from storage and supplied as an output MPEG stream to a corresponding decoder and subsequently to a TV receiver (figure 2: 25, 26, 30 and column 4, lines 31 to 65). A1 also discloses control commands from a user affecting the flow of the MPEG streams, and that storing and extracting of the audio/ video data can be performed simultaneously (see column 3, lines 16 to 32 and column 5, line 27 to column 6, line 14).

3.2 The opposition division held that features (e) and (f) of claim 1 were disclosed in column 1, lines 46 to 52 and column 5, lines 35 to 40 (see decision under

appeal, point 24.3.3). The cited passage in column 5 discloses the assembly of "single frame compressed data from equally spaced addresses in the random access memory 37 to form mosaic display frame[s], each frame consisting of [a] set of reduced-size images which may be viewed simultaneously to reveal the contents of the buffer memory at spaced intervals." A mosaic display frame is displayed to the user, and on selection of a particular reduced-size image the read point is set "to the appropriate memory location and playback continues from that location."

3.3 It was undisputed that this passage of A1 at least discloses a "local parsing" of the MPEG stream. However, the appellant argued that there was no disclosure in A1 of a parsing being performed before the compressed data were stored. Instead, the mosaic display frame was generated after the storage of the audio/video data. The stored data were sequentially parsed starting from equally spaced addresses in the storage until a frame was encountered, i.e. the storage was parsed locally until a frame was detected. This frame was then extracted and reduced in resolution to form the reduced-size image for the mosaic display frame.

3.4 The board agrees with the appellant that the above interpretation is how the skilled person would understand the cited passage in its context.

3.5 Respondent O1 argued that A1 disclosed implicitly that frames were stored at fixed addresses, which required that the incoming MPEG stream be parsed prior to storage. However, as correctly argued by the appellant, such an organisation of the memory would necessitate storing frames in sections of constant size, the size

being determined by the frame requiring the maximum amount of memory. For all other frames this would leave gaps between the frames, resulting in an inefficient use of the available memory. In addition, column 5, lines 22 to 30 of A1, specifies that "the incoming video signal is continuously written to a continuously advancing memory location". This passage is taken as an indication of the fact that data are stored without leaving gaps between successive frames.

3.6 Respondent O1 referred in addition to A1's stop-action and slow-motion effects (see column 2, lines 17 to 22) which are obtained by transmitting frames at an increased or decreased rate from the buffer. To achieve the effects, frames had to be equally spaced. For reverse-order frame viewing (see column 2, lines 28 to 30), similar considerations applied, i.e. fixed addresses had to correlate to a fixed number of frames. Otherwise, it would not be known where the previous frame commenced in the buffer.

The board agrees that the playback of frames in any of these modes requires parsing to find the start of a frame. However, the implementation of such parsing poses no particular difficulties to the skilled person.

3.7 Thus, none of the arguments of respondent O1 convinced the board that according to A1 parsing was implicitly performed prior to storing the compressed data.

3.8 Additionally, the decision under appeal referred to column 4, lines 25 to 30, for a disclosure of feature (e), see point 24.3.1. The board considers this passage to refer to the MPEG conversion which is specified in feature (d). It is therefore distinguished from the parsing of feature (e).

3.9 In view of the above, the board concludes that the subject-matter of claim 1 is novel over A1 (Articles 54(1) and (2) and 100(a) EPC 1973).

Main request - Inventive step, Articles 56 and 100(a) EPC 1973

4. It follows from the above analysis of the novelty of claim 1 that the subject-matter of claim 1 is distinguished from A1 in that parsing of the MPEG stream is effected prior to storage of the audio/video components on disk.

4.1 The appellant argued that the technical effect of the parsing of the MPEG stream before storage of its components was to provide for efficient trick play modes. In contrast to A1, the whole MPEG stream and not only local segments of the stream were parsed. The parser detected the beginning of all important events in the MPEG stream, which information was used by the program logic for proper playback and for performing special effects on the stream such as fast forward, reverse, fast/slow play, etc. In addition, the claim also specified that the parsing was carried out by the media switch, which resulted in a reduction of processing power required at the CPU. The appellant formulated the corresponding technical problem as to provide a process for the simultaneous storage and playback of multimedia data which was able to keep up with high video rates with reduced microprocessor and system requirements (see page 22, last paragraph, of the letter dated 27 November 2015 and page 3, first paragraph, of the letter dated 27 May 2016). In the oral proceedings the appellant relied on the more general formulation of how to improve the playback of audio/video data.

4.2 The board is not convinced that the technical effects are actually achieved by the distinguishing features in the context of claim 1.

With respect to the alleged reduction of processing power at the CPU, the board notes that claim 1 only refers to a media switch, an input section and an output section. A separation of tasks with a CPU cannot be deduced from claim 1. Hence, the board can also not accept the appellant's formulation of the technical problem that was proposed in the written procedure (see point 4.1 above).

Concerning the second technical effect of providing for efficient trick play modes, the board is also not convinced that parsing before storing alone improves the playback in any of the trick play modes. A stream which has been parsed before being stored is not necessarily distinguishable from a stream which is stored and subsequently parsed. The technical effect depends on the information that is extracted in the parsing process and its use in the subsequent steps of extracting and assembling the output MPEG stream. Hence, the board cannot accept that the alleged technical effects are achieved. Consequently, the board rejects both formulations of the technical problem proposed by the appellant.

4.3 Since the alleged technical effects are not achieved, the board considers that claim 1 relates to a process for the simultaneous storage and playback of multimedia data which can be regarded as an alternative implementation to that of A1. The technical problem is therefore to provide an alternative process for the simultaneous storage and playback of multimedia data.

4.4 The board considers the reversal of the storage and parsing operations as a plain alternative, which would have been chosen by the skilled person where convenient depending on the circumstances of the case. It is obvious that both options have their advantages and disadvantages. Storing before parsing may reduce the computational power required for parsing the MPEG stream in real-time as it arrives at the input section. In contrast, to parse incoming data before it is stored on disk obviates the need to retrieve the data from storage for the parsing operation. These advantages and disadvantages are well known to the skilled person, who would have made use of these options as appropriate according to the circumstances. Hence, the subject-matter of claim 1 was obvious to a person skilled in the art in view of A1.

4.5 The appellant argued that there was no hint in A1 that an operation could be effected prior to storage, in particular to produce a kind of index to simplify access to MPEG events for later playback. The board notes that A1 refers to compression/MPEG coding being carried out before storage (see column 4, lines 25 to 31, and lines 57 to 65). This operation does not produce an index for later playback; however, it shows that dedicated chip sets were used for real-time operations on audio/video streams before storage of the resulting stream. In addition, the board notes that claim 1 does not contain features implying the production and the use of an index for later playback. Hence, the appellant's arguments failed to change the board's view.

4.6 In view of the above, the subject-matter of claim 1 does not involve an inventive step over A1. Thus, the main request is not allowable.

Auxiliary request - Admissibility, Article 12(4) RPBA

5. Under Article 12(1) and (4) RPBA, the board shall take into account everything presented by the parties, inter alia in the notice of appeal, the statement of grounds of appeal and any written reply of the other party or parties, if and to the extent it relates to the case under appeal and meets the requirements set out in Article 12(2) RPBA. The board, however, has the power to hold inadmissible facts, evidence or requests which could have been presented or were not admitted in the first-instance proceedings.

5.1 The claims of the auxiliary request (initially labelled auxiliary request 4) were submitted together with the statement setting out the grounds of appeal. Compared with the independent claims of the main request, the independent claims of the auxiliary request comprise additional features relating to the result of the parsing operation by generating events for an event buffer, the event including an address offset, an event type and a time stamp, (see point XI above, features (e') to (e''')), and to the operation of the media switch in conjunction with a CPU, (see feature (m')).

5.2 These amendments result partly from the incorporation of dependent claims 5 (feature (e''')) and 11 (feature (m')) of the main request into claim 1. The additional features (e') and (e'') were present in reformulated form, for example, in claim 1 of the

fourth auxiliary request underlying the decision under appeal.

5.3 Hence, even if respondent O1's argument is correct that the subject-matter of claim 1 was not considered in this specific combination of features in the proceedings before the opposition division, claim 1 of the auxiliary request is essentially directed to subject-matter that was already present in the claims underlying the decision under appeal. The amendments to claim 1 also represent an effort to further specify the essential process steps of what was considered as the gist of the invention in the decision under appeal, i.e. "decouple the microprocessor from the high data rates and the real time nature of the (video) data streams" and make it "possible to perform special effects without having to parse through an immense data stream" (see point 28.1.3 of the decision under appeal). The same applies with respect to the further independent claim 12. It is also noted that the request was filed at the earliest possible stage of the appeal proceedings, namely with the statement of grounds of appeal. The filing of this request therefore did not give rise to any procedural complications preventing a discussion of the request at the oral proceedings (see Case Law of the Boards of Appeal of the European Patent Office, 7th edition, 2013, section IV.E.4.3.2(d)).

5.4 Hence, the board decided to admit the auxiliary request.

Auxiliary request - Inventive step, Article 56 EPC 1973

6. Claim 1 of the auxiliary request differs from claim 1 of the main request in that features (e') to (e''') and (m') have been incorporated (see point XI above).

6.1 Referring to A1, column 5, lines 7 to 11, and figure 2, respondent O1 asserted that the personal computer 49 and the microcontroller 22 of A1 corresponded to the CPU and the media switch, respectively, of feature (m'). A1 also disclosed parsing for MPEG distinguished events in the stream indicating the start of video or audio components as specified in feature (e'). In addition, A1 implicitly disclosed the storage of an address offset for the frames that were collected for the mosaic display frame (feature e'').

6.2 The board agrees with respondent O1 that A1 discloses the parsing for MPEG distinguished events such as the start of frames (see, for example, A1, column 5, lines 35 to 40). However, according to A1 parsing is effected after the storage of the audio/video components (see point 3.3 above). The board also agrees that generating the mosaic display frame requires storage of the address offsets of the frames in a suitable data structure. It follows that feature (e'') is partly disclosed in A1. Feature (m') is not disclosed in A1. Even if the personal computer 49 of A1 were equated with the CPU of the patent in suit, there is still no disclosure of the microcontroller allowing the personal computer to queue up DMA transfers as specified in feature (m').

6.3 Hence, claim 1 differs from A1 in parts of feature (e''), features (e''') and (m') and in that the parsing is effected prior to the storage of the audio/ video components.

6.4 The appellant argued that features (e') to (e''') provided details of the result of the parsing operation, the corresponding data being collected in

the event buffer. This structure allowed direct access to the stored video and audio data, which improved trick play operations. In addition, by specifying feature (m'), claim 1 referred to a distributed system wherein the task of real-time parsing of the MPEG stream was off-loaded from the CPU to the media switch. All additional features allowed improved access to the stored audio/video data, which simplified the playback of the data.

6.5 It is accepted that that feature (m') implies some separation of tasks between the media switch and a CPU. However, claim 1 is silent as to the significance of the CPU for the claimed process and with regard to the tasks carried out by the CPU. Claim 1 only specifies that the media switch allows the CPU to queue up DMA transfers. The source and destination of such DMA transfers or their purpose is not further specified in claim 1. DMA transfers initiated by a CPU are, however, conventional in the art, as respondent O1 correctly argued. Hence, the board regards this feature in its breadth and in the context of claim 1 to relate to an obvious implementation aspect which does not contribute to the technical effects caused by the further distinguishing features relating to the parsing of the MPEG stream.

6.6 The appellant's argument that the distinguishing features (e''), (e''') and the parsing before storage allowed improved access to the stored audio/video data, which simplified the playback of the data, is accepted. Hence, the technical problem can be formulated as how to simplify the playback of audio/video data.

6.7 A2 discloses a sequence analysis system for video databases to provide for time-shifting, personal

archival and fast access to downloaded video material. Advanced methods for automated analysis of compressed video sequences, such as MPEG video streams, are discussed. These methods focus on the extraction of representative information and its organisation in a video database for efficient browsing and retrieval. Figure 1 of A2 discloses an implementation of a sequence analysis system performing real-time analysis of the video content during the recording operation. This analysis involves the separation of an MPEG transport stream into its video and audio components and the construction of an index of the video stream. For this purpose, A2 discloses the extraction of "key frames" using scene change detection techniques as well as the extraction of time stamps from the MPEG stream (see abstract, chapter "Introduction", last 5 lines, figure 1, and chapter 2 "Video Parsing", first paragraph).

6.8 Both documents A1 and A2 relate to digital video systems for time shifting and aim to improve video retrieval. Hence, these documents are closely related. A2 teaches that parsing of the MPEG data can be effected in real-time during the storage of the video stream, thus avoiding the construction of the index at a later point in time involving additional read and write operations to the storage. A2 also proposes an index data structure (event buffer) which is composed using time stamps that are extracted from the digital stream. It also follows from A2 that the index data structure must distinguish MPEG events by type, such as whether or not a frame represents a key event or not. The index data structure generated as a result of the sequence analysis is employed to simplify playback of the video sequence, for example if the user desires to continue playback from a certain key frame.

6.9 Hence, starting from A1 and being faced with the problem of simplifying the playback of audio/video data, the skilled person would combine the teaching of A1 with document A2, as interpreted on the basis of his common general knowledge, and in so doing would arrive at the subject-matter of claim 1. As a consequence, the subject-matter of claim 1 was obvious to a person skilled in the art.

6.10 The appellant's arguments did not convince the board.

According to the appellant, A2 was not relevant for the present invention, because it concerned content parsing, not the parsing of all important events of an MPEG stream for internal transfer and manipulation as the patent did. Claim 1 requires the separation of the MPEG stream "into its video and audio components by looking for MPEG distinguished events in the stream, indicating the start of video and audio components". This feature is disclosed in figure 1 (see the separation into video and audio elementary streams and subsequent video parsing, audio analysis and key-frame selection). It is correct that the "key frames selection" of A2 requires a scene change detection involving the determination of those frames "where a transition occurs from one shot to another" (see first paragraph of the chapter "Video Parsing"). However, as an initial step the key-frame selection implicitly requires searching for frames.

The appellant also argued that A2 aimed to produce a video database for efficient browsing and retrieval, not to improve access to and playback of MPEG streams for trick play modes. It is correct that A2 does not aim at improving playback for trick play modes, even

though trick play modes are explicitly referred to in A2 (see chapter "Introduction", last paragraph). But claim 1 and the patent in suit are not restricted to improving playback in trick play modes (see also paragraph [0032] of the description). In particular, there are no features in claim 1 that imply the use of the event buffer to perform special effects such as fast forward, reverse, etc. on the stream. The board holds that the skilled person would have arrived at the invention as claimed without having to consider the suitability of the event buffer for trick play modes. An index data structure was required anyway for locating, fast access and playback of downloaded video material.

The board also rejects the appellant's argument that A2 did not disclose the event buffer. As set out above, the event buffer of the patent in suit corresponds to the index produced according to A2.

With respect to the appellant's argument that A2 only referred to real-time analysis of video content "during the recording operation", which was contrary to what was specified in claim 1, where the parsing was carried out before the storage of the parsed data, the board refers to section 2 above regarding the construction of claim 1. The essential effect of parsing being effected before storage of the audio/video components is present in both A2 and the patent in suit. This means that the audio/video components do not have to be retrieved from storage in order to be parsed, but can be processed "on the fly" as they arrive as television broadcast signals.

6.11 In view of the above, the subject-matter of claim 1 does not involve an inventive step. Hence, the auxiliary request is not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

K. Boelicke C. Kunzelmann

Decision electronically authenticated