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EXAMINER	
ART UNIT	PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. 90/009,329.

PATENT NO. 6233389.

ART UNIT 3992.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Office Action in Ex Parte Reexamination	**Control No.** 90/009,329	**Patent Under Reexamination** 6233389	
	Examiner Fred Ferris	**Art Unit** 3992	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a☒ Responsive to the communication(s) filed on *4/8/2010* . b☒ This action is made FINAL.
c☐ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire *2* month(s) from the mailing date of this letter.
Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**
If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☒ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ ____

Part II SUMMARY OF ACTION

1a. ☒ Claims *31 and 61* are subject to reexamination.
1b. ☐ Claims ___ are not subject to reexamination.
2. ☐ Claims ___ have been canceled in the present reexamination proceeding.
3. ☐ Claims ___ are patentable and/or confirmed.
4. ☒ Claims *31 and 61* are rejected.
5. ☐ Claims ___ are objected to.
6. ☐ The drawings, filed on ___ are acceptable.
7. ☐ The proposed drawing correction, filed on ___ has been (7a) ☐ approved (7b)☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some* c)☐ None of the certified copies have
   1☐ been received.
   2☐ not been received.
   3☐ been filed in Application No. ____
   4☐ been filed in reexamination Control No. ____
   5☐ been received by the International Bureau in PCT application No. ____
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

DETAILED ACTION

Introduction

This Office Action is responsive to Patent owner's response filed November 2, 2009 and Supplemental Reply of April 8, 2010 in the *ex parte* reexamination of United States Patent Number 6,233,389 issued to Barton et al. Claims 31 and 61 remain rejected. This action is FINAL.

Patent owner's Supplemental Reply of April 8, 2010 proposing additional claims has NOT been entered. The amendment does not meet the criteria required by 37 CFR 1.111(2) which recites the following:

"(2) *Supplemental replies* . (i) A reply that is supplemental to a reply that is in compliance with § 1.111(b) will not be entered as a matter of right except as provided in paragraph (a)(2)(ii) of this section. The Office may enter a supplemental reply if the supplemental reply is clearly limited to:

(A) Cancellation of a claim(s);
(B) Adoption of the examiner suggestion(s);
(C) Placement of the application in condition for allowance;
(D) Reply to an Office requirement made after the first reply was filed;
(E) Correction of informalities (e.g., typographical errors); or
(F) Simplification of issues for appeal.
(ii) A supplemental reply will be entered if the supplemental reply is filed within the period during which action by the Office is suspended under § 1.103(a) or (c)."

Response to Arguments

Patent owner's arguments generally mirror the Villasenor declaration and hinge on the meaning of the terms "source object", "sink object", and "automatic[ally] flow control[led]". Patent owner's arguments, and the Villasenor Declaration, have been fully considered as explained in the examiner's response to appearing below.

A. "Source Object"

Patent owner first argues that the claimed *"source object" does much more than simply place data from a source into a buffer* as indicated by the examiner in the office action. Here, Patent owner proposes that the examiner's construction citing 8:43-45 of the '389 Patent describes only one action taken by the source object. (i.e. "[t]he source object 901 takes data out of a physical data source, such as the Media Switch, and places it into a PES buffer.") Patent owner proposes that actions taken by the source object act on the system in "other ways" as well and cites the Villasenor declaration (26) for support. (See: Examiner's note below) However, Patent owner fails to explain how the specification expressly discloses any of the "other ways" that the source object acts on the system. Instead, Patent owner points to the language of the claims requiring action by the source object (e.g. "said source object converts video data into data streams and fills said buffer with data streams") but cites no supporting specification passages describing such actions.

For purposes of claim construction, the examiner gives the term "object" the widely accepted computer science meaning of a "collection of data and operations". Hence the term "source object", taken in light of the specification, can be interpreted to simply be the data, and the program code associated with any supporting hardware (e.g. memory (buffers), processors, and controllers) for performing the claimed functions. Therefore, the examiner maintains that even if the term "source object" is given the construction proposed by Patent owner, namely, that the source object somehow (1) extracts <u>video and audio data from a physical data source</u>, (2) <u>obtains a buffer (memory) from a transform object</u>, (3) <u>converts video data into data streams</u>, (4) <u>fills the</u>

buffer (memory) with the streams, and (5) is automatically flow controlled by a transform object, then the limitations are still disclosed in the prior art based on the broadest reasonable interpretation. In this instance the functions (i.e. "operations") themselves, e.g. the extraction of video and audio data from data source, conversion of video data into data streams... etc., are disclosed in the prior art of record as set forth in the 103 rejections appearing below. For example, (1) extracts video and audio data from a physical data source is disclosed by Thomason because the operation of DMA controller 31 and microprocessor 24 through software meets the recited source object step as the operation transfers video and audio data from the physical data source, *i.e.,* buffer 4, to buffer memory 35. (Thomason at col. 3, lines 53-64.) Thus, Thomason meets the broadest reasonable interpretation of the "source object" extracting video and audio data from a physical source as claimed.

Examiner's Note: Patent owner cites the Villasenor declaration (26) in support of the "other ways" the source object acts on the system. However, the declaration also fails to explain how the '389 specification expressly discloses any of the "other ways" that the source object acts on the system. The Villasenor declaration also cites Figure 9 of '389 Patent as apparently exemplary of the claimed "source object" and "sink object". Figure 9, includes numerous elements (904-907) relating to the Tivo Media Kernal. (e.g. Tmk core, Tmk Pipeline, Tmk, source, etc.) However, none of these elements are expressly claimed, and the cited passages of the '389 specification does not make clear how any of these elements are associated with the claimed "source object". Accordingly, a skilled artisan would understand from the specification that the source object 901 takes data out of a physical source (e.g. a media switch) and places it into a buffer. (i.e. '389 at 8:43-54)

B. Thomason discloses the "Source Object" and "Automatically Flow Controlled" limitations based on the broadest reasonable interpretation.

Patent owner next argues that Thomason *does not meet the claim element "wherein said source object is automatically flow controlled by said transform object".* Instead, Patent owner believes that the design of Thomason is aimed at a system in which there is no flow control and cites the Villasenor declaration (31, 32) for support. (See: Examiner's note below) The examiner disagrees with this narrow view of Thomason. Here Patent owner argues that Thomason does not disclose flow control between buffer (4) and buffer (35) with regard to DMA controller 31 because the operation is described in passive terms. However this view of Thomason ignores the fundamental principles of the operation of DMA controllers. A skilled artisan would understand that DMA controllers (e.g. 31, 32, & 33 of Thomason) require some type of handshaking between the buffer memories. (e.g. buffer (4) and buffer mem. (35) of Thomason) A skilled artisan would also know that, in a traditional synchronous DMA transfer, handshaking (e.g. via a "ready" line and program control) is the way the DMA controller "regulates" the data transfer between memories. (See: DMA (Embedded Systems) page 3, paragraphs 3-4, of record) Hence a skilled artisan would understand that the DMA controller can be thought of as "self regulating" during <u>any</u> traditional DMA data transfer operation. This understanding is completely consistent with Patent owner's proposed definition of the term "automatic flow control" as meaning "self regulating". ('389 at 8:49) The fact that Thomason discloses that main memory 36 is "available to receive data" from DMA controller 32 occurs "downstream" of buffers 4 and 35 is irrelevant since the same regulation of flow must occur between buffer (4) and buffer (35) with regard to DMA controller 31 which is not downstream.

Thomason also discloses that the microprocessor 24 runs software for the administration and allocation of the buffer memory. (Thomason at 3:60-63) This software, which allocates (obtains) buffer memory and administers (controls) data transfer between the buffers, is functionally an "object" in light of the explanation given above. Finally, Patent owner's reference to the object being *"blocked" until there is sufficient memory* ('389 at 8:45-49, Villasensor at 32) as being exemplary of "automatic flow control" does not distinguish over the prior art since Thomason discloses that DMA controllers regulate the data transfer between buffers as explained above. (The "blocked" feature is not even expressly required by the language of the claim.) Therefore Thomason discloses the necessary interaction between objects in controlling the flow of data between buffers.

Examiner's note: The Villasenor declaration (31) makes the same "downstream" argument with regard to the DMA controller already rebutted based on the reasoning set forth above. The Villasenor declaration (32) also opines that automatic flow control is a result of the source object's desire to obtain a buffer from the (downstream) transform object, the source object being "blocked", and the self-regulating pipeline. ('389 at 8:45-49) The examiner agrees that the '389 specification does appear to indicate that flow control is "automatic" because of the way the pipeline is constructed (e.g. '389 at 11:25). However, the "pipeline", "downstream" transform object, and "blocked" features relied upon in the declaration are not specifically required by the language of the claim.

C. "Sink Object"

Patent owner offers essentially the same arguments with regard to the claimed "sink object" as offered for the "source object". Namely, that the claimed "sink object" does much more than simply consume data from a buffer as referenced at 7:50 of the '389 Patent, and stated by the examiner in the office action. Patent owner cites the Villasenor declaration (36) but again fails to explain how the specification expressly discloses the purported "much more" system operation aspects of the sink object. Patent owner again points to the language of the claims requiring action by the sink object (e.g. "obtains" and "outputs data streams") but cites no supporting specification passages describing such actions. As explained above, the examiner gives the term "object" the widely accepted computer science meaning of a "collection of data and operations". Hence the term "sink object" can be interpreted to simply be the data and program code associated with any supporting hardware (e.g. memory (buffers), processors, and controllers) for performing the claimed functions. Hence, the examiner again maintains that even if the term "sink object" is given the construction proposed by Patent owner, namely, that the sink object somehow (1) <u>obtains data streams from a transform object</u>, (2) <u>outputs data streams to a video and audio decoder</u>, and (3) <u>is automatically flow controlled by a transform object</u>, then the limitations are still disclosed in the prior art based on the broadest reasonable interpretation. In this instance the functions (i.e. "operations") themselves, e.g. obtaining data streams, outputting data streams to a video and audio decoder… etc., are disclosed in the prior art of record as set forth in the 103 rejections appearing below. For example, (2) <u>outputs data streams to a video and audio decoder</u>, is disclosed by Thomason because the operation of DMA controller 33 and the microprocessor 24 meets the sink object step as it <u>operates to transfer data streams</u> under program control from variable buffer memory 35 to buffer 14. Fig. 1 shows that buffer 14 outputs the data to decompressor 13 and d/a converter 12. (As noted below, in MPEG format the decompressor would by necessity include a video decoder and an audio decoder) Thus, Thomason meets the broadest reasonable interpretation of the "sink object" outputting data streams to a video and audio decoder as claimed.

Examiner's Note: Patent owner cites the Villasenor declaration (36) in support of the "other ways" the sink object acts on the system. However, the declaration also fails to explain how the '389 specification expressly discloses any of the "other ways" that the sink object acts on the system. The Villasenor declaration also cites Figure 9 of '389 Patent as apparently exemplary of the claimed "source object" and "sink object". Figure 9, includes numerous elements (904-907) relating to the Tivo Media Kernal. (e.g. Tmk core, Tmk Pipeline, Tmk, source, etc.) However, none of these elements are expressly claimed, and the cited passages of the '389 specification do not make clear how any of these elements are associated with the claimed "sink object". Accordingly, a skilled artisan would simply understand from the specification that the sink object consumes data in the buffer. (i.e. '389 at 7:50)

D. Thomason discloses the "Sink Object" and "Automatically Flow Controlled" limitations based on the broadest reasonable interpretation.

Patent owner next argues that Thomason *does not meet the claim element "wherein said sink object is automatically flow controlled by said transform object"*. Instead, Patent owner believes that the design of Thomason is aimed at a system in which there is no flow control and cites the Villasenor declaration (38) for support. As previously explained, the examiner disagrees with this narrow view of Thomason. Here Patent owner argues that Thomason does not disclose flow control between the output data side of buffer (35) into buffer (14) with regard to DMA controller 33. However, as explained above, this view of Thomason ignores the fundamental principles of the operation of DMA controllers. A skilled artisan would understand that DMA controllers (e.g. 31, 32, & 33 of Thomason) require some type of handshaking between the buffer memories. (e.g. buffer (35) and buffer mem. (14) of Thomason) A skilled artisan would also know that, in a traditional synchronous DMA transfer, handshaking (e.g. via a "ready" line and program control) is the way the DMA controller "regulates" the data transfer between memories. (See: DMA (Embedded Systems) page 3, paragraphs 3-4, of record) Hence a skilled artisan would understand that the DMA controller can be thought of as "self regulating" during any traditional DMA data transfer operation. This understanding is completely consistent with Patent owner's proposed definition of the term "automatic flow control" as meaning "self regulating". ('389 at 8:49) The fact that Thomason discloses that main memory 36 is "available to receive data" from DMA controller 32 occurs "downstream" of buffers 4 and 35 is irrelevant since the same regulation of flow must occur between buffer (4) and buffer (35) with regard to DMA controller 31 which is not downstream.

Thomason also discloses that the microprocessor 24 runs software for the administration and allocation of the buffer memory. (Thomason at 3:60-63) This software, which allocates (obtains) buffer memory and administers (controls) data transfer between the buffers, is functionally an "object" in light of the explanation given above. Finally, Patent owner's reference to the object being able to "block" the sink until the buffer is ready ('389 at 8:52-65, Villasensor at 40), as being exemplary of "automatic flow control", does not distinguish over the prior art since

Thomason discloses that DMA controllers "regulate" the data transfer between buffers as explained above. (The "block" feature is not even expressly required by the language of the claim.) Therefore Thomason discloses the necessary interaction between objects in controlling the flow of data between buffers.

Examiner's note: The Villasenor declaration (38) makes the same "downstream" argument with regard to the DMA controller already rebutted based on the reasoning set forth above. The Villasenor declaration (39) also opines that automatic flow control is a result of the sink object's desire to obtain a buffer from the (upstream) transform object, the sink object being "blocked", and the self-regulating pipeline. ('389 at 8:45-49) The examiner agrees that the '389 specification does appear to indicate that flow control is "automatic" because of the way the pipeline is constructed (e.g. '389 at 11:25). However, the "pipeline", "upstream" transform object, and "blocked" features relied upon in the declaration are not specifically required by the language of the claim.

E. The combination of Thomason and Krause renders claims 31 and 61 obvious.

Patent owner cites the Villasenor declaration (43-48) and argues that the combination of Thomason and Krause would significantly *change the principle of operation of Thomason because Thomason's acceleration controller operates on combined analog audio and video signals and Krause's I-frame detector works on digital signals*. The examiner does not agree for several reasons. First, creating digital video from analog video was within the ordinary capabilities of a skilled artisan and in common practice at the time of the invention. (See: Numerous prior art references (all of record) citing MPEG encoders converting digital video from standard (analog) video signal streams – EP 0 762 756 A2 Sasaki, Seishi page 5 lines 16, 54, page 6 line 42, Figs. 1, 5, 6, Nelson, Lee J. "The Latest in Compression Hardware and Software page 7, Leek, M. R. "MPEG Q&A" page 2, for example) Thus, converting Thomason's analog video stream to an encoded MPEG digital video stream would have been a trivial task for a skilled artisan.

Second, Krause teaches an embodiment for retrieving I-frames for fast forward and reverse playback functions using an I-frame table which is created in advance. (Krause at 11:37-55, Figs. 4&5) At 11:35 Krause recites the following:

A more efficient retrieval method can be used if the locations of the I-frames on the Storage Device 140 are known in advance. FIG. 4 shows this second embodiment for retrieving I-frames for fast forward and reverse playback. The sequence number I of the next I-frame to be retrieved is determined as in the first embodiment, based on the direction and rate of playback in step 400. The address or index number of the block on the storage device containing the beginning of this I-frame is then determined by referencing a table which is created in advance (not shown in FIG. 4) and used to initialize storage block counter k in step 410. This storage block is then retrieved, in step 420, and the beginning of the I-frame is located by scanning the storage block for the unique sequence of bits used to identify the I-frames and comparing the sequence number with the chosen value I, in step 430. SELECT is then set to 1, in step 440, so that subsequent data will be delivered to the Decoder 150. As shown in steps 450-456 (like steps 390-396 of FIG. 3) the Controller 130 will then continue to retrieve subsequent blocks from the storage device until the end of the I-frame is detected, at which time SELECT will be reset to 0. (emphasis added)

(Also see: Krause at 11:55-12:14, Figs. 4&5)

Hence, Krause teaches a mechanism to store the identified I-frame location information and provide it to the controller to accommodate fast forward and reverse playback functions.

Thus, while the Villasenor declaration opines that the Thomason acceleration controller would be unable to act on digital signals because the system receives only uncompressed analog video, the prior art appears to overwhelmingly support the position that a skilled artisan would have known how to convert analog video to MPEG video, and perform any required modifications to the microprocessor, DMA controller, and buffer management to realize the invention as recited in claims 31 and 61. Further, no technological "leap" would have been required since it was known at the time of the invention that the industry was migrating away from analog video, and toward digital video streams (i.e. MPEG), as noted with regard to the MPEG digital encoders cited above. It should also be noted that claims 31 and 61 are drawn to a system for the simultaneous storage and playback of multimedia data (e.g. video) based on commands from a user, but do not expressly require that the commands are fast forward and reverse functions.

In summary, both Patent owner's arguments, and the Villasenor declaration appear to rely heavily on features that are not specifically required by the language of claims 31 and 61.

F. Secondary Considerations.

Patent owner also argues secondary considerations of non-obviousness based on the commercial success of the '389 Patent. While the examiner generally agrees that TiVo products were indeed successful as opined in the Barton Declaration, neither Patent owner's arguments, nor the Barton Declaration, establish a clear nexus between the merits of the claimed invention, and the proposed evidence of commercial success. Hence, the examiner finds the secondary considerations inadequate to overcome the final conclusion of non-obviousness as presented herein. In this instance, it is unclear how the commercial success relates to the claimed features such as the "source object", the "sink object", and "automatically flow controlled" that Patent owner has argued distinguish the invention over the prior art, or, how the commercial success relates to obvious features relied on in the Krause reference (i.e. parsing the video and audio data from the broadcast data). Accordingly, the secondary considerations do not appear to support the conclusion that claims 31 and 61 are non-obvious. (MPEP 716.01(a,b))

Background

The '389 Patent is drawn to a system and a method simultaneously storing and playing back multimedia data, such as a television broadcast program. The ability to simultaneously store and play back the program allows the user to rewind or fast forward through the program while viewing it. Fig. 1 illustrates the system. Input Module 101 receives a television input stream and outputs an MPEG formatted stream. For example, if the television input stream is an analog signal, Input Module 101 converts the signal into an MPEG format through the use of video and audio encoders. (Col. 2, lines 10-14 and Col. 3, lines 49-52.) The MPEG formatted stream is then sent to Media Switch 102. Media Switch 102 includes a "parser." The parser "parses the stream looking for MPEG distinguished events including the start of video, audio or private data segments." (Col. 5, lines 3-6.) When a video or audio segment is distinguished, the parser indexes the segment in an appropriate video or audio circular buffer represented by memory 104. (See also Fig. 4 at video buffer 410 and audio buffer 411)

Claims 31 and 61 are directed to the program logic within CPU 106 that controls the movement of data through the system. The program logic has three conceptual components as illustrated in Fig. 8 of the '389 Patent.

The '389 patent also describes the use of object-oriented programming language, e.g., the C++ programming language, to implement the program logic illustrated conceptually in Fig. 8 above. Specifically, the '389 patent describes the use of a "source object" 901, a "transform object" 902 and a "sink object" 903 corresponding to sources 801, transforms 802 and sinks 803. (Col. 8, lines 9-18; Fig. 9.) A "control object" 917 is also employed to accept commands from the user. (Col. 9, lines 25-32.) However, the specific features relating to the claimed object-based method and apparatus now appear to be rendered obvious by the prior art now being view in a new light as set forth below. (See: Prior art rejections below)

References cited in the request

U.S. Patent 6,018,612 to Thomason et al. ("Thomason")

U.S. Patent 5,949,948 to Krause et al. ("Krause")

Prior art rejections

Claim Rejections - 35 USC § 103

(1) Claims 31 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Thomason in view of Krause.

The prior art renders obvious the elements of claim 31 as follows:

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

Thomason describes a conventional system that simultaneously stores and plays back a television program. (Col. 1, lines 28-31.) Thomason is directed to an improvement of the conventional system with respect to its use of memories. (Col. 2, lines 54-55.)

providing a physical data source, wherein said physical data source accepts

broadcast data from an input device, parses video and audio data from said broadcast data, and temporarily stores said video and audio data;

Thomason discloses channel selector 1 that receives one or more television signals. (Col. 3, lines 39-43; Fig. 1.) Channel selector 1 selects the television signals desired by the user for storage and then passes the selected signals to a/d converter 2 and compressor 3. The resulting compressed data is then stored in one or more buffers 4. (Col. 3, lines 47-57.) Thus, buffer 4 meets the recited physical data source as it accepts broadcast data from an input device, i.e., channel selector 1, i.e., and temporarily stores the data.

Examiner note: The parsing of video and audio data is interpreted to mean detecting video frames and then generating an index or table of the start of the detected video frames and their storage location on a hard drive. ('389 at 2:15-20, 5:3-15)

Krause discloses an I-frame detector that detects I-frames in MPEG-formatted broadcast data and then generates a table or index of the storage locations of the detected I-frames. (Col. 5, lines 35-44; see also Col. 6, lines 31-39 and Fig. 5.) The act of identifying a certain type of a video frame and generating a table based on the identification necessarily parses the broadcast video data, i.e., the data corresponding to I-frames, and audio data, i.e., the data not detected by the I-frame detector. One of ordinary skill in the art would employ the indexing of detected I-frames, i.e., "parsing," of the MPEG-formatted data to identify I-frames from other video and audio data prior to storage in buffer 4. An I-frame provides enough information for a complete picture to be generated from the I-frame alone, in contrast to other types of frames. Knowing the locations of the I-frames in advance would allow Thomason to more efficiently perform operations such as varying speed reverse or varying speed forward by directly retrieving the appropriate I-frames for the selected speed.

However, Thomason does not explicitly disclose that buffer 4 parses the video and audio data from the broadcast data prior to storage.

Prior art Krause discloses parsing video and audio data from broadcast data. As further explained below, Krause discloses an I-frame detector that detects I-frames in MPEG-formatted broadcast data and then generates a table or index of the storage locations of the detected I-frames. (Col. 5, lines 35-44; see also Col. 6, lines 31-39 and Fig. 5.) The act of identifying a certain type of a video frame and generating a table based on the identification necessarily parses the broadcast video data, i.e., the data corresponding to I-frames, and audio data, i.e., the data not detected by the I-frame detector. (See below)

providing a source object, wherein said source object extracts video and audio data from said physical data source;

Thomason discloses DMA controller 31 that transfers data from buffer 4 to buffer memory 35. DMA controller 31 is supervised by microprocessor 24 that accesses ROM 22 to run software:

The information contained in the buffers 4 will be transferred to the buffer memory 35 under supervision of a microprocessor 24 by a DMA (direct memory access) controller 31, and is identifiable as input destined for a main memory 36, which is in the form of a band disk arrangement. The microprocessor 24 initiates the data transfer from the buffer 4 to the buffer memory 35, and performs memory allocation in the buffer memory. The microprocessor 24 runs ROM-(read-only memory) 22 based software and makes use of a working RAM (random access memory) 23 for temporary variables, the administration of the buffer memory 35, storage of user commands and the user status, etc. (col. 3, lines 53-64.)

Thus, the operation of DMA controller 31 and microprocessor 24 through software meets the recited source object step as the operation transfers video and audio data from the physical data source, *i.e.,* buffer 4, to buffer memory 35.

Examiner note: The recited "source object" is interpreted to mean data from a source (e.g. a Media switch) is placed in a buffer. ("389 at 8:43-45)

providing a transform object, wherein said transform object stores and retrieves data streams onto a storage device;

Thomason explains that DMA controller 32 operates under the supervision of microprocessor 24 that runs software. DMA controller 32 stores and retrieves data from buffer memory 35 to a storage device, i.e., main memory 36:

Input data in the buffer memory 35 is transferred to the main memory 36 as soon as it is convenient under the supervision of the microprocessor 24 by another DMA controller 32. The stored data in main memory 36 is in due course transferred to the buffer memory 35 under supervision of the microprocessor 24 by DMA controller 32. (Col. 3, line 64 to Col. 4, line 3.)

The data stored and retrieved from main memory 36 is a data stream as Thomason discloses operating the system of Fig. 1 to simultaneously record and play a television program. Thomason further discloses that data stored on the main memory can be retrieved at a later time, thereby creating a temporal transformation. (See, e.g., Thomason at Col. 1, lines 56-59 ("If the viewer is interrupted while watching a program, for example by a telephone call or a call at the door, he can resume watching the program from the point at which he was interrupted."); see also '389 patent, at Col. 8, lines 3-8 (describing temporal transformations in the context of transforms 802).)

Examiner note: the recited "transform object" is interpreted to mean a temporal transfer of data that can be retrieved later in time. ('389 at 9:35-37)

wherein said source object obtains a buffer from said transform object, said source object converts video data into data streams and fills said buffer with

said streams;

Thomason discloses that the operation of DMA controller 31 under the supervision of microprocessor 24 - i.e., the source object - is to transfer data from buffer 4 to the buffer memory 35, with the data being "identifiable as input destined for a main memory 36." (Col. 3, lines 53-64.) The operation of DMA controller 32 as supervised by microprocessor 24 - i.e., the transform object - is to control the transfer of data to and from buffer memory 35 to main memory 36. (Col. 3, line 64 to Col. 4, line 3.) Fig. 1 of Thomason shows buffer memory 35 as being variable by the diagonal dashed lines. Thus, the source object 31/24 obtains a buffer, i.e., variable buffer memory 35, from the transform object 32/24 to fill the buffer with data identified for input to main memory 36. The source object 31/24 converts the data to a stream by successively outputting data from buffer 4 to buffer memory 35 for generating a television program.

wherein said source object is automatically flow controlled by said transform object;

Automatic flow control is taught in Thomason by teaching that data is automatically buffered (e.g. self-regulated) from buffer 4 to buffer memory 35 until the main memory 36 is available to receive data. (Col. 4, lines 43-51)

providing a sink object, wherein said sink object obtains data stream buffers from said transform object and outputs said streams to a video and audio decoder;

Thomason discloses transferring a data stream from main memory 36 to buffer memory 35 through the operation of DMA controller 32 and microprocessor 24, i.e., the transform object. Buffer memory 35 is variable as discussed above, and DMA controller 33 under the supervision of microprocessor 24 through software operates to obtain the data stream buffers from the transform object. (Col. 4, lines 1-19.) Fig. 1 shows that buffer 14 receives the data from buffer memory 35. That is, the operation of DMA controller 33 and the microprocessor 24 meets the sink object step as it operates to transfer data streams from variable buffer memory 35 to buffer 14. Fig. 1 shows that buffer 14 outputs the data to decompressor 13 and d/a converter 12. If the data is in MPEG format, the decompressor would include a video decoder and an audio decoder. Examiners note: The claimed "sink object" relates to transferring data streams from buffer memory where a "sink" simply consumes data from a buffer. ("389 at 7:50)

wherein said decoder converts said streams into display signals and sends said signals to a display;

Thomason discloses that d/a converter 12 converts the signals from a digital stream to an analog signal that can be sent "to a video recorder or television." (Col. 4, lines 15-19.)

wherein said sink object is automatically flow controlled by said transform object;

Thomason discloses self-regulation in that data is buffered from buffer 4 to buffer memory 35 until the main memory 36 is available to receive data. (See, e.g., Col. 4, lines 43-51) The same process applies between the transform object and the sink object as data is transferred from buffer memory 35 to buffer 14 until the main memory is available to output data. (See Col. 4, lines 52-61)

providing a control object, wherein said control object receives commands from a user, said commands control the flow of the broadcast data through the

system; and
wherein said control object sends flow command events to said source, transform, and sink objects.

Fig. 1 of Thomason illustrates a "user interface device" 26 providing command signals to a "user command input ports" 25 connected to bus 21. Thomason discloses that conventional systems allow the user to provide commands to control viewing such as reversing or fast forwarding, i.e., control the flow of data. (Col. 1, line 45 to Col. 2, line 32.) Fig. 1 illustrates that bus 21 in turn is connected the microprocessor 24 and DMA controllers 31-33 and, thus, the commands from device 26 for controlling the flow of data are sent to the elements defined above as meeting the recited source, transform and sink objects to effect the desired commands.

Examiners note: The recited "control object" is interpreted to mean a control command from a user. ('389 at 9:23)

As explained above, Thomason does not explicitly disclose that buffer 4 parses the video and audio data from the broadcast data prior to storage.

Analogous art Krause discloses an I-frame detector that detects I-flames in MPEG-formatted broadcast data and then generates a table or index of the storage locations of the detected I-frames.

As the compressed program is received by a storage device, an I-frame detector notes the arrival of each I-frame and provides this information to a host system which may control the maintenance of a table which corresponds [sic] I-flames to particular blocks of memory in the storage device. In this way, efficient and rapid retrieval of I-frame data blocks may be provided by the storage controller for providing appropriate blocks of memory to the decoder for effecting various playback modes. (Col. 5, lines 35-44; *see also* Col. 6, lines 31-39 and Fig. 5.)

That is, the detector in Krause "parses" the broadcast data by identifying a specific type of video frame from broadcast data having both video and audio data and generates a table based on the detected frames. The act of identifying a certain type of a video flame and generating a table based on the identification necessarily parses the broadcast between video data, i.e., the data corresponding to I-frames, and audio data, i.e., the data not detected by the I-frame detector.

Motivation to combine

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ Krause's indexing in the system of Thomason. Thomason discloses that the selected television signals are digitized by a/d converter 2 and compressed by compressor 3 before being input to buffer 4 for storage. The skilled artisan would appreciate that compressor 3 could be an MPEG encoder or, additionally, that a received digital MPEG-formatted broadcast stream could be directly input to buffer 4 without the need for conversion and compression. One of ordinary skill in the art would employ the indexing of detected I-frames, i.e., "parsing," of the MPEG-formatted data to identify I-frames from other video and audio data prior to storage in buffer 4. An I-frame provides enough information for a complete picture to be generated from the I-frame alone, in contrast to other types of frames. Knowing the locations of the I-frames in advance would allow Thomason to more efficiently perform operations such as varying speed reverse or varying speed forward by directly retrieving the appropriate I-frames for the selected speed.

Further, both references include teachings from the same technological arena. (i.e. simultaneously storing and watching a multimedia program) Hence, the combination would have yielded predictable results.

The prior art renders obvious the elements of claim 61 as follows:

An apparatus for the simultaneous storage and play back of multimedia data, comprising:

Thomason describes a conventional system that simultaneously stores and plays back a television program. (Col. 1, lines 28-31.) Thomason is directed to an improvement of the conventional system with respect to its use of memories. (Col. 2, lines 54-55.)

a physical data source, wherein said physical data source accepts broadcast data from an input device, parses video and audio data from said broadcast data, and temporarily stores said video and audio data;

Thomason discloses channel selector 1 that receives one or more television signals. (Col. 3, lines 39-43; Fig. 1.) Channel selector 1 selects the television signals desired by the user for storage and then passes the selected signals to a/d converter 2 and compressor 3. The resulting compressed data is then stored in one or more buffers 4. (Col. 3, lines 47-57.) Thus, buffer 4 meets the recited physical data source as it accepts broadcast data from an input device, i.e., channel selector 1, i.e., and temporarily stores the data.

Examiner note: The parsing of video and audio data is interpreted to mean detecting video frames and then generating an index or table of the start of the detected video frames and their storage location on a hard drive. ('389 at 2:15-20, 5:3-15)

Krause discloses an I-frame detector that detects I-frames in MPEG-formatted broadcast data and then generates a table or index of the storage locations of the detected I-frames. (Col. 5, lines 35-44; see also Col. 6, lines 31-39 and Fig. 5.) The act of identifying a certain type of a video frame and generating a table based on the identification necessarily parses the broadcast video data, i.e., the data corresponding to I-frames, and audio data, i.e., the data not detected by the I-frame detector. One of ordinary skill in the art would employ the indexing of detected I-frames, i.e., "parsing," of the MPEG-formatted data to identify I-frames from other video and audio data prior to storage in buffer 4. An I-frame provides enough information for a complete picture to be generated from the I-frame alone, in contrast to other types of frames. Knowing the locations of the I-frames in advance would allow Thomason to more efficiently perform operations such as varying speed reverse or varying speed forward by directly retrieving the appropriate I-frames for the selected speed.

However, Thomason does not explicitly disclose that buffer 4 parses the video and audio data from the broadcast data prior to storage.

Prior art Krause discloses parsing video and audio data from broadcast data. As further explained below, Krause discloses an I-frame detector that detects I-frames in MPEG-formatted broadcast data and then generates a table or index of the storage locations of the detected I-frames. (Col. 5, lines 35-44; see also Col. 6, lines 31-39 and Fig. 5.) The act of identifying a certain type of a video frame and generating a table based on the identification necessarily parses the broadcast video data, i.e., the data corresponding to I-frames, and audio data, i.e., the data not detected by the I-frame detector. (See below)

a source object, wherein said source object extracts video and audio data

from said physical data source;

Thomason discloses DMA controller 31 that transfers data from buffer 4 to buffer memory 35.

DMA controller 31 is supervised by microprocessor 24 that accesses ROM 22 to run software:

The information contained in the buffers 4 will be transferred to the buffer memory 35 under supervision of a microprocessor 24 by a DMA (direct memory access) controller 31, and is identifiable as input destined for a main memory 36, which is in the form of a band disk arrangement. The microprocessor 24 initiates the data transfer from the buffer 4 to the buffer memory 35, and performs memory allocation in the buffer memory. The microprocessor 24 runs ROM-(read-only memory) 22 based software and makes use of a working RAM (random access memory) 23 for temporary variables, the administration of the buffer memory 35, storage of user commands and the user status, etc. (col. 3, lines 53-64.)

Thus, the operation of DMA controller 31 and microprocessor 24 through software meets the recited source object step as the operation transfers video and audio data from the physical data source, *i.e.*, buffer 4, to buffer memory 35.

Examiner note: The recited "source object" is interpreted to mean data from a source (e.g. a Media switch) is placed in a buffer. ("389 at 8:43-45)

a transform object, wherein said transform object stores and retrieves data streams onto a storage device;

Thomason explains that DMA controller 32 operates under the supervision of microprocessor 24 that runs software. DMA controller 32 stores and retrieves data from buffer memory 35 to a storage device, i.e., main memory 36:

Input data in the buffer memory 35 is transferred to the main memory 36 as soon as it is convenient under the supervision of the microprocessor 24 by another DMA controller 32. The stored data in main memory 36 is in due course transferred to the buffer memory 35 under supervision of the microprocessor 24 by DMA controller 32. " (Col. 3, line 64 to Col. 4, line 3.)

The data stored and retrieved from main memory 36 is a data stream as Thomason discloses operating the system of Fig. 1 to simultaneously record and play a television program. Thomason further discloses that data stored on the main memory can be retrieved at a later time, thereby creating a temporal transformation. (See, e.g., Thomason at Col. 1, lines 56-59 ("If the viewer is interrupted while watching a program, for example by a telephone call or a call at the door, he can resume watching the program from the point at which he was interrupted."); see also '389 patent, at Col. 8, lines 3-8 (describing temporal transformations in the context of transforms 802).)

Examiner note: the recited "transform object" is interpreted to mean a temporal transfer of data that can be retrieved later in time. ('389 at 9:35-37)

wherein said source object obtains a buffer from said transform object, said source object converts video data into data streams and fills said buffer with said streams;

Thomason discloses that the operation of DMA controller 31 under the supervision of microprocessor 24 - i.e., the source object - is to transfer data from buffer 4 to the buffer memory 35, with the data being "identifiable as input destined for a main memory 36." (Col. 3, lines 53-64.) The operation of DMA controller 32 as supervised by microprocessor 24 - i.e., the transform object - is to control the transfer of data to and from buffer memory 35 to main memory 36. (Col. 3, line 64 to Col. 4, line 3.) Fig. 1 of Thomason shows buffer memory 35 as being variable by the diagonal dashed lines. Thus, the source object 31/24 obtains a buffer, i.e., variable buffer memory 35, from the transform object 32/24 to fill the buffer with data identified for input to main memory 36. The source object 31/24 converts the data to a stream by successively outputting data from buffer 4 to buffer memory 35 for generating a television program.

wherein said source object is automatically flow controlled by said transform object;

Automatic flow control is taught in Thomason by teaching that data is automatically buffered (e.g. self-regulated) from buffer 4 to buffer memory 35 until the main memory 36 is available to receive data. (Col. 4, lines 43-51)

a sink object, wherein said sink object obtains data stream buffers from said transform object and outputs said streams to a video and audio decoder;

Thomason discloses transferring a data stream from main memory 36 to buffer memory 35 through the operation of DMA controller 32 and microprocessor 24, i.e., the transform object. Buffer memory 35 is variable as discussed above, and DMA controller 33 under the supervision of microprocessor 24 through software operates to obtain the data stream buffers from the transform object. (Col. 4, lines 1-19.) Fig. 1 shows that buffer 14 receives the data from buffer memory 35. That is, the operation of DMA controller 33 and the microprocessor 24 meets the sink object step as it operates to transfer data streams from variable buffer memory 35 to buffer 14. Fig. 1 shows that buffer 14 outputs the data to decompressor 13 and d/a converter 12. If the data is in MPEG format, the decompressor would include a video decoder and an audio decoder. Examiners note: The claimed "sink object" relates to transferring data streams from buffer memory where a "sink" simply consumes data from a buffer. ("389 at 7:50)

wherein said decoder converts said streams into display signals and sends

said signals to a display;

Thomason discloses that d/a converter 12 converts the signals from a digital stream to an analog signal that can be sent "to a video recorder or television." (Col. 4, lines 15-19.)

wherein said sink object is automatically flow controlled by said transform object;

Thomason discloses self-regulation in that data is buffered from buffer 4 to buffer memory 35 until the main memory 36 is available to receive data. (See, e.g., Col. 4, lines 43-51) The same process applies between the transform object and the sink object as data is transferred from buffer memory 35 to buffer 14 until the main memory is available to output data. (See Col. 4, lines 52-61)

a control object, wherein said control object receives commands from a user, said commands control the flow of the broadcast data through the system; and wherein said control object sends flow command events to said source, transform, and sink objects.

Fig. 1 of Thomason illustrates a "user interface device" 26 providing command signals to a "user command input ports" 25 connected to bus 21. Thomason discloses that conventional systems allow the user to provide commands to control viewing such as reversing or fast forwarding, i.e., control the flow of data. (Col. 1, line 45 to Col. 2, line 32.) Fig. 1 illustrates that bus 21 in turn is connected the microprocessor 24 and DMA controllers 31-33 and, thus, the commands from device 26 for controlling the flow of data are sent to the elements defined above as meeting the recited source, transform and sink objects to effect the desired commands.

Examiners note: The recited "control object" is interpreted to mean a control command from a user. ('389 at 9:23)

Thus, Thomason teaches all of the basic flow control operations recited in claim 31. However, and as explained above, Thomason does not explicitly disclose that buffer 4 parses the video and audio data from the broadcast data prior to storage.

Analogous art Krause discloses an I-frame detector that detects I-flames in MPEG-formatted broadcast data and then generates a table or index of the storage locations of the detected I-frames.

As the compressed program is received by a storage device, an I-frame detector notes the arrival of each I-frame and provides this information to a host system which may control the maintenance of a table which corresponds [sic] I-flames to particular blocks of memory in the storage device. In this way, efficient and rapid retrieval of I-frame data blocks may be provided by the storage controller for providing appropriate blocks of memory to the decoder for effecting various playback modes. (Col. 5, lines 35-44; *see also* Col. 6, lines 31-39 and Fig. 5.)

That is, the detector in Krause "parses" the broadcast data by identifying a specific type of video frame from broadcast data having both video and audio data and generates a table based on the detected frames. The act of identifying a certain type of a video flame and generating a table based on the identification necessarily parses the broadcast between video data, i.e., the data corresponding to I-frames, and audio data, i.e., the data not detected by the I-frame detector.

Motivation to combine

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ Krause's indexing in the system of Thomason. Thomason discloses that the selected television signals are digitized by a/d converter 2 and compressed by compressor 3 before being input to buffer 4 for storage. The skilled artisan would appreciate that compressor 3 could be an MPEG encoder or, additionally, that a received digital MPEG-formatted broadcast stream could be directly input to buffer 4 without the need for conversion and compression. One of ordinary skill in the art would employ the indexing of detected I-frames, i.e., "parsing," of the MPEG-formatted data to identify I-frames from other video and audio data prior to storage in buffer 4. An I-frame provides enough information for a complete picture to be generated from the I-frame alone, in contrast to other types of frames. Knowing the locations of the I-frames in advance would allow Thomason to more efficiently perform operations such as varying speed reverse or varying speed forward by directly retrieving the appropriate I-frames for the selected speed. Further, both references include teachings from the same technological arena. (i.e. simultaneously storing and watching a multimedia program) Hence, the combination would have yielded predictable results.

Conclusion

THIS ACTION IS MADE FINAL.

A shortened statutory period for response to this action is set to expire 2 months from the mailing date of this action.

Extensions of time under 37 CFR 1.136(a) do not apply in reexamination proceedings. The provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Further, in 35 U.S.C. 305 and in 37 CFR 1.550(a), it is required that reexamination proceedings "will be conducted with special dispatch within the Office."

Extensions of time in reexamination proceedings are provided for in 37 CFR 1.550(c). A request for extension of time must be filed on or before the day on which a response to this action is due, and it must be accompanied by the petition fee set forth in 37 CFR 1.17(g). The mere filing of a request will not effect any extension of time. An extension of time will be granted only for sufficient cause, and for a reasonable time specified.

The filing of a timely first response to this final rejection will be construed as including a request to extend the shortened statutory period for an additional month, which will be granted even if previous extensions have been granted. In no event however, will the statutory period for response expire later than SIX MONTHS from the mailing date of the final action. See MPEP § 2265.

IDS Submissions

Regarding IDS submissions MPEP 2256 recites the following: "Where patents, publications, and other such items of information are submitted by a party (patent owner or requester) in compliance with the requirements of the rules, the requisite degree of consideration to be given to such information will be normally limited by the degree to which the party filing the information citation has explained the content and relevance of the information." Accordingly, the IDS submissions have been considered by the Examiner only with the scope required by MPEP 2256.

In certain instances, the examiner has "lined through" references because they do not meet the requirements of being a Patent or Printed Publication (e.g. court papers and other evidence that is not NPL). However, these references have been made of record in the proceeding and are given due consideration.

Amendment in Reexamination Proceedings

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR § 1.52(a) and (b), and must contain any fees required by 37 CFR § 1.20(c). See MPEP § 2250(IV) for examples to assist in the preparation of proper proposed amendments in reexamination proceedings.

Service of Papers

After the filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. See 37 CFR 1.550.

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 6,233,389 throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

All correspondence relating to this ex parte reexamination proceeding should be directed:

By Mail to:

Mail Stop Ex Parte Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to:

(571) 273-9900
Central Reexamination Unit

By hand:

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication should be directed to the Central

Reexamination Unit at telephone number (571) 272-7705.

Fred Ferris
Primary Examiner
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Conferees:

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