EXHIBIT 21

DECLARATION OF J. CHRISTOPHER CARRAWAY IN SUPPORT
OF DEFENDANT MICROSOFT'S MOTION TO STAY PROCEEDINGS PENDING
COMPLETION OF THE REEXAMINATION OF THE PATENTS-IN-SUIT

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
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CONTROL NO.	FILING DATE	PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
95/000065	12/08/2004	6155906	

Mark Kammer
KAMMER BROWNING PLLC
7700 Broadway, Suite 202
San Antonio TX 78209

EXAMINER
Amy B. Vanatta

ART UNIT	PAPER
3765	

DATE MAILED:

03/15/05

INTER PARTES REEXAMINATION COMMUNICATION

BELOW/ATTACHED YOU WILL FIND A COMMUNICATION FROM THE UNITED STATES PATENT AND TRADEMARK OFFICE OFFICIAL(S) IN CHARGE OF THE PRESENT REEXAMINATION PROCEEDING.

All correspondence relating to this *inter partes* reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this communication.

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

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Transmittal of Communication to Third Party Requester
Inter Partes Reexamination

REEXAMINATION CONTROL NUMBER *95/000,065*.

PATENT NUMBER *6,155,906*.

TECHNOLOGY CENTER *3700*.

ART UNIT *3765*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above-identified reexamination proceeding. 37 CFR 1.903.

Prior to the filing of a Notice of Appeal, each time the patent owner responds to this communication, the third party requester of the *inter partes* reexamination may once file written comments within a period of 30 days from the date of service of the patent owner's response. This 30-day time period is statutory (35 U.S.C. 314(b)(2)), and, as such, it cannot be extended. See also 37 CFR 1.947.

If an *ex parte* reexamination has been merged with the *inter partes* reexamination, no responsive submission by any *ex parte* third party requester is permitted.

All correspondence relating to this inter partes reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of the communication enclosed with this transmittal.

OFFICE ACTION IN INTER PARTES REEXAMINATION	Control No. 95/000,065	Patent under Reexamination 6155906	
	Examiner Amy B. Vanatta	Art Unit 3765	

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

Responsive to the communication(s) filed by:
Patent Owner on _____
Third Party(ies) on _____

RESPONSE TIMES ARE SET TO EXPIRE AS FOLLOWS:

For Patent Owner's Response:
2 MONTH(S) from the mailing date of this action. 37 CFR 1.945. EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.956.
For Third Party Requester's Comments on the Patent Owner Response:
30 DAYS from the date of service of any patent owner's response. 37 CFR 1.947. NO EXTENSIONS OF TIME ARE PERMITTED. 35 U.S.C. 314(b)(2).

All correspondence relating to this inter partes reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

This action is not an Action Closing Prosecution under 37 CFR 1.949, nor is it a Right of Appeal Notice under 37 CFR 1.953.

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

1. ☒ Notice of References Cited by Examiner, PTO-892
2. ☒ Information Disclosure Citation, PTO-1449 or PTO/SB/08
3. ☐ _____

PART II. SUMMARY OF ACTION:

1a. ☒ Claims 1-14 are subject to reexamination.
1b. ☐ Claims _____ are not subject to reexamination.
2. ☐ Claims _____ have been canceled.
3. ☐ Claims _____ are confirmed. [Unamended patent claims]
4. ☐ Claims _____ are patentable. [Amended or new claims]
5. ☒ Claims 1-14 are rejected.
6. ☐ Claims _____ are objected to.
7. ☐ The drawings filed on _____ ☐ are acceptable ☐ are not acceptable.
8. ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
9. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has: ☐ been received. ☐ not been received. ☐ been filed in Application/Control No _____.
10. ☐ Other _____

Reexamination

1. This first Office action on the merits is being mailed subsequent to the order granting reexamination. 37 CFR 1.935.

Issues Raised by the Requestor

2. It is requested that the Patent Owner and the Third Party Requestor refer to these Issue numbers in future correspondence.

Issue 1: The requestor submits that claims 1-7, 12, and 14 of the May patent are unpatentable under 35 U.S.C. 102(b) over JP 58-110006.

Issue 2: The requestor submits that claims 8 and 10 of the May patent are unpatentable under 35 U.S.C. 103(a) over JP 58-110006 in view of Woods (US 4,638,513).

Issue 3: The requestor submits that claims 9 and 13 of the May patent are unpatentable under 35 U.S.C. 103(a) over JP 58-110006 in view of Erwin (US 5,772,492).

Issue 4: The requestor submits that claims 11 and 12 of the May patent are unpatentable under 35 U.S.C. 103(a) over JP 58-110006 in view of the Elle reference.

Issue 5: The requestor submits that claim 14 of the May patent is unpatentable under 35 U.S.C. 103(a) over JP 58-110006 in view of Fernandes (US 6,086,451).

Issue 6: The requestor submits that claims 1-7, 11, and 12 of the May patent are unpatentable under 35 U.S.C. 102(b) over the Elle reference.

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UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
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CONTROL NO.	FILING DATE	PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
95/000,173	08/01/06	6529685	

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EXAMINER
MINH NGUYEN

ART UNIT	PAPER
3992	

DATE MAILED:

09/29/06

INTER PARTES REEXAMINATION COMMUNICATION

BELOW/ATTACHED YOU WILL FIND A COMMUNICATION FROM THE UNITED STATES PATENT AND TRADEMARK OFFICE OFFICIAL(S) IN CHARGE OF THE PRESENT REEXAMINATION PROCEEDING.

All correspondence relating to this *inter partes* reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this communication.

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Transmittal of Communication to Third Party Requester
Inter Partes Reexamination

REEXAMINATION CONTROL NUMBER *95/000,173*.

PATENT NUMBER *6,529,685*.

TECHNOLOGY CENTER *3999*.

ART UNIT *3992*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above-identified reexamination proceeding. 37 CFR 1.903.

Prior to the filing of a Notice of Appeal, each time the patent owner responds to this communication, the third party requester of the *inter partes* reexamination may once file written comments within a period of 30 days from the date of service of the patent owner's response. This 30-day time period is statutory (35 U.S.C. 314(b)(2)), and, as such, it cannot be extended. See also 37 CFR 1.947.

If an *ex parte* reexamination has been merged with the *inter partes* reexamination, no responsive submission by any *ex parte* third party requester is permitted.

All correspondence relating to this inter partes reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of the communication enclosed with this transmittal.

INTER PARTES REEXAMINATION COMMUNICATION	Control No. 95/000,173	Patent Under Reexamination 6529685	
	Examiner Minh Nguyen	Art Unit 3992	

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

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS SET TO EXPIRE ☐ _____ MONTH(S) ☒ THIRTY DAYS FROM THE MAILING DATE OF THIS LETTER. EXTENSIONS OF TIME FOR PATENT OWNER ARE GOVERNED BY 37 CFR 1.956.

Each time the patent owner responds to this Office action, the third party requester of the *inter partes* reexamination may once file written comments within a period of 30 days from the date of service of the patent owner's response. This 30-day time period is statutory (35 U.S.C. 314(b)(2)), and, as such, it cannot be extended. See also 37 CFR 1.947.

All correspondence relating to this *inter partes* reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

Transmittal of Communication to Third Party Requester Inter Partes Reexamination	Control No.	Patent Under Reexamination	
	95/000,173	6529685	
	Examiner	Art Unit	
	Minh Nguyen	3992	

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

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above-identified reexamination proceeding. 37 CFR 1.903.

Prior to the filing of a Notice of Appeal, each time the patent owner responds to this communication, the third party requester of the *inter partes* reexamination may once file written comments within a period of 30 days from the date of service of the patent owner's response. This 30-day time period is statutory (35 U.S.C. 314(b)(2)), and, as such, it cannot be extended. See also 37 CFR 1.947.

If an *ex parte* reexamination has been merged with the *inter partes* reexamination, no responsive submission by any *ex parte* third party requester is permitted.

All correspondence relating to this inter partes reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of the communication enclosed with this transmittal.

OFFICE ACTION IN INTER PARTES REEXAMINATION	Control No.	Patent Under Reexamination
	95/000,173	6529685
	Examiner	Art Unit
	Minh Nguyen	3992

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

Responsive to the communication(s) filed by:
Patent Owner on _____
Third Party(ies) on 1 August 2006

RESPONSE TIMES ARE SET TO EXPIRE AS FOLLOWS:

For Patent Owner's Response:
1 MONTH(S) from the mailing date of this action. 37 CFR 1.945. EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.956.
For Third Party Requester's Comments on the Patent Owner Response:
30 DAYS from the date of service of any patent owner's response. 37 CFR 1.947. NO EXTENSIONS OF TIME ARE PERMITTED. 35 U.S.C. 314(b)(2).

All correspondence relating to this inter partes reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

This action is not an Action Closing Prosecution under 37 CFR 1.949, nor is it a Right of Appeal Notice under 37 CFR 1.953.

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

1. ☐ Notice of References Cited by Examiner, PTO-892
2. ☐ Information Disclosure Citation, PTO/SB/08
3. ☐ _____

PART II. SUMMARY OF ACTION:

1a. ☒ Claims 1,2,6-14 and 17-20 are subject to reexamination.
1b. ☒ Claims 3-5,15 and 16 are not subject to reexamination.
2. ☐ Claims _____ have been canceled.
3. ☐ Claims _____ are confirmed. [Unamended patent claims]
4. ☐ Claims _____ are patentable. [Amended or new claims]
5. ☒ Claims 1,2,6-14,17-20 are rejected.
6. ☐ Claims _____ are objected to.
7. ☐ The drawings filed on _____ ☐ are acceptable ☐ are not acceptable.
8. ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
9. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has: ☐ been received. ☐ not been received. ☐ been filed in Application/Control No _____.
10. ☐ Other _____

***INTER PARTES* REEXAMINATION INITIAL OFFICE ACTION**

1. This first Office action on the merits is being mailed together with the order granting reexamination. 37 CFR 1.935.

2. The paper filed on 8/3/06 indicates that current litigation is stayed for the purpose of this reexamination. All aspects of the proceeding will be expedited to the extent possible. Cases will be taken up for action at the earliest time possible, and time periods set in actions may be extended only upon a strong showing of sufficient cause (see MPEP § 2665).

3. This action is directed only to the claims for which reexamination was requested. With respect to such claims, requester has alleged that a substantial new question of patentability (SNQ) exists, and upon review, it has been determined that the alleged SNQ in fact is present for claims 1, 2, 6-14 and 17-20. No determination was made with respect to the existence or nonexistence of an SNQ with respect to any claim for which reexamination was not specifically requested.

Summary

4. The requester asserts that claims 1, 2, 6-14 and 17-20 of the '685 patent are either anticipated under 35 USC 102 or obvious under 35 USC 103 of the following patents, patent applications and publications:

(a) US Patent No. 5,442,390 to Hooper et al., issued August 15, 1995 (Hooper, hereafter).

(b) US Patent No. 5,241,428 to Goldwasser et al., issued August 31, 1993 (Goldwasser, hereafter).

(c) US Patent No. 5,371,551 to Logan, issued December 6, 1994 (Logan, hereafter).

(d) US Patent No. 5,438,423 to Lynch et al., issued August 1, 1995 (Lynch, hereafter).

(e) US Patent No. 5,761,166 to Sedlmayr et al., issued June 2, 1996 (Sedlmayr, hereafter).

(f) Textbook by Hugh Sierra, entitled "An Introduction to Direct Access Storage Devices", Acadamic Press 1990 (Sierra, hereafter).

(g) Advertisement by Quantum Corporation for a Q500 5.25 inch fixed Disk Drive, copyright notice 1983 (Quantum, hereafter).

(h) Article by Chris Ruemmler et al., entitled "UNIX disk access patterns", Hewlett-Packard Laboratories, Winter USENIX, San Diego, CA, Jan 25-29, 1993 (HP, hereafter).

Claim Rejections - 35 USC § 102 and 35 USC § 103

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Grounds of Rejection

Ground 1: The requester proposed to reject claims 1, 2, 6-14 and 17-20 under 102(e) as being anticipated by Hooper.

Ground 2: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Hooper in view of Sierra.

Ground 3: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Hooper in view of Quantum.

Ground 4: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Hooper in view of Sierra and Sedlmayr.

Ground 5: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Hooper in view of Sierra and HP.

Ground 6: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Hooper in view of Quantum and Sedlmayr.

Ground 7: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Hooper in view of Quantum and HP.

Ground 8: The requester proposed to reject claims 1, 2, 6-14 and 17-20 under 102(b) as being anticipated by Goldwasser.

Ground 9: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Goldwasser in view of Sierra.

Ground 10: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Goldwasser in view of Quantum.

Ground 11: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Goldwasser in view of Sierra and Sedlmayr.

Ground 12: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Goldwasser in view of Sierra and HP.

Ground 13: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Goldwasser in view of Quantum and Sedlmayr.

Ground 14: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Goldwasser in view of Quantum and HP.

Ground 15: The requester proposed to reject claims 1, 2, 6-14 and 17-20 under 102(e) as being anticipated by Logan.

Ground 16: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Logan in view of Sierra.

Ground 17: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Logan in view of Quantum.

Ground 18: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Logan in view of Sierra and Sedlmayr.

Ground 19: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Logan in view of Sierra and HP.

Ground 20: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Logan in view of Quantum and Sedlmayr.

Ground 21: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Logan in view of Quantum and HP.

Ground 22: The requester proposed to reject claims 1, 2, 6-14 and 17-20 under 102(e) as being anticipated by Lynch.

Ground 23: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Lynch in view of Sierra.

Ground 24: The requester proposed to reject claims 1, 2, 7-10, 12-14 and 18-20 under 103(a) as being unpatentable over Lynch in view of Quantum.

Ground 25: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Lynch in view of Sierra and Sedlmayr.

Ground 26: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Lynch in view of Sierra and HP.

Ground 27: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Lynch in view of Quantum and Sedlmayr.

Ground 28: The requester proposed to reject claims 6, 11 and 17 under 103(a) as being unpatentable over Lynch in view of Quantum and HP.

Definitions

7. The following definitions are adopted for terms used in the claims:

(a) **presentation control window buffer** = memory for storing that portion of a multimedia program over which the user has presentation control.

(b) **translatable** = movable in time.

(c) **forward window portion** = a portion of a multimedia program that is later in time relative to a current position in time in the program.

(d) **reverse window portion** = a portion of a multimedia program that is earlier in time relative to a current position in time in the program.

(e) **controller** = a device comprising one or more hardware and/or software components having the capability of coordinating the writing of source program segments to the data storing regions and the reading of source program segments from the presentation control window buffer.

(f) **non-chronologically ordered source program segments** = source program segments representing a portion of a multimedia program that are out of chronological order.

(g) **asynchronous** = out of sequence.

Proposed third party requester rejection: Ground 1

8. Requester's proposed anticipation rejection of claims 1, 2, 6-14 and 17-20 under 102(e) in view of Hooper **is not adopted**.

Requester's proposed anticipation rejection of claim 1 in view of Hooper **is not adopted** because Hooper does not teach (i) data stored on any of lower disk surface and upper disk surface, (ii) a spindle motor, (iii) a single actuator, (iv) a read/write transducer. Because Hooper does not teach each and every element in claim 1, anticipating of independent claim 1 by Hooper is not possible.

Requester argues that (i) Hooper teaches a storage media which can be commercial available disk drive used in a personal computer, (ii) it is well-known that a commercial available disk drive used in a personal computer comprises one or more data storage disks, data stored on the upper and lower surfaces, a spindle motor, a single actuator having elongated arms, and a read/write transducer as shown in Sierra and Quantum. Based on these reasons, the requester concludes that Hooper teaches a disk drive comprises one or more data storage disks, data stored on the upper and lower surfaces, a spindle motor, a single actuator having elongated arms, a read/write transducer. This reasoning is not found persuasive. The requester is reminded that for anticipating, a single reference must disclose each and every element of the claim, either expressly or under principles of inherency. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given

set of circumstances is not sufficient. In this instant case, Hooper teaches a disk drive but does not expressly teach a disk drive comprising a media which stores data on the lower or upper disk surfaces, a spindle motor, a single actuator having elongated arms, a read/write transducer. Hooper can only anticipate claim 1 if these elements were inherently included in a disk drive. As recognized by a person of ordinary skill in the art, a disk drive does not necessary include all these elements, some have more, some have less. For example, there is a possibility that a disk drive has double actuators instead of a single actuator. Inherency cannot be established in this case. Therefore, Hooper does not anticipate claim 1.

Requester's proposed anticipation rejection of claims 2 and 6-13 in view of Hooper **is not adopted** because Hooper can not anticipate claims 2 and 6-13 without also anticipating claim 1 (from which claims 2 and 6-13 depends). As Hooper does not anticipate claim 1, claims 2 and 6-13 are also not anticipated.

Similarly, requester's proposed anticipation rejection of claim 14 in view of Hooper **is not adopted** because Hooper does not teach a single actuator. Because Hooper does not teach each and every element in claim 14, anticipating of independent claim 1 by Hooper is not possible.

Requester's proposed anticipation rejection of claims 17-20 in view of Hooper **is not adopted** because Hooper can not anticipate claims 17-20 without also anticipating claim 14 (from which claims 17-20 depends). As Hooper does not anticipate claim 14, claims 17-20 are also not anticipated.

Proposed third party requester rejection: Ground 2

9. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Hooper in view of Sierra **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hooper in view of Sierra.

As per claim 1, Hooper discloses a direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*as shown in Figure 3, Hooper discloses the creation of video packets representing a temporally unique portion of a multimedia program. Each packet includes a time stamp that temporally distinguishes each data packet within a program ("The video 100 includes a plurality of packets 110, generally indicated by the numerals 1-N. The number of packets in the video is dependent on the "length" or viewing time of the video. Each packet 110 includes a packet header 120, packet data 140, and an optional packet filler. The packet header 120 includes an ID 121, a RATE 122, and a TIME-STAMP 123 .... The TIME-STAMP indicates the position of the packet data 140 time-wise, relative to the beginning of the video 100," col. 6:3-18; Fig. 3)*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*Hooper states that the buffer memory can be a disk drive similar to disk drives used in personal computers ("In the preferred embodiment of the invention, the memory block 300 is a small form factor disk drive, similar to the disk drives that are used in personal computers." col. 15:12-15)*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program

segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*Hooper discloses a memory for storing a portion of a multimedia program as that program progresses in time. Figure 7 of Hooper shows a block of a cache memory 300 that includes a FILL-POINTER 310 and a PLAY-POINTER 320. The PLAY- POINTER 310 can be controlled by the user ("it is possible for the PLAY- POINTER 320 to move in a backward direction. For example, if the customer has entered a command to reverse the video, the PLAY-POINTER 320 reads the packets in reverse order." col. 12:6-10). The PLAY-POINTER 310 and FILL- POINTER 320 move during the writing and reading of video data from memory ("As the video data are written to the segment cache block 300 the FILL-POINTER 310 is advanced." col. 11, 34-36); ("As the video data are read from the segment memory cache 300 the PLAY-POINTER 320 is like-wise advanced." col. 11, 42- 44). As shown in Figure 7 of Hooper there is a portion of multimedia program that is earlier in time relative to a current position in time in the program, and a portion of multimedia that is later in time relative to a current position in time of the program ("The video data ahead of the PLAY-POINTER 320 and behind the FILL- POINTER, generally indicated by reference numeral 330, are the video data which has not yet been reviewed." col. 11:55-59)*]; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*Hooper discloses controllers 800, 810 and 820 (Figure 12) to coordinate writing and reading of the disk drive ("The write controller 810 is connected to the segment cache memory block 300 for writing video data to the segment cache memory block 300 at memory locations specified by the movable FILL-POINTER 310. The read controller 820 reads packet 180 from the cache memory block 300 at locations indicated by the PLAY-POINTER 320 via line 807. The cache controller 800 manages the writing and reading of the cache*

memory block 300." col. 15:22-31). Hooper also discloses the implementation of VCR-type functions such as pause, forward and reverse (col. 3:37-43, "customer commands can include VCR-like control functions, such as reverse, forward, and pause... "; col. 14:61-62,"Commands which change the display sequence include forward, reverse, jump, and the like.")].

Hooper expressly states that the buffer memory may be a disk drive used in a personal computer, i.e., commercially available hard disk drive, but fails to specifically list elements in the disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Sierra teaches commercially available disk drive [*see figures 1.1, 1.4 and 1.5*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms [*each of these elements are shown in the figures*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Sierra in Hooper. Hooper expressly teaches that the use of commercially available disk drive in the device is preferred. This teaching would have motivated one of ordinary skill in the art to search for a commercial available disk drive, leading to the discovery of the disk drive structure taught by Sierra. Accordingly, there is a suggestion and/or motivation to combine Hooper and Sierra, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, the device discussed in claim 1 discloses the at least one data storage disk includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Sierra discloses storing data on both surfaces of a disk in figure 1.1*].

As per claim 7, Hooper discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*Hooper discloses storing and playing video as received from the server, (col. 15:21-36, " The write controller 810, is connected to the packet receiver via line 806 for receiving packet data 180. The write controller 810 is connected to the segment cache memory block 300 for writing video data to the segment cache memory block 300 at memory locations specified by the movable FILL-POINTER 310. The read controller 820 reads packet 180 from the cache memory block 300 at locations indicated by the PLAY-POINTER 320 via line 807. The cache controller 800 manages the writing and reading of the cache memory block 300. The operation of the cache controller 800 is similar to that described for the cache controller 700 of the server segment cache 24, that is, the cache memory block is managed as a circular buffer. However, it should be apparent that the customer segment cache 14 only has a single PLAY-POINTER 320.". Col. 11:18- col.12:4 further discloses playing while storing as recited*] .

As per claim 8, Hooper discloses wherein the multimedia program presentation

comprises a live program broadcast [*Hooper discloses concurrently storing and playing a broadcasted program. ("While a video is being transferred to the CPE 10, customer commands can include VCR-like control functions, such as reverse, forward, and pause, generally not available for known broadcast or cable-TV services." col. 3:37-41)*].

As per claim 9, Hooper discloses wherein the source program segments define frames of the multimedia program presentation [*figure 3 and col 6,30-45, ("The packet data 140 of each packet 110 includes either digital video data or digital audio data, but not both. In a typical video, there are about seven "video" packets for every "audio" packet. The packet data 140 includes about 1 to 4 KB of encoded and compressed video or audio data. The data in the consecutive packets 110 are treated as a continuous bit stream defining the frames of the video. Typically, the frames 180 are displayed on the viewing device at a fixed rate of, for example, 30 frames per second. Depending on the level of compression, a frame 180 can include 1 KB to 16 KB of digital data. In other words, for highly compressed portions of the video 100, a single video packet 110 may contain several frames 180. For images compressed to a lesser extent, several packet 110 may be required to compose a single frame.")*].

As per claim 10, Hooper discloses wherein the multimedia program presentation comprises pre-processed programming [*Hooper discloses compressing a program before transmission to the set-top boxes ("The data of the video 100 is in a form suitable for transfer over the network 30 by using encoding and compression techniques, for example, the industry standard Motion Picture Expert Group (MPEG) compression algorithms." col. 5:63-68)*].

As per claim 12, Hooper discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device concurrently with coordinating writing of the source program segments to the presentation control window buffer [*The controller controls the writing of data from the disk to an output buffer, such as decompress or/decoder 803, concurrently with the writing of program segments to the disk (col. 15:21-36; " The write controller 810, is connected to the packet receiver via line 806 for receiving packet data 180. The write controller 810 is connected to the segment cache memory block 300 for writing video data to the segment cache memory block 300 at memory locations specified by the movable FILL-POINTER 310. The read controller 820 reads packet 180 from the cache memory block 300 at locations indicated by the PLAY-POINTER 320 via line 807. The cache controller 800 manages the writing and reading of the cache memory block 300. The operation of the cache controller 800 is similar to that described for the cache controller 700 of the server segment cache 24, that is, the cache memory block is managed as a circular buffer. However, it should be apparent that the customer segment cache 14 only has a single PLAY-POINTER 320.". Col. 11:18- col.12:4 further discloses playing while storing as recited*].

As per claim 13, Hooper discloses wherein the source program segments comprise compressed digital program segments [*Hooper discloses compressing video in accordance with MPEG. (col. 5:60-6:2, "Now with reference to FIG. 3 the internal data structure a video suitable for transfer over the network 30 will be described. The video 100 is, for example a 1.2 GB feature length movie, having a start and an end. The data of the video 100 is in a form suitable for transfer over the network 30 by using encoding and compressing techniques, for example, the industry standard Motion Picture Expert Group (MPEG) compression algorithms. MPEG compression can reduce the video data by as much as a factor of 200 while achieving a quality comparable with known VCR videos.")*] .

As per claim 14, Hooper discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of a multimedia program [*as shown in Figure 3, Hooper discloses the creation of video packets representing a temporally unique portion of a multimedia program. Each packet includes a time stamp that temporally distinguishes each data packet within a program ("The video 100 includes a plurality of packets 110, generally indicated by the numerals 1-N. The number of packets in the video is dependent on the "length" or viewing time of the video. Each packet 110 includes a packet header 120, packet data 140, and an optional packet filler. The packet header 120 includes an ID 121, a RATE 122, and a TIME-STAMP 123 .... The TIME-STAMP indicates the position of the packet data 140 time-wise, relative to the beginning of the video 100." col. 6:3-18; Fig. 3)*], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*Hooper states that the buffer memory can be a disk drive similar to drives used in personal computers ("In the preferred embodiment of the invention, the memory block 300 is a small form factor disk drive, similar to the disk drives that are used in personal computers." col. 15:12-15)*];

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*Hooper discloses a memory for storing a portion of a multimedia program as that program progresses in time. Figure 7 of Hooper shows a block of a cache memory 300 that includes a FILL-POINTER 310 and a PLAY-POINTER 320. The PLAY- POINTER 310*

can be controlled by the user ("it is possible for the PLAY- POINTER 320 to move in a backward direction. For example, if the customer has entered a command to reverse the video, the PLAY-POINTER 320 reads the packets in reverse order." col. 12:6-10). The PLAY-POINTER 310 and FILL-POINTER 320 move during the writing and reading of video data from memory ("As the video data are written to the segment cache block 300 the FILL-POINTER 310 is advanced." col. 11, 34-36; "As the video data are read from the segment memory cache 300 the PLAY-POINTER 320 is like-wise advanced." col. 11, 42-44). As shown in Figure 7 of Hooper there is a portion of multimedia program that is earlier in time relative to a current position in time in the program, and a portion of multimedia that is later in time relative to a current position in time of the program ("The video data ahead of the PLAY-POINTER 320 and behind the FILL- POINTER, generally indicated by reference numeral 330, are the video data which has not yet been reviewed." col. 11:55-59).];

writing the source program segments to the plurality of data storage regions [*Hooper discloses writing program segments to the disk ("As the video data are written to the segment cache block 300 the FILL-POINTER 310 is advanced." col.11, 34-36).*]; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*Hooper discloses reading program segments from the disk. ("As the video data are read from the segment memory cache 300 the PLAY-POINTER 320 is like-wise advanced." col. 11, 42-44). Hooper also discloses the implementation of VCR-type functions such as pause, forward and reverse (col. 3:37-43, "customer commands can include VCR-like control functions, such as reverse, forward, and pause..."; col. 14:61-62, "Commands which change the display sequence include forward, reverse, jump, and the like.")*].

Hooper does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Sierra teaches commercially available disk drive [*see figures 1.1, 1.4 and 1.5*] which includes a plurality of read/write heads supported by a single actuator.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Sierra in Hooper. Hooper expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Sierra. Accordingly, there is a suggestion and/or motivation to combine Hooper and Sierra, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 18, Hooper discloses wherein writing the source program segments comprises writing chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the chronologically ordered source program segments from the presentation control window buffer [*Hooper discloses storing and playing video as received from the server. (col. 15:21-36 ("The write controller 810, is connected to the packet receiver via line 806 for receiving packet data 180. The write controller 810 is connected to the segment cache memory block 300 for writing video data to the segment cache memory block 300 at memory locations specified by the movable FILL-POINTER 310. The read controller 820 reads packet 180 from the cache memory block 300 at locations indicated by the PLAY-POINTER 320 via line 807. The cache controller 800 manages the writing and reading of the cache memory block 300. The operation of the cache controller 800 is similar to that described for the cache controller 700 of the server segment cache 24, that is, the cache memory block is managed as a*

circular buffer. However, it should be apparent that the customer segment cache 14 only has a single PLAY-POINTER 320."). Col. 11:18- col.12:4 further discloses playing while storing as recited].

As per claim 19, Hooper discloses the multimedia program presentation comprises a live program broadcast [*Hooper discloses concurrently storing and playing a broadcasted program ("While a video is being transferred to the CPE 10, customer commands can include VCR-like control functions, such as reverse, forward, and pause, generally not available for known broadcast or cable-TV services." col. 3:37-41)*].

As per claim 20, Hooper discloses the multimedia program presentation comprises pre-processed programming [*Hooper discloses compressing a program before transmission to the set-top boxes ("The data of the video 100 is in a form suitable for transfer over the network 30 by using encoding and compression techniques, for example, the industry standard Motion Picture Expert Group (MPEG) compression algorithms." col. 5:63-68)*].

Proposed third party requester rejection: Ground 3

10. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Hooper in view of Quantum **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hooper in view of Quantum.

As per claim 1, Hooper discloses direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*discussed in ground 2 section*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*discussed in ground 2 section*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 2 section*] ; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse

functions in response to respective pause, forward, and reverse control signals [*discussed in ground 2 section*].

Hooper expressly states that the buffer memory may be a disk drive used in a personal computer, i.e., commercially available hard disk drive, but fails to specifically list elements in the disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Quantum teaches commercially available disk drive [*see figures shown in the article*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Hooper. Hooper expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Hooper and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, Hooper discloses wherein the at least one data storage disk includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Quantum discloses storing data on both surfaces of a disk, i.e., "disk" and "disk surfaces"*].

As per claim 7, Hooper discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*discussed in ground 2 section*] .

As per claim 8, Hooper discloses wherein the multimedia program presentation comprises a live program broadcast [*discussed in ground 2 section*].

As per claim 9, Hooper discloses wherein the source program segments define frames of the multimedia program presentation [*discussed in ground 2 section*].

As per claim 10, Hooper discloses wherein the multimedia program presentation comprises pre-processed programming [*discussed in ground 2 section*].

As per claim 12, Hooper discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device

concurrently with coordinating writing of the source program segments to the presentation control window buffer [*discussed in ground 2 section*].

As per claim 13, Hooper discloses wherein the source program segments comprise compressed digital program segments [*discussed in ground 2 section*] .

As per claim 14, Hooper discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of a multimedia program [*discussed in ground 2 section*], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*discussed in ground 2 section*];

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 2 section*];

writing the source program segments to the plurality of data storage regions [*Hooper discloses writing program segments to the disk ("As the video data are written to the segment cache block 300 the FILL-POINTER 310 is advanced." col. 11, 34-36)*]; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*discussed in ground 2 section*].

Hooper does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Quantum teaches commercially available disk drive [*see figures shown in the article*] comprises a plurality of read/write heads supported by a single actuator.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Hooper. Hooper expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Hooper and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 18, Hooper discloses wherein writing the source program segments comprises writing chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the chronologically ordered source program segments from the presentation control window buffer [*discussed in ground 2 section*].

As per claim 19, Hooper discloses wherein the multimedia program presentation comprises a live program broadcast [*discussed in ground 2 section*].

As per claim 20, Hooper discloses wherein the multimedia program presentation comprises pre-processed programming [*discussed in ground 2 section*].

Proposed third party requester rejection: Ground 4

11. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Hooper in view of Sierra and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hooper in view of Sierra and Sedlmayr.

As per claim 6, the combination of Hooper and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*see figure 9, and "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of

an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Hooper discloses concurrently storing and playing a broadcasted program. ("While a video is being transferred to the CPE 10, customer commands can include VCR-like control functions, such as reverse, forward, and pause, generally not available for known broadcast or cable-TV services." col. 3:37-41)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates a synchronous reading of the source program segments from the presentation control window buffer due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading

data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 5

12. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Hooper in view of Sierra and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hooper in view of Sierra and HP.

As per claim 6, the combination of Hooper and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Sierra and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Hooper discloses concurrently storing and playing a broadcasted program. ("While a video is being transferred to the CPE 10, customer commands can include VCR-like control functions, such as reverse, forward, and pause, generally not available for known broadcast or cable-TV services." col. 3:37-41)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Sierra and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and

reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Proposed third party requester rejection: Ground 6

13. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Hooper in view of Quantum and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hooper in view of Quantum and Sedlmayr.

As per claim 6, the combination of Hooper and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of

an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Hooper discloses concurrently storing and playing a broadcasted program. ("While a video is being transferred to the CPE 10, customer commands can include VCR-like control functions, such as reverse, forward, and pause, generally not available for known broadcast or cable-TV services." col. 3:37-41)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates a synchronous reading of the source program segments from the presentation control window buffer due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading

data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 7

14. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Hooper in view of Quantum and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hooper in view of Quantum and HP.

As per claim 6, the combination of Hooper and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Hooper discloses concurrently storing and playing a broadcasted program. ("While a video is being transferred to the CPE 10, customer commands can include VCR-like control functions, such as reverse, forward, and pause, generally not available for known broadcast or cable-TV services." col. 3:37-41)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Hooper, Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and

reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Proposed third party requester rejection: Ground 8

15. Requester's proposed anticipation rejection of claims 1, 2, 6-14 and 17-20 under 102(b) in view of Goldwasser **is not adopted**.

Requester's proposed anticipation rejection of claim 1 in view of Goldwasser **is not adopted** because Goldwasser does not teach (i) data stored on any of lower disk surface and upper disk surface, (ii) a spindle motor, (iii) a single actuator, (iv) a read/write transducer. Because Goldwasser does not teach each and every element in claim 1, anticipating of independent claim 1 by Goldwasser is not possible.

Requester argues that (i) Goldwasser teaches a storage media which can be commercial available disk drive used in a personal computer, (ii) it is well-known that a commercial available disk drive used in a personal computer comprises one or more data storage disks, data stored on the upper and lower surfaces, a spindle motor, a single actuator having elongated arms, and a read/write transducer as shown in Sierra and Quantum. Based on the reasons, the requester concludes that Hooper teaches a disk drive comprises one or more data storage disks, data stored on the upper and lower surfaces, a spindle motor, a single actuator having elongated arms, a read/write transducer. This reasoning is not found persuasive. The requester is reminded that for anticipating, a single reference must disclose each and every element of the claim, either expressly or under principles of inherency. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given

set of circumstances is not sufficient. In this instant case, Goldwasser teaches a disk drive but does not expressly teach a disk drive comprising a media which stores data on the lower or upper disk surfaces, a spindle motor, a single actuator having elongated arms, a read/write transducer. Goldwasser can only anticipate claim 1 if these elements were inherently included in a disk drive. As recognized by a person of ordinary skill in the art, a disk drive does not necessary include all these elements, some have more, some have less. For example, there is a possibility that a disk drive has double actuators instead of a single actuator. In other words, inherency cannot be established in this case. Therefore, Goldwasser does not anticipate claim 1.

Requester's proposed anticipation rejection of claims 2 and 6-13 in view of Goldwasser **is not adopted** because Goldwasser can not anticipate claims 2 and 6-13 without also anticipating claim 1 (from which claims 2 and 6-13 depends). As Goldwasser does not anticipate claim 1, claims 2 and 6-13 are also not anticipated.

Similarly, requester's proposed anticipation rejection of claim 14 in view of Goldwasser **is not adopted** because Hooper does not teach a single actuator. Because Goldwasser does not teach each and every element in claim 14, anticipating of independent claim 1 by Goldwasser is not possible.

Requester's proposed anticipation rejection of claims 17-20 in view of Goldwasser **is not adopted** because Goldwasser can not anticipate claims 17-20 without also anticipating claim 14 (from which claims 17-20 depends). As Goldwasser does not anticipate claim 14, claims 17-20 are also not anticipated.

Proposed third party requester rejection: Ground 9

16. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Goldwasser in view of Sierra **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldwasser in view of Sierra.

As per claim 1, Goldwasser discloses a direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*Goldwasser discloses storing a digitized video signal into individualized addressable portions that are accessed in sequence ("Thus in the "random-access" embodiment of the invention, the digitized video signal is stored in individually addressable portions, which are accessed in the sequence in which they were stored, to reconstitute the original video signal." col. 7:30-35)*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*Goldwasser states that the random access memory can be a conventional disk drive employed in personal computers ("it might be desirable to buffer a small amount of data .... and then store it on a conventional "hard disk" as employed in personal computers", col. 7:61-66)*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current

viewing time reference [*Goldwasser discloses a write pointer and a read pointer that identify locations within memory where video is stored (see Figure 4). The write pointer continuously moves or translates to store incoming video ("At step 102, this byte is stored in memory 53 at an address designated by a write pointer. The write pointer is then incremented by one at block 104. The subsequent byte will thus be stored at the next address in memory 53. This process allows data representing the video signal to be continuously stored." col. 6:64-7:1). The read pointer can be moved in accordance with a command from the user panel ("During simultaneous playback, in block 106 a byte stored at a location pointed to by a read pointer is fetched from the memory 53 and sent to a block 108 to the digital-to-analog converter 54 ..... At block 110 the interrupt mask of the computer is checked briefly to allow an interrupt from the user control panel 50. At block 112 any interrupt from the control panel is detected; such an interrupt might indicate, for example, that the orderly playback process implemented by blocks 106 and 108 be varied." col. 7:2-12). The read pointer can be moved in forward and reverse directions ("an apparatus that can be used to record and playback video material while allowing the user to effectively reposition the stored material with respect to the playback device to allow "fast forward" or "rewind" of the material being played back" col. 1:63-68)*]; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*Goldwasser discloses an address controller 58 that receives command signals from a user control panel and controls the writing and reading of data with the random access memory ("The locations at which the digitized video samples are stored in the random access memory 53 are controlled by an address controller 58, which in turn is responsive to commands received from a user control panel 50." col. 6:44-48) to effectuate pause, forward and reverse functions ("The user can also interrupt the playback of a program that is being recorded as it is being watched ..... he can speed (i.e., fast forward) through those recorded portions and catch up to the live broadcast. The user can also rewind and replay portions of the*

program as the video recorder continues to record the program." Abstract; "A control device maintains the addresses of the segment(s) of the recorded material in the memory device, so that they can be reassembled in the proper sequence for playback." col. 3:8-11)].

Goldwasser expressly states that the buffer memory may be a disk drive used in a personal computer, i.e., commercially available hard disk drive. Goldwasser fails to specifically list elements in the disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Sierra teaches commercially available disk drive [*see figures 1.1, 1.4 and 1.5*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Sierra in Goldwasser. Goldwasser expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Sierra. Accordingly, there is a suggestion and/or motivation to combine Goldwasser and Sierra, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, Goldwasser discloses wherein the at least one data storage disk includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Sierra discloses storing data on both surfaces of a disk in figure 1.1*].

As per claim 7, Goldwasser discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*Goldwasser discloses writing and reading video as it is being received. ("In both "sequential" and "random access" embodiments of the invention the video program material is effectively stored in a so-called FIFO (first in-first out) buffer of variable length so that the user can view the video material in the sequence in which it is broadcast..." col. 3:14-18)*] .

As per claim 8, Goldwasser discloses wherein the multimedia program presentation comprises a live program broadcast [*Goldwasser discloses storing and playing a broadcasted program. ("In both "sequential" and "random access" embodiments of the invention the video program material is effectively stored in a so-called FIFO (first in-first out) buffer of variable length so that the user can view the video material in the sequence in which it is broadcast..." col. 3:14-18)*].

As per claim 9, Goldwasser discloses the source program segments define frames of the multimedia program presentation [*Goldwasser discloses storing 1 second segments. "in most circumstances, allowing the user to access the signal at one second intervals will be*

more than adequate. Therefore, the processing steps could be simplified in a manner well understood by those of skill in the art, by storing the digitized data in blocks of length equivalent to one second and allowing the user simply to access these in sequence, through the interrupt routine as described above or the like. (col. 7:42-50)"].

As per claim 10, Goldwasser discloses wherein the multimedia program presentation comprises pre-processed programming [*The multimedia program is processed before being buffered by Goldwasser. For example, the video signal can be digitized and compressed. (Figure 3)*].

As per claim 12, Goldwasser discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device concurrently with coordinating writing of the source program segments to the presentation control window buffer [*Goldwasser discloses concurrent write and read processes ("A video recorder and playback device allowing simultaneous recording and playback of program material..." Abstract)*].

As per claim 13, Goldwasser discloses wherein the source program segments comprise compressed digital program segments [*Goldwasser discloses compressing video ("To conserve the amount of storage space required to store a given quantity of the digitized video signal, the digitized signal can be compressed in a data compressor 57, removing redundant information prior to storage, and decompressed in a decompressor 59 prior to reconstitution by the digital-to-analog converter 54. Such data compressors and decompressors are known per se and the details of their operation are not critical to the present invention", col. 6:50-58)*] .

As per claim 14, Goldwasser discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of a multimedia program [*Goldwasser discloses storing a digitized video signal into individualized addressable portions that are accessed in sequence ("Thus in the "random-access" embodiment of the invention, the digitized video signal is stored in individually addressable portions, which are accessed in the sequence in which they were stored, to reconstitute the original video signal." col. 7:30-35)*], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*Goldwasser states that the random access memory can be a conventional disk drive employed in personal computers ("it might be desirable to buffer a small amount of data .... and then store it on a conventional "hard disk" as employed in personal computers", col. 7:61-66)*];

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*Goldwasser discloses a write pointer and a read pointer that identify locations within memory where video is stored (see Figure 4). The write pointer continuously moves or translates to store incoming video ("At step 102, this byte is stored in memory 53 at an address designated by a write pointer. The write pointer is then incremented by one at block 104. The subsequent byte will thus be stored at the next address in memory 53. This process allows data representing the video signal to be continuously stored." col. 6:64-7:1). The read pointer can be moved in accordance with a command from the user panel ("During simultaneous playback, in block 106 a byte stored at a location*

pointed to by a read pointer is fetched from the memory 53 and sent to a block 108 to the digital-to-analog converter 54 ..... At block 110 the interrupt mask of the computer is checked briefly to allow an interrupt from the user control panel 50. At block 112 any interrupt from the control panel is detected; such an interrupt might indicate, for example, that the orderly playback process implemented by blocks 106 and 108 be varied." col. 7:2-12). The read pointer can be moved in forward and reverse directions ("an apparatus that can be used to record and playback video material while allowing the user to effectively reposition the stored material with respect to the playback device to allow "fast forward" or "rewind" of the material being played back" col. 1:63-68)];

writing the source program segments to the plurality of data storage regions [*Goldwasser discloses writing program segments to the buffer memory. The write pointer continuously moves or translates to store incoming video ("At step 102, this byte is stored in memory 53 at an address designated by a write pointer. The write pointer is then incremented by one at block 104. The subsequent byte will thus be stored at the next address in memory 53. This process allows data representing the video signal to be continuously stored." col. 6:64-7:1)*]; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*Goldwasser discloses reading program segment from the buffer memory. The read pointer can be moved in accordance with a command from the user panel ("During simultaneous playback, in block 106 a byte stored at a location pointed to by a read pointer is fetched from the memory 53 and sent to a block 108 to the digital-to-analog converter 54 ..... At block 110 the interrupt mask of the computer is checked briefly to allow an interrupt from the user control panel 50. At block 112 any interrupt from the control panel is detected; such an interrupt might indicate, for example, that the orderly playback process implemented by blocks 106 and 108 be varied." col. 7:2-12). The read pointer can be moved in forward and reverse directions ("an apparatus that can be used to record and playback video material while allowing the user to effectively reposition the stored material with respect to the playback device to allow "fast forward" or "rewind" of the material being played back"*

col. 1:63-68). ("The user can also interrupt the playback of a program that is being recorded as it is being watched ..... he can speed (i.e., fast forward) through those recorded portions and catch up to the live broadcast. The user can also rewind and replay portions of the program as the video recorder continues to record the program." Abstract; "A control device maintains the addresses of the segment(s) of the recorded material in the memory device, so that they can be reassembled in the proper sequence for playback." col. 3:8-11)].

Goldwasser does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Sierra teaches commercially available disk drive [*see figures 1.1, 1.4 and 1.5*] which includes a plurality of read/write heads supported by a single actuator.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Sierra in Goldwasser. Goldwasser expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Sierra. Accordingly, there is a suggestion and/or motivation to combine Hooper and Sierra, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 18, Goldwasser discloses wherein writing the source program segments comprises writing chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the chronologically ordered source program segments from the presentation control window

buffer [*Goldwasser discloses writing and reading video as it is being received. ("In both "sequential" and "random access" embodiments of the invention the video program material is effectively stored in a so-called FIFO (first in-first out) buffer of variable length so that the user can view the video material in the sequence in which it is broadcast..." col. 3:14-18)*].

As per claim 19, Goldwasser discloses wherein the multimedia program presentation comprises a live program broadcast [*Goldwasser discloses storing and playing a broadcasted program. ("In both "sequential" and "random access" embodiments of the invention the video program material is effectively stored in a so-called FIFO (first in-first out) buffer of variable length so that the user can view the video material in the sequence in which it is broadcast..." col. 3:14-18)*]

As per claim 20, Hooper discloses wherein the multimedia program presentation comprises pre-processed programming [*Goldwasser discloses pre-processed video, ("To conserve the amount of storage space required to store a given quantity of the digitized video signal, the digitized signal can be compressed in a data compressor 57, removing redundant information prior to storage, and decompressed in a decompressor 59 prior to reconstitution by the digital-to-analog converter 54. Such data compressors and decompressors are known per se and the details of their operation are not critical to the present invention", 6:50-58)*].

Proposed third party requester rejection: Ground 10

17. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Goldwasser in view of Quantum **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldwasser in view of Quantum.

As per claim 1, Goldwasser discloses a direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*discussed in ground 9 section*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*Goldwasser states that the random access memory can be a conventional disk drive employed in personal computers ("it might be desirable to buffer a small amount of data .... and then store it on a conventional "hard disk" as employed in personal computers", col. 7:61-66)*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 9 section*]; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse

functions in response to respective pause, forward, and reverse control signals [*discussed in ground 9 section*].

Goldwasser expressly states that the buffer memory may be a disk drive used in a personal computer, i.e., commercially available hard disk drive. Goldwasser fails to specifically list elements in the disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Quantum teaches commercially available disk drive [*see figures shown in the article*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Goldwasser. Goldwasser expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Goldwasser and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, Goldwasser discloses wherein the at least one data storage disk includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Quantum discloses storing data on both surfaces of a disk, i.e., "disk" and "disk surfaces"*].

As per claim 7, Goldwasser discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*discussed in ground 9 section*] .

As per claim 8, Goldwasser discloses wherein the multimedia program presentation comprises a live program broadcast [*Goldwasser discloses storing and playing a broadcasted program. ("In both "sequential" and "random access" embodiments of the invention the video program material is effectively stored in a so-called FIFO (first in-first out) buffer of variable length so that the user can view the video material in the sequence in which it is broadcast..." col. 3:14-18)*].

As per claim 9, Goldwasser discloses wherein the source program segments define frames of the multimedia program presentation [*Goldwasser discloses storing 1 second segments ("in most circumstances, allowing the user to access the signal at one second intervals will be more than adequate. Therefore, the processing steps could be simplified in a manner well understood by those of skill in the art, by storing the digitized data in blocks of length equivalent to one second and*

allowing the user simply to access these in sequence, through the interrupt routine as described above or the like" col. 7:42-50)].

As per claim 10, Goldwasser discloses wherein the multimedia program presentation comprises pre-processed programming [*The multimedia program is processed before being buffered by Goldwasser. For example, the video signal can be digitized and compressed. (Figure 3)*].

As per claim 12, Goldwasser discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device concurrently with coordinating writing of the source program segments to the presentation control window buffer [*Goldwasser discloses concurrent write and read processes ("A video recorder and playback device allowing simultaneous recording and playback of program material..." Abstract)*].

As per claim 13, Goldwasser discloses wherein the source program segments comprise compressed digital program segments [*discussed in ground 9 section*] .

As per claim 14, Goldwasser discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of a multimedia program [*discussed in ground 9 section*], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*Goldwasser states that the random access memory can be a conventional disk drive employed in personal computers ("it might be desirable to buffer a small amount of data .... and then store it on a conventional "hard disk" as employed in personal computers", col. 7:61-66)*];

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 9 section*];

writing the source program segments to the plurality of data storage regions [*discussed in ground 9 section*]; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*discussed in ground 9 section*].

Goldwasser does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Quantum teaches commercially available disk drive [*see figures shown in the article*] which includes a plurality of read/write heads supported by a single actuator.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Goldwasser. Goldwasser expressly teaches the use of commercially available hard disk drive in the

device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Goldwasser and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 18, Goldwasser discloses wherein writing the source program segments comprises writing chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the chronologically ordered source program segments from the presentation control window buffer [*Goldwasser discloses writing and reading video as it is being received. ("In both "sequential" and "random access" embodiments of the invention the video program material is effectively stored in a so-called FIFO (first in-first out) buffer of variable length so that the user can view the video material in the sequence in which it is broadcast..." col. 3:14-18)*].

As per claim 19, Goldwasser discloses wherein the multimedia program presentation comprises a live program broadcast [*discussed in ground 9 section*]

As per claim 20, Goldwasser discloses wherein the multimedia program presentation comprises pre-processed programming [*discussed in ground 9 section*].

Proposed third party requester rejection: Ground 11

18. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Goldwasser in view of Sierra and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldwasser in view of Sierra and Sedlmayr.

As per claim 6, the combination of Goldwasser and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*see figure 9, and "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of

an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Goldwasser discloses an address controller 58 that receives command signals from a user control panel and controls the writing and reading of data with the random access memory ("The locations at which the digitized video samples are stored in the random access memory 53 are controlled by an address controller 58, which in turn is responsive to commands received from a user control panel 50." col. 6:44-48) to effectuate pause, forward and reverse functions ("The user can also interrupt the playback of a program that is being recorded as it is being watched ..... he can speed (i.e., fast forward) through those recorded portions and catch up to the live broadcast. The user can also rewind and replay portions of the program as the video recorder continues to record the program." Abstract; "A control device maintains the addresses of the segment(s) of the recorded material in the memory device, so that they can be reassembled in the proper sequence for playback." col. 3:8-11)*] but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates asynchronous reading of the

source program segments from the presentation control window buffer due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 12

19. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Goldwasser in view of Sierra and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldwasser in view of Sierra and HP.

As per claim 6, the combination of Goldwasser and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser, Sierra and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*discussed in ground 11*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser, Sierra and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically

ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Proposed third party requester rejection: Ground 13

20. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Goldwasser in view of Quantum and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldwasser in view of Quantum and Sedlmayr.

As per claim 6, the combination of Goldwasser and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading

data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Goldwasser discloses an address controller 58 that receives command signals from a user control panel and controls the writing and reading of data with the random access memory ("The locations at which the digitized video samples are stored in the random access memory 53 are controlled by an address controller 58, which in turn is responsive to commands received from a user control panel 50." col. 6:44-48) to effectuate pause, forward and reverse functions ("The user can also interrupt the playback of a program that is being recorded as it is being watched ..... he can speed (i.e., fast forward) through those recorded portions and catch up to the live broadcast. The user can also rewind and replay portions of the program as the video recorder continues to record the program." Abstract; "A control device maintains the addresses of the segment(s) of the recorded material in the memory device, so that they can be reassembled in the proper sequence for playback." col. 3:8-11)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates a synchronous reading of the source program segments from the presentation control window buffer due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 14

21. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Goldwasser in view of Quantum and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldwasser in view of Quantum and HP.

As per claim 6, the combination of Goldwasser and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser,

Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Goldwasser discloses an address controller 58 that receives command signals from a user control panel and controls the writing and reading of data with the random access memory ("The locations at which the digitized video samples are stored in the random access memory 53 are controlled by an address controller 58, which in turn is responsive to commands received from a user control panel 50." col. 6:44-48) to effectuate pause, forward and reverse functions ("The user can also interrupt the playback of a program that is being recorded as it is being watched ..... he can speed (i.e., fast forward) through those recorded portions and catch up to the live broadcast. The user can also rewind and replay portions of the program as the video recorder continues to record the program." Abstract; "A control device maintains the addresses of the segment(s) of the recorded material in the memory device, so that they can be reassembled in the proper sequence for playback." col. 3:8-11)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an

efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Goldwasser, Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Proposed third party requester rejection: Ground 15

22. Requester's proposed anticipation rejection of claims 1, 2, 6-14 and 17-20 under 102(e) in view of Logan **is not adopted**.

Requester's proposed anticipation rejection of claim 1 in view of Logan **is not adopted** because Logan does not teach (i) data stored on any of lower disk surface and upper disk surface, (ii) a spindle motor, (iii) a single actuator, (iv) a read/write transducer. Because Logan does not teach each and every element in claim 1, anticipating of independent claim 1 by Logan is not possible.

Requester argues that (i) Logan teaches a storage media which can be commercial available disk drive used in a personal computer, (ii) it is well-known that a commercial available disk drive used in a personal computer comprises one or more data storage disks, data stored on the upper and lower surfaces, a spindle motor, a single actuator having elongated arms, and a read/write transducer as shown in Sierra and Quantum. Based on these reasons, the requester concludes that Logan teaches a disk drive comprises one or more data storage disks, data stored on the upper and lower surfaces, a spindle motor, a single actuator having elongated arms, a read/write transducer. The reasoning is not found persuasive. The requester is reminded that for anticipating, a single reference must disclose each and every element of the claim, either expressly or under principles of inherency. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given

set of circumstances is not sufficient. In this instant case, Logan teaches a disk drive but does not expressly teach a disk drive comprising a media which stores data on the lower or upper disk surfaces, a spindle motor, a single actuator having elongated arms, a read/write transducer. Logan can only anticipate claim 1 if these elements were inherently included in a disk drive. As recognized by a person of ordinary skill in the art, a disk drive does not necessary have to include all these elements, some have more, some have less. For example, there is a possibility that a disk drive has double actuators instead of a single actuator. Inherency cannot be established in this case. Therefore, Logan does not anticipate claim 1.

Requester's proposed anticipation rejection of claims 2 and 6-13 in view of Logan **is not adopted** because Logan can not anticipate claims 2 and 6-13 without also anticipating claim 1 (from which claims 2 and 6-13 depends). As Logan does not anticipate claim 1, claims 2 and 6-13 are also not anticipated.

Similarly, requester's proposed anticipation rejection of claim 14 in view of Logan **is not adopted** because Logan does not teach a single actuator. Because Logan does not teach each and every element in claim 14, anticipating of independent claim 1 by Logan is not possible.

Requester's proposed anticipation rejection of claims 17-20 in view of Logan **is not adopted** because Logan can not anticipate claims 17-20 without also anticipating claim 14 (from which claims 17-20 depends). As Logan does not anticipate claim 14, claims 17-20 are also not anticipated.

Proposed third party requester rejection: Ground 16

23. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Logan in view of Sierra **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan in view of Sierra.

As per claim 1, Logan discloses a direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*Logan is directed to and discloses a broadcast recording and playback device employing a circular buffer which constantly records one or more incoming audio or video program signals. (Abstract). The circular buffer is implemented by a digital memory, which stores a "fixed duration or 'time window' of prior recorded signals." (Col. 3:16-20). Logan also discloses compressing a program using the MPEG standards which create packets that have time stamps (col. 4:57-65)*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*Logan states that the disk drive may be of the type that can be mounted to an expansion bay of a computer ("In this arrangement, the hard disk memory 7 may be mounted in one or more of the available expansion bays and connected by disk controller circuitry also mounted on the expansion card." col. 3:41-45)*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a

forward window portion and a reverse window portion defined with respect to a current viewing time reference [*Logan discloses how "[t]he memory subsystem 5 continually stores the incoming data, writing over the oldest data stored on the hard disk 7, so that a fixed duration or 'time window' of prior recorded signals are recorded in the memory subsystem 5 at all times." (Col. 3:16-20). Logan discloses a read pointer that can move in response to user control in either a forward or reverse direction ("The read location, however, is completely under the control of the viewer who sends commands from the remote control unit 42 to the microcontroller 23 to perform the following functions; PAUSE .... REPLAY .... SLOW/FAST MOTION ....REVERSE." col. 5:27-6:15). Logan discloses the ability to provide the user with presentation control over the time window to allow: "SLOW/FAST MOTION. Upon command from the control unit 42 or the computer 49, the microcontroller 22 may advance the read point at an increased or decreased rate commensurate with playback speed selected by the user. REVERSE. In the reverse mode the direction of the read point is reversed so that frames already transmitted to the display are retransmitted in a reverse order." (Col. 6:4-11)*]; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*Logan discloses a controller that controls the writing and reading of data in the memory system ("The ompressor 21 compresses the frames in accordance with a compression ratio selected by the microcontroller 22 and transmits the compressed frames to a memory system indicated at 23 where the frames are stored at an addressable location established by the microcontroller 22. The microcontroller also selects a location in the memory system 23 from which programming is to be read .... " col. 4:25-33; "portions of a broadcast program can be reviewed for an "instant replay" (a benefit of the video cassette player's rewind feature), commercials can be "zapped" (a benefit of the video cassette player's fast forward feature), and the*

program can be "paused" temporarily (a benefit of the video cassettes's pause or stop feature)" col. 1:39-45)].

Logan expressly states that the buffer memory may be a hard disk drive, but fails to specifically list elements in the disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Sierra teaches commercially available hard disk drive [*see figures 1.1, 1.4 and 1.5*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Sierra in Logan. Logan expressly teaches the use of hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Sierra. Accordingly, there is a suggestion and/or motivation to combine Logan and Sierra, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, Logan discloses wherein the at least one data storage disk

includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Sierra discloses storing data on both surfaces of a disk in figure 1.1*].

As per claim 7, Logan discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*Logan discloses writing and reading video as it is being received (chronologically) ("The microcontroller 22 maintains a "circular buffer" in the memory system 23 in which the incoming video signal is continuously written to a continuously advancing memory location .... " col. 5:22-25)*] .

As per claim 8, Logan discloses wherein the multimedia program presentation comprises a live program broadcast [*Logan discloses that the invention relates to "an arrangement for monitoring programming as it is broadcast" (col. 1:10-12) and how "[i]t is an object of the present invention to provide these and other options and capabilities when the user of the broadcast receiver is monitoring the programming concurrently with its reception" (col. 1:35-38)*].

As per claim 9, Logan discloses wherein the source program segments define frames of the multimedia program presentation [*Logan specifically refers to the "rate of transmission of frames of a video broadcast." (Col. 2:17-18)*].

As per claim 10, Logan discloses wherein the multimedia program presentation comprises pre-processed programming [*Logan discloses receiving HDTV which is digitized and compressed ("As noted earlier, when digital, compressed high definition television (HDTV) signal are selected by one of the tuners 17 .... " col. 4:40-42)*].

As per claim 12, Hooper discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device concurrently with coordinating writing of the source program segments to the presentation control window buffer [*Logan discloses concurrent write and read processes to and from the disk drive ("It is an object of the present invention to provide these and other options and capabilities when the user of the broadcast receiver is monitoring the programming concurrently with its reception." col. 1:35-38)*].

As per claim 13, Logan discloses wherein the source program segments comprise compressed digital program segments [*Logan discloses compressing video with MPEG ("As noted earlier, when digital, compressed high definition television (HDTV) signal are selected by one of the tuners 17 .... The compressor 18 and decompressor 25 are preferably implemented by one of the available video encoder/decoder (codec) chip sets, such as Integrated Technology's (ITI) video processor, which supports both the H.261 video communications standard and multimedia standards MPEG and JPEG. Other video codec chip sets include the AT&T three-chip AVP-1000, GEC Plessey Semiconductors' VP2611 and a multi-standard chip set from Intel.", col 4:40-65)*] .

As per claim 14, Logan discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each

representative of a temporally unique portion of a multimedia program [*Logan is directed to and discloses a broadcast recording and playback device employing a circular buffer which constantly records one or more incoming audio or video program signals. (Abstract). The circular buffer is implemented by a digital memory, which stores a "fixed duration or 'time window' of prior recorded signals." (Col. 3:16-20). Logan also discloses compressing a program using the MPEG standards which create packets that have time stamps (col. 4:57-65)*], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*Logan states that the disk drive may be of the type that can be mounted to an expansion bay of a computer ("In this arrangement, the hard disk memory 7 may be mounted in one or more of the available expansion bays and connected by disk controller circuitry also mounted on the expansion card." col. 3:41-45)*];

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*Logan discloses how "[t]he memory subsystem 5 continually stores the incoming data, writing over the oldest data stored on the hard disk 7, so that a fixed duration or 'time window' of prior recorded signals are recorded in the memory subsystem 5 at all times." (Col. 3:16-20). Logan discloses a read pointer that can move in response to user control in either a forward or reverse direction ("The read location, however, is completely under the control of the viewer who sends commands from the remote control unit 42 to the microcontroller 23 to perform the following functions: PAUSE .... REPLAY .... SLOW/FAST MOTION ....REVERSE." col. 5:27-6:15). Logan discloses the ability to provide the user with presentation control over the time window to allow: "SLOW/FAST MOTION. Upon command from the control unit 42 or the computer 49, the microcontroller 22 may advance the read point*

at an increased or decreased rate commensurate with playback speed selected by the user. REVERSE. In the reverse mode the direction of the read point is reversed so that frames already transmitted to the display are retransmitted in a reverse order." (Col. 6:4-11)];

writing the source program segments to the plurality of data storage regions [*Logan discloses writing program segments to memory. ("The microcontroller 22 maintains a "circular buffer" in the memory system 23 in which the incoming video signal is continuously written to a continuously advancing memory location, writing over the oldest recorded data in the memory system as it advances the writing location." col. 5, lines 22-27)*]; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*Logan discloses a read pointer that can move in response to user control in either a forward or reverse direction ("The read location, however, is completely under the control of the viewer who sends commands from the remote control unit 42 to the microcontroller 23 to perform the following functions: PAUSE .... REPLAY... SLOW/FAST MOTION .... REVERSE." col. 5:27-6:15; "portions of a broadcast program can be reviewed for an "instant replay" (a benefit of the video cassette player's rewind feature), commercials can be "zapped" (a benefit of the video cassette player's fast forward feature), and the program can be "paused" temporarily (a benefit of the video cassettes's pause or stop feature)" col. 1:39- 45)*].

Logan does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Sierra teaches commercially available disk drive [*see figures 1.1, 1.4 and 1.5*] which includes a plurality of read/write heads supported by a single actuator.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Sierra in Logan. Logan expressly

teaches the used of hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Sierra. Accordingly, there is a suggestion and/or motivation to combine Logan and Sierra, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 18, Logan discloses wherein writing the source program segments comprises writing chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the chronologically ordered source program segments from the presentation control window buffer [*Logan discloses writing and reading video as it is being received (chronologically) ("The microcontroller 22 maintains a "circular buffer" in the memory system 23 in which the incoming video signal is continuously written to a continuously advancing memory location .... " col. 5:22-25)*].

As per claim 19, Logan discloses wherein the multimedia program presentation comprises a live program broadcast [*Logan discloses that the invention relates to "an arrangement for monitoring programming as it is broadcast" (col. 1:10-12) and how "[i]t is an object of the present invention to provide these and other options and capabilities when the user of the broadcast receiver is monitoring the programming concurrently with its reception" (col. 1:35-38)*].

As per claim 20, Logan discloses wherein the multimedia program presentation

comprises pre-processed programming [*Logan discloses receiving HDTV which is digitized and compressed ("As noted earlier, when digital, compressed high definition television (HDTV) signal are selected by one of the tuners 17 ...." col. 4:40-42)*].

Proposed third party requester rejection: Ground 17

24. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Logan in view of Quantum **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan in view of Quantum.

As per claim 1, Logan discloses a direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*discussed in ground 16 section*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*discussed in ground 16 section*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 16 section*]; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse

functions in response to respective pause, forward, and reverse control signals [*discussed in ground 16 section*].

Logan expressly states that the buffer memory may be a hard disk drive, but fails to specifically list elements in the disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Quantum teaches commercially available disk drive [*see figures shown in the article*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Logan. Logan expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Logan and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, Logan discloses wherein the at least one data storage disk

includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Quantum discloses storing data on both surfaces of a disk, i.e., "disk" and "disk surfaces'*].

As per claim 7, Logan discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*discussed in ground 16 section*] .

As per claim 8, Logan discloses wherein the multimedia program presentation comprises a live program broadcast [*discussed in ground 16 section*].

As per claim 9, Logan discloses wherein the source program segments define frames of the multimedia program presentation [*Logan specifically refers to the "rate of transmission of frames of a video broadcast." (Col. 2:17-18)*].

As per claim 10, Logan discloses wherein the multimedia program presentation comprises pre-processed programming [*Logan discloses receiving HDTV which is digitized and compressed ("As noted earlier, when digital, compressed high definition television (HDTV) signal are selected by one of the tuners 17 .... " col. 4:40-42)*].

As per claim 12, Hooper discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device concurrently with coordinating writing of the source program segments to the presentation control window buffer [*discussed in ground 16 section*].

As per claim 13, Logan discloses wherein the source program segments comprise compressed digital program segments [*discussed in ground 16 section*] .

As per claim 14, Logan discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of a multimedia program [*discussed in ground 16 section*], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*discussed in ground 16 section*];

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 16 section*];

writing the source program segments to the plurality of data storage regions [*discussed in ground 16 section*]; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*discussed in ground 16 section*].

Logan does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Quantum teaches commercially available disk drive [*see figures shown in the article*] which includes a plurality of read/write heads supported by a single actuator.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Logan. Logan expressly teaches the use of commercially available hard disk drive in the device. This teaching would have motivated one of ordinary skill in the art to search for a commercial available hard disk drive, leading to the discovery of the disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Logan and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 18, Logan discloses wherein writing the source program segments comprises writing chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the chronologically ordered source program segments from the presentation control window buffer [*Logan discloses writing and reading video as it is being received (chronologically) ("The*

microcontroller 22 maintains a "circular buffer" in the memory system 23 in which the incoming video signal is continuously written to a continuously advancing memory location ..... " col. 5:22-25)].

As per claim 19, Logan discloses wherein the multimedia program presentation comprises a live program broadcast [*discussed in ground 16 section*].

As per claim 20, Logan discloses wherein the multimedia program presentation comprises pre-processed programming [*Logan discloses receiving HDTV which is digitized and compressed ("As noted earlier, when digital, compressed high definition television (HDTV) signal are selected by one of the tuners 17 ..... " col. 4:40-42)*].

Proposed third party requester rejection: Ground 18

25. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Logan in view of Sierra and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan in view of Sierra and Sedlmayr.

As per claim 6, the combination of Logan and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*see figure 9, and "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of

an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Logan discloses a controller that controls the writing and reading of data in the memory system ("The compressor 21 compresses the frames in accordance with a compression ratio selected by the microcontroller 22 and transmits the compressed frames to a memory system indicated at 23 where the frames are stored at an addressable location established by the microcontroller 22. The microcontroller also selects a location in the memory system 23 from which programming is to be read ...." col. 4:25-33; "portions of a broadcast program can be reviewed for an "instant replay" (a benefit of the video cassette player's rewind feature), commercials can be "zapped" (a benefit of the video cassette player's fast forward feature), and the program can be "paused" temporarily (a benefit of the video cassettes's pause or stop feature)" col. 1:39-45)*] but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates a synchronous reading of the source program segments from the presentation control window buffer due to disk

drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 19

26. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Hooper in view of Sierra and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan in view of Sierra and HP.

As per claim 6, the combination of Logan and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan, Sierra and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Logan discloses a controller that controls the writing and reading of data in the memory system ("The compressor 21 compresses the frames in accordance with a compression ratio selected by the microcontroller 22 and transmits the compressed frames to a memory system indicated at 23 where the frames are stored at an addressable location established by the microcontroller 22. The microcontroller also selects a location in the memory system 23 from which programming is to be read .... " col. 4:25-33; "portions of a broadcast program can be reviewed for an "instant replay" (a benefit of the video cassette player's rewind feature), commercials can be "zapped" (a benefit of the video cassette player's fast forward feature), and the program can be "paused" temporarily (a benefit of the video cassettes's pause or stop feature)" col. 1:39-45)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan, Sierra

and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Proposed third party requester rejection: Ground 20

27. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Logan, Quantum and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan in view of Quantum and Sedlmayr.

As per claim 6, the combination of Logan and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of

an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Logan discloses a controller that controls the writing and reading of data in the memory system ("The compressor 21 compresses the frames in accordance with a compression ratio selected by the microcontroller 22 and transmits the compressed frames to a memory system indicated at 23 where the frames are stored at an addressable location established by the microcontroller 22. The microcontroller also selects a location in the memory system 23 from which programming is to be read .... " col. 4:25-33; "portions of a broadcast program can be reviewed for an "instant replay" (a benefit of the video cassette player's rewind feature), commercials can be "zapped" (a benefit of the video cassette player's fast forward feature), and the program can be "paused" temporarily (a benefit of the video cassettes's pause or stop feature)" col. 1:39-45)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates a synchronous reading of the source program segments from the presentation control window buffer due to disk

drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 21

28. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Logan in view of Quantum and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Logan in view of Quantum and HP.

As per claim 6, the combination of Logan and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan, Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*Logan discloses a controller that controls the writing and reading of data in the memory system ("The compressor 21 compresses the frames in accordance with a compression ratio selected by the microcontroller 22 and transmits the compressed frames to a memory system indicated at 23 where the frames are stored at an addressable location established by the microcontroller 22. The microcontroller also selects a location in the memory system 23 from which programming is to be read .... " col. 4:25-33; "portions of a broadcast program can be reviewed for an "instant replay" (a benefit of the video cassette player's rewind feature), commercials can be "zapped" (a benefit of the video cassette player's fast forward feature), and the program can be "paused" temporarily (a benefit of the video cassettes's pause or stop feature)" col. 1:39-45)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Logan,

Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Proposed third party requester rejection: Ground 22

29. Requester's proposed anticipation rejection of claims 1, 2, 6-14 and 17-20 under 102(e) in view of Lynch **is not adopted**.

Requester's proposed anticipation rejection of claim 1 in view of Lynch **is not adopted** because Lynch does not teach (i) data stored on any of lower disk surface and upper disk surface, (ii) a spindle motor, (iii) a single actuator, and (iv) a read/write transducer. Because Lynch does not teach each and every element in claim 1, anticipating of independent claim 1 by Lynch is not possible.

Requester argues that (i) Lynch teaches a storage media which can be commercial available disk drive used in a personal computer, (ii) it is well-known that a commercial available disk drive used in a personal computer comprises one or more data storage disks, data stored on the upper and lower disk surfaces, a spindle motor, a single actuator having elongated arms, and a read/write transducer as shown in Sierra and Quantum. Based on these reasons, the requester concludes that Lynch teaches a disk drive comprises one or more data storage disks, data stored on the upper and lower surfaces, a spindle motor, a single actuator having elongated arms, a read/write transducer. This reasoning is not found persuasive. The requester is reminded that for anticipating, a single reference must disclose each and every element of the claim, either expressly or under principles of inherency. Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given

set of circumstances is not sufficient. In this instant case, Lynch teaches a disk drive but does not expressly teach a disk drive comprising a media which stores data on the lower or upper disk surfaces, a spindle motor, a single actuator having elongated arms, and a read/write transducer. Lynch can only anticipate claim 1 if these elements were inherently included in a disk drive. As recognized by a person of ordinary skill in the art, a disk drive does not necessary including all these elements, some have more, some have less. For example, there is a possibility that a disk drive has double actuators instead of a single actuator. Inherency cannot be established in this case. Therefore, Lynch does not anticipate claim 1.

Requester's proposed anticipation rejection of claims 2 and 6-13 in view of Lynch **is not adopted** because Lynch can not anticipate claims 2 and 6-13 without also anticipating claim 1 (from which claims 2 and 6-13 depends). As Lynch does not anticipate claim 1, claims 2 and 6-13 are also not anticipated.

Similarly, requester's proposed anticipation rejection of claim 14 in view of Lynch **is not adopted** because Lynch does not teach a single actuator. Because Lynch does not teach each and every element in claim 14, anticipating of independent claim 14 by Lynch is not possible.

Requester's proposed anticipation rejection of claims 17-20 in view of Lynch **is not adopted** because Lynch can not anticipate claims 17-20 without also anticipating claim 14 (from which claims 17-20 depends). As Lynch does not anticipate claim 14, claims 17-20 are also not anticipated.

Proposed third party requester rejection: Ground 23

30. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Lynch in view of Sierra **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch in view of Sierra.

As per claim 1, Lynch discloses a direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*Lynch discloses "Time warping for video viewing is achieved by providing a random access dynamic buffer for a video signal from a selected video channel. The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the realtime video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer." (Abstract). "Accordingly the present invention provides time warping for video viewing by continuously storing the video content of a program in a recirculating random access buffer having sufficient capacity to store a significant duration of the program. The video content of the program may be compressed to increase the duration of the program that is stored at any given time." Col. 1:41-47)*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*Lynch states that the dynamic buffer 16 may be a magnetic disk ("The compressed video is written into a dynamic buffer 16, such as a magnetic or optical disk, in a linear, recirculating fashion." Col. 2:20-22)*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*Lynch discloses "The video signal, is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the realtime video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer." (Abstract). "Accordingly the present invention provides time warping for video viewing by continuously storing the video content of a program in a recirculating random access buffer having sufficient capacity to store a significant duration of the program." (Col. 1:41-45). "The compressed video is written into a dynamic buffer 16, such as a magnetic or optical disk, in a linear, recirculating fashion. The dynamic buffer 16 preferably has a capacity capable of containing at least thirty minutes of compressed video." (Col. 2:20-24). "In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30." (Col. 2:44-46). "Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward~ and in either direction, forward or reverse." (Col. 3:13-16)*]; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*Lynch discloses this limitation in the following paragraphs: "A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39). "When the viewer is interrupted for any reason, the viewer may give*

via the remote control unit 28 a pause command to the control circuitry 26. The pause command causes the current address for the dynamic buffer 16 to be stored in a pause register 34, suspending further read out from the dynamic buffer 16 for the display circuitry 20, with the video frame of the video program at the pause address being displayed as a still frame. When the viewer returns after the interruption, the viewer may give via the remote control unit 28 a continue command to the control unit 26 so that the dynamic buffer 16 reads out the video program in a delayed, realtime fashion from the pause address. Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward, and in either direction, forward or reverse." (Col. 3:1-16)].

Lynch expressly states that the buffer memory may be a magnetic disk drive but fails to specifically list elements in the magnetic disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Sierra teaches commercially available magnetic disk drive [*see figures 1.1, 1.4 and 1.5*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the magnetic disk drive taught by Sierra in Lynch. Lynch expressly teaches the use of magnetic disk drive. This teaching would have motivated one of ordinary skill in the art to search for a commercial available magnetic disk drive, leading to the discovery of the commercial available magnetic disk drive structure taught

by Sierra. Accordingly, there is a suggestion and/or motivation to combine Lynch and Sierra, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, the device in claim 1 discloses wherein the at least one data storage disk includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Sierra discloses storing data on both surfaces of a disk in figure 1.1*].

As per claim 7, Lynch discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*Lynch discloses "The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the realtime video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer." (Abstract). "In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30." (Col. 2:44-46). "When the viewer is interrupted for any reason, the viewer may give via the remote control unit 28 a pause command to the control circuitry 26. The pause command causes the current address for the dynamic buffer 16 to be stored in a pause register 34, suspending further read out from the dynamic buffer 16 for the display circuitry 20, with the video frame of the video program at the pause address being displayed as a still frame. When the viewer returns after the interruption, the viewer may give via the remote control unit 28 a continue command to the control*

unit 26 so that the dynamic buffer 16 reads out the video program in a delayed, realtime fashion from the pause address." (Col. 3:1-13)].

As per claim 8, Lynch discloses wherein the multimedia program presentation comprises a live program broadcast [*"The viewer may play back the video at any rate desired, using slow motion to observe some scenes and using fast motion to catch up to the live video." (Col. 1:52-55). "The viewer may also view the video at a faster than realtime rate using a variable speed control to eventually catch up to the live video feed." (Col. 3:19-21)*].

As per claim 9, Lynch discloses wherein the source program segments define frames of the multimedia program presentation [*"The viewer may also review stored video or view one or more frozen frames of the video." (Col. 1:55-57). "By using a skip command the viewer may skip forward a specified number of video frames, such as in fifteen or thirty second increments." (Col. 3:16-19)*].

As per claim 10, Lynch discloses wherein the multimedia program presentation comprises pre-processed programming [*"Referring now to the FIGURE, a video time warping system 10 receives realtime video from some source, whether from a cable or off the air via an antenna, that is input to a television tuner 12 to provide a video signal for a selected video channel. The video signal may be full bandwidth video, either analog or digital, or compressed video. If the video signal is analog, then it is digitized to convert it to digital. If the video signal is not compressed, then a compression circuit 14 is used to compress according to an accepted television compression standard, such as the JPEG or MPEG standard." (Col. 2:9-19)*] .

As per claim 12, Lynch discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device concurrently with coordinating writing of the source program segments to the presentation control window buffer [*"In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30. The video feed, if uncompressed, may also be transmitted directly to the display circuit 20. If the video feed is compressed, then the compressed video may be sent directly to the decompression circuit 18 or stored directly in the dynamic buffer 16 and immediately read out through the decompression circuit for the display circuitry 20." (Col. 2:44-48)*].

As per claim 13, Lynch discloses wherein the source program segments comprise compressed digital program segments [*"The video signal may be full bandwidth video, either analog or digital, or compressed video. If the video signal is analog, then it is digitized to convert it to digital." (Col. 2:13-15)*] .

As per claim 14, Lynch discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of a multimedia program [*"Time warping for video viewing is achieved by providing a random access dynamic buffer for a video signal from a selected video channel. The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the realtime video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer." (Abstract). "Accordingly the present invention provides time warping for video viewing by continuously storing the video content of a program in a recirculating random access buffer*

having sufficient capacity to store a significant duration of the program. The video content of the program may be compressed to increase the duration of the program that is stored at any given time." Col. 1:41-47)], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*Lynch states that the dynamic buffer 16 may be a magnetic disk ("The compressed video is written into a dynamic buffer 16, such as a magnetic or optical disk, in a linear, recirculating fashion." Col. 2:20-22)*] ;

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*"The video signal, is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the realtime video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer." (Abstract). "Accordingly the present invention provides time warping for video viewing by continuously storing the video content of a program in a recirculating random access buffer having sufficient capacity to store a significant duration of the program." (Col. 1:41-45). "The compressed video is written into a dynamic buffer 16, such as a magnetic or optical disk, in a linear, recirculating fashion. The dynamic buffer 16 preferably has a capacity capable of containing at least thirty minutes of compressed video." (Col. 2:20-24). "In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30." (Col. 2:44-46). "Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward~ and in either direction, forward or reverse." (Col. 3:13-16)*];

writing the source program segments to the plurality of data storage regions [*"A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39). "In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30." (Col. 2:44-46)*] ; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*"A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39). "When the viewer is interrupted for any reason, the viewer may give via the remote control unit 28 a pause command to the control circuitry 26. The pause command causes the current address for the dynamic buffer 16 to be stored in a pause register 34, suspending further read out from the dynamic buffer 16 for the display circuitry 20, with the video frame of the video program at the pause address being displayed as a still frame. When the viewer returns after the interruption, the viewer may give via the remote control unit 28 a continue command to the control unit 26 so that the dynamic buffer 16 reads out the video program in a delayed, realtime fashion from the pause address. Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward, and in either direction, forward or reverse." (Col. 3:1-16)*].

Lynch does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Sierra teaches commercially available disk drive [*see figures 1.1, 1.4 and 1.5*] which includes a plurality of read/write heads supported by a single actuator.

1:52-55). "The viewer may also view the video at a faster than realtime rate using a variable speed control to eventually catch up to the live video feed." (Col. 3:19-21)].

As per claim 20, Lynch discloses wherein the multimedia program presentation comprises pre-processed programming [*"Referring now to the FIGURE, a video time warping system 10 receives realtime video from some source, whether from a cable or off the air via an antenna, that is input to a television tuner 12 to provide a video signal for a selected video channel. The video signal may be full bandwidth video, either analog or digital, or compressed video. If the video signal is analog, then it is digitized to convert it to digital. If the video signal is not compressed, then a compression circuit 14 is used to compress according to an accepted television compression standard, such as the JPEG or MPEG standard." (Col. 2:9-19)*].

Proposed third party requester rejection: Ground 24

31. Requester's proposed obviousness rejection of claims 1, 2, 7-10, 12-14 and 18-20 over Lynch in view of Quantum **are adopted** in the following manner.

Claims 1, 2, 7-10, 12-14 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch in view of Quantum.

As per claim 1, Lynch discloses a direct access storage device for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of the multimedia program [*discussed in ground 23 section*], the direct access storage device comprising:

at least one data storage disk having a plurality of data storing regions [*discussed in ground 23 section*];

a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 23 section*]; and

a controller for coordinating writing of the source program segments to the plurality of data storage regions and reading of the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse

functions in response to respective pause, forward, and reverse control signals [*discussed in ground 23 section*].

Lynch expressly states that the buffer memory may be a magnetic disk drive but fails to specifically list elements in the magnetic disk drive which comprises a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms as called for in the claim.

Quantum teaches commercially available magnetic disk drive [*see figures shown in the article*] which includes one or more disks, each having a lower disk surface and an upper disk surface, a spindle motor for rotating the at least one data storage disk, a single actuator having elongated arms and a read/write transducer disposed on each of the elongated arms [*these elements are shown in the figures*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Lynch. Lynch expressly teaches the use of magnetic disk drive. This teaching would have motivated one of ordinary skill in the art to search for a commercial available magnetic disk drive, leading to the discovery of the commercial available magnetic disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Lynch and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 2, Lynch discloses wherein the at least one data storage disk includes an upper data storing region disposed on the upper disk surface and a lower data storing region disposed on the lower disk surface, the upper and lower data storing regions defining the presentation control window buffer [*Quantum discloses storing data on both surfaces of a disk, i.e., "disk" and "disk surfaces"*].

As per claim 7, Lynch discloses wherein the controller coordinates writing of chronologically ordered source program segments to the data storing regions and coordinates reading of the chronologically ordered source program segments from the presentation control window buffer [*discussed in ground 23 section*].

As per claim 8, Lynch discloses wherein the multimedia program presentation comprises a live program broadcast [*discussed in ground 23 section*].

As per claim 9, Lynch discloses wherein the source program segments define frames of the multimedia program presentation [*"The viewer may also review stored video or view one or more frozen frames of the video." (Col. 1:55-57). "By using a skip command the viewer may skip forward a specified number of video frames, such as in fifteen or thirty second increments." (Col. 3:16-19)*].

As per claim 10, Lynch discloses wherein the multimedia program presentation comprises pre-processed programming [*discussed in ground 23 section*] .

As per claim 12, Lynch discloses wherein the controller coordinates transmission of the source program segments to an output buffer of the device concurrently with coordinating writing of the source program segments to the presentation control window buffer [*"In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30. The video feed, if uncompressed, may also be transmitted directly to the display circuit 20. If the video feed is compressed, then the compressed video may be sent directly to the decompression circuit 18 or stored directly in the dynamic buffer 16 and immediately read out through the decompression circuit for the display circuitry 20." (Col. 2:44-48)*].

As per claim 13, Lynch discloses wherein the source program segments comprise compressed digital program segments [*"The video signal may be full bandwidth video, either analog or digital, or compressed video. If the video signal is analog, then it is digitized to convert it to digital." (Col. 2:13-15)*] .

As per claim 14, Lynch discloses method for buffering at least a portion of a multimedia program presentation comprising source program segments each representative of a temporally unique portion of a multimedia program [*discussed in ground 23 section*], the method comprising:

providing a direct access storage device having a plurality of data storing regions defined on a surface of at least one data storage disk disposed in the direct access storage device [*Lynch states that the dynamic buffer 16 may be a magnetic disk ("The compressed*

video is written into a dynamic buffer 16, such as a magnetic or optical disk, in a linear, recirculating fashion." Col. 2:20-22)] ;

providing a translatable presentation control window buffer supported by the plurality of data storing regions, the presentation control window buffer storing source program segments defining a portion of the multimedia program presentation and comprising a forward window portion and a reverse window portion defined with respect to a current viewing time reference [*discussed in ground 23 section*];

writing the source program segments to the plurality of data storage regions [*"A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39). "In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30." (Col. 2:44-46)*] ; and

reading the source program segments from the presentation control window buffer to effect at least pause, forward, and reverse functions in response to respective pause, forward, and reverse control signals [*discussed in ground 23 section*].

Lynch does not disclose the direct access storage device comprising a plurality of read/write heads supported by a single actuator as called for in the claim.

Quantum teaches commercially available disk drive [*see figures shown in the article*] which includes a plurality of read/write heads supported by a single actuator.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the disk drive taught by Quantum in Lynch. Lynch expressly teaches the use of magnetic disk drive. This teaching would have motivated one of

ordinary skill in the art to search for a commercial available magnetic disk drive, leading to the discovery of the commercial available magnetic disk drive structure taught by Quantum. Accordingly, there is a suggestion and/or motivation to combine Lynch and Quantum, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 18, Lynch discloses wherein writing the source program segments comprises writing chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the chronologically ordered source program segments from the presentation control window buffer [*"The video signal is continuously written into the dynamic buffer in a recirculating fashion, and may be read out on a random access basis so that the viewer may control the realtime video viewing in the same manner as controlling a video cassette recorder up to the duration of the video signal stored in the dynamic buffer." (Abstract). "In normal viewing the video feed is compressed and stored in the dynamic buffer 16 in consecutive addresses generated by a recirculating address counter 30." (Col. 2:44-46)*].

As per claim 19, Lynch discloses wherein the multimedia program presentation comprises a live program broadcast [*"The viewer may play back the video at any rate desired, using slow motion to observe some scenes and using fast motion to catch up to the live video." (Col. 1:52-55). "The viewer may also view the video at a faster than realtime rate using a variable speed control to eventually catch up to the live video feed." (Col. 3:19-21)*].

As per claim 20, Lynch discloses wherein the multimedia program presentation comprises pre-processed programming [*"Referring now to the FIGURE, a video time warping system 10 receives realtime video from some source, whether from a cable or off the air via an antenna, that is input to a television tuner 12 to provide a video signal for a selected video channel. The video signal may be full bandwidth video, either analog or digital, or compressed video. If the video signal is analog, then it is digitized to convert it to digital. If the video signal is not compressed, then a compression circuit 14 is used to compress according to an accepted television compression standard, such as the JPEG or MPEG standard." (Col. 2:9-19)*].

Proposed third party requester rejection: Ground 25

32. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Lynch in view of Sierra and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch in view of Sierra and Sedlmayr.

As per claim 6, the combination of Lynch and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*see figure 9, and "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of

an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*"A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39). "When the viewer is interrupted for any reason, the viewer may give via the remote Control unit 28 a pause command to the control circuitry 26. The pause command causes the current address for the dynamic buffer 16 to be stored in a pause register 34, suspending further read out from the dynamic buffer 16 for the display circuitry 20, with the video frame of the video program at the pause address being displayed as a still frame. When the viewer returns after the interruption, the viewer may give via the remote control unit 28 a continue command to the control unit 26 so that the dynamic buffer 16 reads out the video program in a delayed, realtime fashion from the pause address. Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward, and in either direction, forward or reverse." (Col. 3:1-16)*] but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates a synchronous reading of the source program segments from the presentation control window buffer due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38;26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Sierra and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 26

33. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Lynch in view of Sierra and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch in view of Sierra and HP.

As per claim 6, the combination of Lynch and Sierra discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Sierra and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*"A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39). "When the viewer is interrupted for any reason, the viewer may give via the remote control unit 28 a pause command to the control circuitry 26. The pause command causes the current address for the dynamic buffer 16 to be stored in a pause register 34, suspending further read out from the dynamic buffer 16 for the display circuitry 20, with the video frame of the video program at the pause address being displayed as a still frame. When the viewer returns after the interruption, the viewer may give via the remote control unit 28 a continue command to the control unit 26 so that the dynamic buffer 16 reads out the video program in a delayed, realtime fashion from the pause address. Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward, and in either direction, forward or reverse." (Col. 3:1-16)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the

teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Sierra and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Proposed third party requester rejection: Ground 27

34. Requester's proposed obviousness rejection of claims 6, 11 and 17 Lynch, Quantum and Sedlmayr **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch in view of Quantum and Sedlmayr.

As per claim 6, the combination of Lynch and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

Sedlmayr expressly teaches writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of

an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*"A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39). "When the viewer is interrupted for any reason, the viewer may give via the remote Control unit 28 a pause command to the control circuitry 26. The pause command causes the current address for the dynamic buffer 16 to be stored in a pause register 34, suspending further read out from the dynamic buffer 16 for the display circuitry 20, with the video frame of the video program at the pause address being displayed as a still frame. When the viewer returns after the interruption, the viewer may give via the remote control unit 28 a continue command to the control unit 26 so that the dynamic buffer 16 reads out the video program in a delayed, realtime fashion from the pause address. Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward, and in either direction, forward or reverse." (Col. 3:1-16)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

Sedlmayr expressly teaches asynchronous writing of the source program segments to the data storing regions and coordinates a synchronous reading of the source program segments from the presentation control window buffer due to disk drives fragment and access data asynchronously [*figure 9, "As can be seen from the illustration the file is fragmented that is, broken up into different file segments stored in different non-contiguous sectors. This is typical of how a contemporary data file is stored.", col. 38:26-29*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by Sedlmayr for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of Sedlmayr which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Quantum and Sedlmayr, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6*].

Proposed third party requester rejection: Ground 28

35. Requester's proposed obviousness rejection of claims 6, 11 and 17 over Lynch in view of Quantum and HP **are adopted** in the following manner.

Claims 6, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lynch in view of Quantum and HP.

As per claim 6, the combination of Lynch and Quantum discussed in claim 1 above does not teach wherein the controller coordinates writing of non-chronologically ordered source program segments to the data storing regions and coordinates reading of the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 11, the device discussed in claim 1 teaches the reading of the presentation control window buffer to effect the at least pause, forward, and reverse functions in response to the respective pause, forward, and reverse control signals [*"A control circuit 26, in response to commands generated by a viewer, such as with a remote control device 28, determines whether and the amount of compression to be applied by the compression circuit 14; controls writing into and reading out of the dynamic buffer 16." (Col. 2:34-39), "When the viewer is interrupted for any reason, the viewer may give via the remote Control unit 28 a pause command to the control circuitry 26. The pause command causes the current address for the dynamic buffer 16 to be stored in a pause register 34, suspending further read out from the dynamic buffer 16 for the display circuitry 20, with the video frame of the video program at the pause address being displayed as a still frame. When the viewer returns after the interruption, the viewer may give via the remote control unit 28 a continue command to the control unit 26 so that the dynamic buffer 16 reads out the video program in a delayed, realtime fashion from the pause address. Such continuation of the video may be viewed at any desired rate, realtime, slow motion or fast forward, and in either direction, forward or reverse." (Col. 3:1-16)*], but fails to disclose the controller coordinates asynchronous writing of the source program segments to the plurality of data storage regions and coordinates asynchronous reading of the source program segments as called for in the claim.

HP expressly teaches that prior art disk drives access data asynchronously [*"disk accesses are rarely sequential; 25-50% of all accesses are asynchronous." (Abstract)*].

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the method taught by HP for writing and reading data stored in the disk drive of the device discussed in claim 1. The lack of teaching of an efficient method to store and read data would motivate an artisan to search for the

teaching, leading to the discovery of HP which teaches out-of-sequence writing and reading. Accordingly, there is a suggestion and/or motivation to combine Lynch, Quantum and HP, there is a reasonable expectation of success and the references together teach or suggest all of the claim limitations.

As per claim 17, wherein writing the source program segments comprises writing non-chronologically ordered source program segments to the data storing regions, and reading the source program segments comprises reading the non-chronologically ordered source program segments from the presentation control window buffer as chronologically ordered source program segments [*this claim is rejected for the same reasons and motivation discussed in claim 6 of this section*].

Conclusion

36. In order to ensure full consideration of any amendments, affidavits or declarations, or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions after the next Office action, which is intended to be an Action Closing Prosecution (ACP), will be governed by 37 CFR 1.1 16(b) and (d), which will be strictly enforced.

37. Extensions of time under 37 CFR 1.136(a) will not be permitted in *inter partes* reexamination proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 314(c) requires that *inter partes* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.937). Patent owner extensions of time in *inter partes* reexamination proceedings are provided for in 37 CFR 1.956. Extensions of time are not available for third party requester comments, because a comment period of 30 days from service of patent owner's response is set by statute. 35 U.S.C. 314(b)(3).

38. The patent owner is reminded of the continuing responsibility under 37 CFR 1.985(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 6,529,685 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 2686 and 2686.04.

Communication with the USPTO

39. All correspondence relating to this *ex partes* reexamination proceeding should be directed as follows:

By **U.S. Postal Service Mail** to:

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By FAX to:

571-273-9900
Central Reexamination Unit

By hand to:

Customer Service Window
Randolph Building
401 Dulany St.
Alexandria, VA 22314

40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Nguyen whose telephone number is 571-272-1748. The examiner can normally be reached on Monday, Tuesday, Thursday, Friday 7:00-5:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Reinhart, can be reached on 571-272-1611.

41. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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