IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TEXARKANA DIVISION

MOTOROLA MOBILITY, INC., and GENERAL INSTRUMENT CORP., *Plaintiffs*,	§	
v.	§	
TIVO, INC., *Defendant*.	§	
	§	CASE NO. 5:11-CV-53-JRG
TIVO, INC., *Counterclaim Plaintiff*,	§	
v.	§	
MOTOROLA MOBILITY, INC., GENERAL INSTRUMENT CORP., TIME WARNER CABLE INC., and TIME WARNER CABLE LLC., *Counterclaim Defendants*,	§	

MEMORANDUM OPINION AND ORDER

Before the Court is Plaintiffs Motorola Mobility, Inc. and General Instruments Corporation's (collectively, "Motorola's") Opening Claim Construction Brief (Dkt. No. 173). Also before the Court are Defendant TiVo, Inc.'s ("TiVo's") response (Dkt. No. 182) and Motorola's reply (Dkt. No. 189).

Before the Court is Counterclaim Plaintiff TiVo's P.R. 4-5(a) Opening Claim Construction Brief (Dkt. No. 177). Also before the Court is the response of Counterclaim Defendants Time Warner Cable Inc. and Time Warner Cable LLC (collectively, "TWC") and Motorola (Dkt. No. 183). Further before the Court is TiVo's reply (Dkt. No. 190).

The Court held a claim construction hearing on November 27, 2012.

Table of Contents

I. BACKGROUND

Motorola brings suit alleging infringement of the following United States Patents (collectively, "the Motorola Patents"):

5,949,948 ("the '948 Patent")
6,304,714 ("the '714 Patent")
6,356,708 ("the '708 Patent")

(Dkt. No. 86, 4/30/2012 Amended Complaint, at ¶¶ 1 & 27-53.)

TiVo has counterclaimed, alleging infringement by Motorola of the following United States Patents (collectively, "the TiVo Patents"):

6,233,389 ("the '389 Patent")
7,529,465 ("the '465 Patent")
6,792,195 ("the '195 Patent")

(Dkt. No. 73, 3/26/2012 Amended Counterclaims, at ¶¶ 88-90 & 111-149.) TiVo's Amended Counterclaims also accuse TWC of distributing infringing set-top digital video recorder ("DVR") boxes made by Motorola. (*See generally* Dkt. No. 129, 7/18/2012 Memorandum Opinion and Order (denying motion to sever and stay TiVo's counterclaims against TWC).)

The patents-in-suit relate to digital video recording and playback and frequently refer to the widely-used "MPEG" (Moving Pictures Experts Group) standard for compressed digital video and audio.

II. LEGAL PRINCIPLES

It is understood that "[a] claim in a patent provides the metes and bounds of the right which the patent confers on the patentee to exclude others from making, using or selling the protected invention." *Burke, Inc. v. Bruno Indep. Living Aids, Inc.*, 183 F.3d 1334, 1340 (Fed. Cir. 1999). Claim construction is clearly an issue of law for the court to decide. *Markman v.*

Westview Instruments, Inc., 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996).

To ascertain the meaning of claims, courts look to three primary sources: the claims, the specification, and the prosecution history. *Markman*, 52 F.3d at 979. The specification must contain a written description of the invention that enables one of ordinary skill in the art to make and use the invention. *Id.* A patent's claims must be read in view of the specification, of which they are a part. *Id.* For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. *Id.* "One purpose for examining the specification is to determine if the patentee has limited the scope of the claims." *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000).

Nonetheless, it is the function of the claims, not the specification, to set forth the limits of the patentee's invention. Otherwise, there would be no need for claims. *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc). The patentee is free to be his own lexicographer, but any special definition given to a word must be clearly set forth in the specification. *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1388 (Fed. Cir. 1992). Although the specification may indicate that certain embodiments are preferred, particular embodiments appearing in the specification will not be read into the claims when the claim language is broader than the embodiments. *Electro Med. Sys., S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994).

This Court's claim construction analysis is substantially guided by the Federal Circuit's decision in *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). In *Phillips*, the court set forth several guideposts that courts should follow when construing claims. In

particular, the court reiterated that "the claims of a patent define the invention to which the patentee is entitled the right to exclude." *Phillips*, 415 F.3d at 1312 (emphasis added) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To that end, the words used in a claim are generally given their ordinary and customary meaning. *Id.* The ordinary and customary meaning of a claim term "is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Id.* at 1313. This principle of patent law flows naturally from the recognition that inventors are usually persons who are skilled in the field of the invention and that patents are addressed to, and intended to be read by, others skilled in the particular art. *Id.*

Despite the importance of claim terms, *Phillips* made clear that "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* Although the claims themselves may provide guidance as to the meaning of particular terms, those terms are part of "a fully integrated written instrument." *Id.* at 1315 (quoting *Markman*, 52 F.3d at 978). Thus, the *Phillips* court emphasized the specification as being the primary basis for construing the claims. *Id.* at 1314-17. As the Supreme Court stated long ago, "in case of doubt or ambiguity it is proper in all cases to refer back to the descriptive portions of the specification to aid in solving the doubt or in ascertaining the true intent and meaning of the language employed in the claims." *Bates v. Coe*, 98 U.S. 31, 38 (1878). In addressing the role of the specification, the *Phillips* court quoted with approval its earlier

observations from *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998):

> Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.

Phillips, 415 F.3d at 1316. Consequently, *Phillips* emphasized the important role the specification plays in the claim construction process.

The prosecution history also continues to play an important role in claim interpretation. Like the specification, the prosecution history helps to demonstrate how the inventor and the Patent and Trademark Office ("PTO") understood the patent. *Id.* at 1317. Because the file history, however, "represents an ongoing negotiation between the PTO and the applicant," it may lack the clarity of the specification and thus be less useful in claim construction proceedings. *Id.* Nevertheless, the prosecution history is intrinsic evidence that is relevant to the determination of how the inventor understood the invention and whether the inventor limited the invention during prosecution by narrowing the scope of the claims. *Id.*; *see Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004) (noting that "a patentee's statements during prosecution, whether relied on by the examiner or not, are relevant to claim interpretation").

Phillips rejected any claim construction approach that sacrificed the intrinsic record in favor of extrinsic evidence, such as dictionary definitions or expert testimony. The *en banc* court condemned the suggestion made by *Texas Digital Systems, Inc. v. Telegenix, Inc.*, 308 F.3d 1193 (Fed. Cir. 2002), that a court should discern the ordinary meaning of the claim terms (through dictionaries or otherwise) before resorting to the specification for certain limited purposes.

Phillips, 415 F.3d at 1319-24. According to *Phillips*, reliance on dictionary definitions at the expense of the specification had the effect of "focus[ing] the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent." *Id.* at 1321. *Phillips* emphasized that the patent system is based on the proposition that the claims cover only the invented subject matter. *Id.*

Phillips does not preclude all uses of dictionaries in claim construction proceedings. Instead, the court assigned dictionaries a role subordinate to the intrinsic record. In doing so, the court emphasized that claim construction issues are not resolved by any magic formula. The court did not impose any particular sequence of steps for a court to follow when it considers disputed claim language. *Id.* at 1323-25. Rather, *Phillips* held that a court must attach the appropriate weight to the intrinsic sources offered in support of a proposed claim construction, bearing in mind the general rule that the claims measure the scope of the patent grant.

Indefiniteness is a "legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." *Exxon Research & Eng'g Co. v. U.S.*, 265 F.3d 1371, 1376 (Fed. Cir. 2001) (citation omitted). A finding of indefiniteness must overcome the statutory presumption of validity. *See* 35 U.S.C. § 282. That is, the "standard [for finding indefiniteness] is met where an accused infringer shows by clear and convincing evidence that a skilled artisan could not discern the boundaries of the claim based on the claim language, the specification, and the prosecution history, as well as her knowledge of the relevant art area." *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249-50 (Fed. Cir. 2008).

> In determining whether that standard is met, i.e., whether the claims at issue are sufficiently precise to permit a potential competitor to determine whether or not he is infringing, we have not held that a claim is indefinite merely because it poses a difficult issue of claim construction. We engage in claim construction

> every day, and cases frequently present close questions of claim construction on which expert witnesses, trial courts, and even the judges of this court may disagree. Under a broad concept of indefiniteness, all but the clearest claim construction issues could be regarded as giving rise to invalidating indefiniteness in the claims at issue. But we have not adopted that approach to the law of indefiniteness. We have not insisted that claims be plain on their face in order to avoid condemnation for indefiniteness; rather, what we have asked is that the claims be amenable to construction, however difficult that task may be. If a claim is insolubly ambiguous, and no narrowing construction can properly be adopted, we have held the claim indefinite. If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree, we have held the claim sufficiently clear to avoid invalidity on indefiniteness grounds. . . . By finding claims indefinite only if reasonable efforts at claim construction prove futile, we accord respect to the statutory presumption of patent validity . . . and we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal.

Exxon, 265 F.3d at 1375 (citations and internal quotation marks omitted).

III. CONSTRUCTION OF AGREED TERMS

The parties have not submitted any agreed-upon constructions for the TiVo Patents. The parties have submitted the following agreed-upon constructions for terms in the Motorola Patents, which the Court hereby adopts:

Term	Patent / Claims	Agreed Construction
"buffer"	'389 Pat.; cls. 31, 61	"memory where data can be temporarily stored for transfer"
"digital video recorder"	'465 Pat.; cls. 1, 10	"a device capable of recording multimedia programs in digital form"
"allows playback rate and direction of each multimedia program to be controlled individually and simultaneously to perform any of: fast forward, rewind, frame step, pause, and play functions"	'465 Pat.; cls. 1, 10	"is capable of changing the playback rate and direction of each multimedia program such that each program can be independently and simultaneously controlled to execute any of the following modes: fast-forward, rewind, frame-step, pause and play"

"said tuners accept analog and/or digital multimedia program signals"	'465 Pat.; cl. 16	"the input signal tuners may accept: 1) analog multimedia program signals, or 2) digital multimedia signals, or 3) both analog and digital multimedia signals"
"linear cache for storing information from said data stream"	'195 Pat.; cl. 58	"a general device for buffering information contained in a stream of information"
"oldest block"	'195 Pat.; cl. 75	"the oldest block held by the linear cache"

(Dkt. No. 167, 10/17/2012 Joint P.R. 4-3 Claim Construction and Prehearing Statement.)

IV. CONSTRUCTION OF DISPUTED TERMS IN THE "MOTOROLA" PATENTS

A. U.S. Patent No. 6,304,714

The '714 Patent, titled "In-Home Digital Video Unit with Combine[d][1] Archival Storage and High-Access Storage," issued on October 16, 2001, and bears a priority date of April 21, 1995. In general, the '714 Patent discloses a home video recording and playback system that includes both an archival storage medium, such as a tape, as well as a rapid access storage medium, such as a hard disk drive. The Abstract of the '714 Patent states:

> A[] digital home video system providing recording and playback of compressed video programs using an archival storage medium; simultaneous recording and playback using the same archival medium; storage of multiple programs on a single videotape; a full array of trick mode functions; efficient management of the contents of a video tape or other archival storage medium; and real-time random access to video program content, enabling truly interactive playback. These capabilities are provided by combining the best features of an archival storage medium such as digital video tape: namely, potentially large storage capacity, but low tolerance for variable data rate, and essentially linear program access; with the complementary features of a relatively high-access storage device such as a fixed disk drive: namely, tolerance for a highly variable data rate, and random access capability, but relatively lower storage capacity.

Claim 1 of the '714 Patent recites:

[1] The patentee appears to have intended "combined" rather than "combine." (*See* Dkt. No. 173, Ex. G, 2/24/1997 Amendment and Response, at 1 (title in caption uses "combined"); Dkt. No. 173, Ex. H, 3/23/1998 Preliminary Amendment, at 1 (same).)

1. A method for simultaneously recording first digital program data onto a high-capacity archival medium partitioned into segments and playing back second digital program data from the same high-capacity archival medium, said method utilizing a high-access storage device partitioned into segments, an input buffer, and an output buffer, and comprising the following steps:

writing the first program data into the input buffer;

selecting a first current segment of the high-access storage device for writing the first program data;

transferring the first program data from the input buffer to the first current segment of the high-access storage device;

selecting a second current segment of the high-access storage device for reading the first program data;

selecting a first current segment of the high-capacity archival medium for writing the first program data;

transferring the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium;

selecting a second current segment of the high-capacity archival medium for reading the second program data;

selecting a third current segment of the high-access storage device for writing the second program data;

transferring the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device;

selecting a fourth current segment of the high-access storage device for reading the second program data;

transferring the second program data from the fourth current segment of the high-access storage device to the output buffer;

maintaining the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing;

interleaving the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer; and

reading the second program data from the output buffer,

wherein the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, the transfer of the second program data from the second current segment of the high-capacity

archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer appear simultaneous.

(1) "trick modes" (Claim 2)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"video display operations such as search, fast forward and the like"	"non-normal playback functions such as slow motion, fast forward, fast reverse and/or slow reverse"

(Dkt. No. 173, at 4.)

(a) The Parties' Positions

Motorola argues that TiVo's proposal of "non-normal" "would only confuse the jury, because the jury would not consider common functions like reverse and fast-forward to be 'non-normal.'" (Dkt. No. 173, at 5.)

TiVo responds that Motorola's list of operations is incomplete and that the proposed phrase "and the like" is indefinite. (Dkt. No. 182, at 3.) TiVo also submits that its proposal of "non-normal" "merely explains that trick modes are functions other than normal playback." (*Id.*, at 4.)

Motorola replies that "Motorola's construction is taken directly from the '714 specification at column 5, lines 55-57" and that "[n]one of the specification passages that TiVo cites use or even suggest TiVo's negative and ambiguous 'non-normal' limitation." (Dkt. No. 189, at 1.)

(b) Analysis

Claim 2 of the '714 Patent recites (emphasis added):

2. The method of claim 1, wherein the segments of the high-access storage device are of lengths enabling the use of *trick modes*.

The specification discloses (emphasis added):

> Present video playback systems are limited in several respects. Current systems offer relatively limited storage capacity, typically holding the equivalent of a single, feature-length movie on a single disc or tape. Digital video tape offers theoretically greater capacity, if aggressive data compression schemes are used. However, such compression has generally not been used with digital video tapes, because this greatly complicates the implementation of *trick mode functions such as slow motion, fast forward, and fast and slow motion reverse*.
>
> * * *
>
> [A] major limitation in the prior art is that it is impractical to store highly compressed video data on an archival medium such as video tape because playback devices for these media cannot easily adjust to the variable data rate required for VBR [(variable bit rate)] encoding or *trick mode display functions such as slow motion, fast search, or reverse play*. High-access media, while allowing variable-speed playback and recording of compressed data, have the limitation that they generally cannot hold the large quantity of information, in excess of one feature length film, that archival media can contain.
>
> * * *
>
> FIG. 2 illustrates the general, high level architecture of the present invention. In the embodiment illustrated, the present invention is integrated into a single "set-top box," 11 so-called because it is a physically separate box that is coupled to a viewer's television 12 and VCR [(video cassette recorder)] 13 (as illustrated in FIG. 1), although the invention could incorporate the VCR 13 itself, eliminating the need for another box. As shown in FIG. 2, the set-top box contains a control/management device 14 coupled to a user interface 15. The user interface 15 may be a remote control, through which a user may issue commands such as play, stop, record, or *trick-mode function commands such as search, fast forward and the like.*

('714 Patent at 1:23-32, 5:21-31 & 5:46-57.)

First, the term "non-normal," proposed by TiVo, is potentially confusing. The phrase "other than normal" will be more useful in contrasting "trick" modes with the "normal" playback mode. (*See, e.g.*, '714 Patent at 8:7-9 ("If [a viewer] wishes to 'fast forward' the read pointer 22 will rotate clockwise at a higher speed than during *normal* playback.") (emphasis added).)

Second, Motorola's proposal of "and the like," although it appears in the specification, is amorphous and potentially confusing. Instead, TiVo's exemplary list of non-normal playback modes is useful for putting "non-normal" in context. To reduce the likelihood of that list being perceived as limiting, however, "such as" should be replaced with "for example."

The Court accordingly hereby construes **"trick modes"** to mean **"playback operations other than normal play; for example, slow motion, search, fast forward, fast reverse and/or slow reverse."**

(2) "high-capacity archival medium" and "high-access storage device" (Claims 1-4, 9 & 10)

"high-capacity archival medium" (Claims 1-4, 9 & 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language); alternatively, a storage device with significantly greater storage capacity than the high access storage device."	"a linear non-random access device such as digital video tape, with significantly greater storage capacity than the high-access storage device"
"high-access storage device" (Claims 1-4, 9 & 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language); alternatively, a storage device with significantly faster and random access than the high-capacity archival medium."	"a non-linear random access storage device such as a fixed hard drive, with significantly faster access than the high-capacity archival medium"

(Dkt. No. 173, at 5.)

(a) The Parties' Positions

As to "high-capacity archival medium," Motorola argues that TiVo improperly adds "linear" and "non-random" to the construction. (Dkt. No. 173, at 5.) Motorola submits that

TiVo's proposal is inconsistent with dependent Claims 7, 8, 16, and 17. (*Id.*, at 5-6.) Motorola also argues that the '714 Patent discloses embodiments that feature non-linear, random access. (*Id.*, at 6 (citing '714 Patent at 3:38-39 & 10:29-35).) Likewise, as to "high-access storage device," Motorola argues that the claims "do not require that the storage device be 'non-linear' or 'random' or 'a hard disk.'" (*Id.*, at 6-7.) Motorola also argues claim differentiation as to dependent Claims 8 and 17. (*Id.*, at 7.) Motorola further cites disclosure of a high-access storage device acting as a "first-in-first-out ('FIFO') buffer," which Motorola submits is an inherently linear form of storage that would be read out by TiVo's proposed construction. (*Id.*)

TiVo responds that the Summary of the Invention relies upon the complementary attributes of "high-capacity" and "high-access":

> Each storage component fills the deficiency of the other. The archival medium only provides linear access. The high-access storage device overcomes this deficiency by providing random access. Likewise, the high-access storage device has a relatively low storage capacity. This shortcoming is overcome by including a "high-capacity" archival medium.

(Dkt. No. 182, at 4.) TiVo concludes that the distinction between linear and non-linear access is essential. (*Id.*, at 5.) TiVo also submits that its constructions "include 'such as' to qualify that the video tape and hard drive are exemplary devices. The same examples are given by the '714 Patent." (*Id.* (citing '714 Patent at 2:61-3:2, 4:5-23 & Fig. 2).) As to Motorola's reliance on disclosure that program segments can be stored out of order on the high-capacity archival medium, TiVo responds that *access* to the medium is nonetheless linear, which is an inherent property of, for example, a tape system. (*Id.*)

As to the prosecution history, TiVo responds that "although the Patent Office did imply that the archival medium could be a disk, the PTO also repeatedly equated the archival medium

with a video tape and the storage device as a drive." (*Id.*, at 5-6 (citing Ex. A., 9/23/1996 Office Action at 2 & 4; Ex. B, 6/2/1997 Office Action at 3; Ex. C., 8/3/1998 Office Action at 3).) TiVo also argues that in distinguishing the "Staron" reference, the patentee argued that Staron taught away from using a video tape. (*Id.*, at 6 (citing Ex. D, 8/7/1997 Amendment, at 4 & 5; Ex. E, 2/24/1997 Amendment at 12).) As to Motorola's claim differentiation argument, TiVo responds that a "hard disk may be configured to provide linear access," such as by "act[ing] as a FIFO (first-in-first-out) buffer." (*Id.*, at 6.)

Motorola replies that the linearity and randomness of each medium is relative to the other medium and is not absolute. (Dkt. No. 189, at 1-2.) Motorola also reiterates that Claim 8 recites that the high-access storage device is electronic memory and that the high-capacity archival medium is a hard disk. (*Id.*, at 2.) Motorola argues that because a hard disk is not a "linear non-random" device, Claim 8 demonstrates that TiVo's proposal that the high-capacity archival medium is "linear non-random" must be incorrect.

(b) Analysis

Although Motorola proposes plain meaning, the parties have presented a "fundamental dispute regarding the scope of a claim term," and the Court has a duty to resolve that dispute. *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362-63 (Fed. Cir. 2008).

Primarily, the parties dispute whether the "high-capacity archival medium" must be a "linear, non-random access device such as digital video tape."

Claims 7, 8, 16, and 17 of the '714 Patent, cited by Motorola, recite:

> 7. The method of claim 1, wherein the high-access storage device comprises a hard disk drive, and the high-capacity archival medium comprises digital video tape.

> 8. The method of claim 1, wherein the high-access storage device comprises electronic memory, and the high-capacity archival medium comprises a hard disk drive.
>
> * * *
>
> 16. The apparatus of claim 10, wherein the high-access storage device comprises a hard disk drive, and the high-capacity archival medium comprises digital video tape.
>
> 17. The apparatus of claim 10, wherein the high-access storage device comprises electronic memory, and the high-capacity archival medium comprises a hard disk drive.

On one hand, these dependent claims do not recite linear access or non-linear access. Further, the Summary of the Invention discloses that an archival medium provides "essentially linear" access:

> The present invention addresses the foregoing objectives by methods and apparatus that combine the features of an archival storage medium such as digital video tape: namely, potentially large storage capacity, but low tolerance for variable data rate, and *essentially linear program access*; with the complementary features of a relatively high-access storage device such as a fixed disk drive: namely, tolerance for a highly variable data rate, and random access capability, but relatively lower storage capacity.

('714 Patent at 2:61-3:2 (emphasis added).)

On the other hand, because a hard disk drive is generally a random access device, the recitation in dependent Claims 8 and 17 that "the high-capacity archival medium" can "comprise[] a hard disk drive" would readily lead a person of ordinary skill in the art to conclude that independent Claims 1 and 10 do not require the high-capacity archival medium to be a linear, non-random access device. That a hard disk could be configured to provide linear storage, as TiVo submits, should not override the plain import of Claims 8 and 17. On balance, a

linear, non-random access high-capacity archival medium is a feature of the preferred embodiment that should not be imported into the claims.

Finally, upon review, the prosecution history cited by TiVo contains no "definitive statements" that are relevant here and has no significant bearing on the construction of the disputed terms. *Omega Eng. v. Raytek Corp.*, 334 F.3d 1314, 1324 (Fed. Cir. 2003).

The Court therefore hereby construes **"high-capacity archival medium"** to mean **"a storage device with significantly greater storage capacity than the high access storage device."**

The Court also hereby construes **"high-access storage device"** to mean **"a storage device with significantly faster access than the high-capacity archival medium."**

(3) "maintaining the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing" (Claims 1-3 & 9)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language)"	"generating a signal to transfer data from the input buffer when the input buffer achieves a certain level of fullness, and generating a signal to transfer data to the output buffer when the output buffer achieves a certain level of emptiness"

(Dkt. No. 173, at 7.)

(a) The Parties' Positions

Motorola argues that contrary to TiVo's proposed construction, "[n]othing in the claim limits overflow prevention to the input buffer and underflow prevention to the output buffer." (Dkt. No. 173, at 7.) Motorola also argues that there is no requirement for generation of a signal, that the specification discloses frequent filling or emptying as a way to prevent overflow and

underflow, and that there is also disclosure of using multiple levels of fullness or emptiness. (*Id.*, at 8.)

TiVo responds that "[t]his term requires an active step of maintaining a level of fullness." (Dkt. No. 182, at 7.) TiVo further explained at the November 27, 2012 hearing that because the claims recite separate "transferring" steps, "maintaining" must mean more than merely transferring.

Motorola replies that "neither the signals nor the functions that TiVo proposes are recited or required." (Dkt. No. 189, at 3.)

(b) Analysis

Although Motorola proposes plain meaning, the parties have presented a "fundamental dispute regarding the scope of a claim term," and the Court has a duty to resolve that dispute. *O2 Micro*, 521 F.3d at 1362-63.

The parties dispute whether the disputed term requires generating a signal and whether or not overflow and underflow prevention can each operate on both the input buffer and the output buffer. Claim 1 of the '714 Patent recites, in relevant part (emphasis added):

> 1. A method for simultaneously recording first digital program data onto a high-capacity archival medium partitioned into segments and playing back second digital program data from the same high-capacity archival medium, said method utilizing a high-access storage device partitioned into segments, an *input buffer*, and an *output buffer*, and comprising the following steps:
>
> writing the first program data into the *input buffer*;
>
> . . .
>
> transferring the first program data from the *input buffer* to the first current segment of the high-access storage device;
>
> . . .
>
> transferring the second program data from the fourth current segment of the high-access storage device to the *output buffer*;
>
> *maintaining the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing*;

. . .

reading the second program data from the *output buffer*, ...

The "maintaining the level of fullness" term thus refers to keeping "the input and output buffers . . . at required levels of fullness (or emptiness)." ('714 Patent at 6:25-31.) The specification also consistently discloses that data flows in one direction such that maintaining the level of fullness involves removing data from the input buffer and adding data to the output buffer. (*See, e.g.*, *id.* at 5:62-6:9.) The disputed term should be construed accordingly. *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1144-45 (Fed. Cir. 2005) (construing term "board" to mean "wood cut from a log" in light of the patentee's consistent usage of the term; noting that patentee "is not entitled to a claim construction divorced from the context of the written description and prosecution history.").

The specification also discloses the use of "interrupts" when buffer levels reach certain levels:

> The input buffer 16 signals to the control/management device 14 when it has achieved a certain level of fullness, so that its contents may be written to the disk 17 at the direction of the control/management device 14.
>
> . . .
>
> The control/management device 14 also receives updates from an output buffer 18 which tells the control/management device 14 when it achieves a certain state of "emptiness" and is ready to receive more data from the disk 17.

(*Id.* at 5:65-6:6.)

> This main process may be interrupted by the Input Interrupt function detailed in the flowchart of FIG. 6, or the Output Interrupt function detailed in the flowchart of FIG. 7. The Input Interrupt is triggered when the input buffer 16 achieves a certain level of fullness, indicating that data must be removed and transferred to disk to prevent the input buffer 6 from overflowing.
>
> . . .

> Likewise, an Output Interrupt is triggered when the output buffer 18 achieves a certain level of emptiness, and is, thus, ready to receive more program information.

(Id. at 9:28-35 & 9:51-57.) Although the preferred embodiment thus includes the use of "interrupt" signals, TiVo has failed to justify bringing that limitation into the claims, which do not themselves recite any such signals.

The Court therefore hereby construes **"maintaining the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing"** to mean **"transferring data from the input buffer when the input buffer achieves a certain level of fullness, and transferring data to the output buffer when the output buffer achieves a certain level of emptiness."**

(4) ". . . appear simultaneous" (Claims 1-4, 9 & 10)

The full disputed term is "wherein the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer appear simultaneous."

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"the user perceives the recording of the first program data and the playback of the second program data as occurring simultaneously"	"Plain meaning"

(Dkt. No. 173, at 8-9.)

(a) The Parties' Positions

Motorola argues that "[t]he Court should construe this phrase to clarify for the jury that the 'appear simultaneous' limitation applies to the user, because it is not readily apparent from the claim language." (Dkt. No. 173, at 9 (citing '714 Patent at 5:36-42).)

TiVo responds that the portion of the specification relied upon by Motorola "states that the archival medium may record and playback simultaneously and contains no discussion about the user's perception." (Dkt. No. 182, at 8.)

Motorola replies that "TiVo offers no explanation either for the meaning of 'appear simultaneous' or for why the meaning of this limitation will be readily understood by a lay jury" and that "[t]he Court should adopt Motorola's construction, which explains what 'appears' to whom." (Dkt. No. 189, at 3.)

(b) Analysis

Although TiVo proposes plain meaning, the parties have presented a "fundamental dispute regarding the scope of a claim term," and the Court has a duty to resolve that dispute. *O2 Micro*, 521 F.3d at 1362-63.

The disputed term relates to archiving one program while at the same time retrieving and viewing another program from the archive. Along these lines, the specification discloses that "the present invention . . . provide[s] the user with the ability to play and record using the same archival medium, e.g., a DVT [(digital video tape)], simultaneously." ('714 Patent at 5:36-42.)

As to the meaning of "simultaneous," the patentee explained during prosecution that "'simultaneous' means that the process of playback and recording *overlap in time*, not

simultaneous access to the storage medium at any given instant." (Dkt. No. 173, Ex. G, 2/24/1997 Amendment and Response, at 8 (emphasis added).) The patentee then later explained in more detail:

> [T]he Examiner stated that Applicants' attempt to claim simultaneous transfer of "the compressed data from the input buffer to the high access storage device and the transfer of compressed data from the high access storage device to the high capacity archival medium" would not be allowed because the claims do not themselves support it. "[T]he applicant's argument does not supported by the claimed invention since nowhere in claims do they suggest that the compressed data from input buffer is transferring to the high access storage device in the same time the compressed data from the high access storage device is transferred to the high capacity archival medium. Furthermore it is noted that interleaved transferring is different from simultaneous transferring." Examiner's response, page 2, line 18 to page 3, line 3.
>
> Applicants respectfully traverse the Examiner's argument. The interleaving of compressed data transfers (and, as amended in claims 1, 7, 21 and 27, "repeated" interleaving of compressed data transfers) results in data transfers that are functionally, if not literally, simultaneous in that the interleaving is invisible to the user's perception. Therefore, applicants respectfully request that the Examiner withdraw his basis for rejection. In addition, because Lang, Lynch and Staron do not teach this element, and in fact were not cited as prior art relevant to this element, there is no basis for rejection under 35 U.S.C. § 102 or § 103.
>
> Applicants have also entered new claims 42, 43, 45 and 47, which claim compressed data transfers that are not simultaneous but "appear simultaneous with respect to a user's perception." Applicants respectfully submit that these claims are in condition for allowance.

(Dkt. No. 173, Ex. H, 3/23/1998 Preliminary Amendment, at 9.) The patentee thus explained that the appearance of simultaneous operations resulted from interleaving the processes so as to overlap in time.

Although the constituent term "appears" suggests some element of user perception, the above-quoted arguments by the patentee during prosecution demonstrate that a more helpful construction would address the overlap in time, whereby the transfers "appear simultaneous"

because they occur in a manner such that playback is not interrupted. Such a construction would also be more helpful than Motorola's proposed repetition of the constituent term "simultaneous" in the construction.

The Court therefore hereby construes **". . . appear simultaneous"** to mean **"the recording of the first program data and the playback of the second program data are overlapping in time such that playback is not interrupted."**

(5) "means for selecting . . ." (Claim 10)

"means for selecting a first current segment of the high-access storage device for writing the first program data" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "selecting a first current segment of the high-access storage device for writing the first program data" Structure: "Control Management Device 14 that selects a free segment from a list of available segments, or equivalents"	Function: "select a first current segment of a high-access storage device to write the first program data" Structure: "Indefinite OR a control/management device that moves a write pointer in a clockwise direction as physically far as possible from the current position of the read pointer by using the formula (i=j+(number of segments)/2) and finding the nearest free segment as described in elements 50-60 of Figure 6"

"means for selecting a second current segment of the high-access storage device for reading the first program data" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "selecting a second current segment of the high-access storage device for reading the first program data" Structure: "Control Management Device 14 that selects the next segment to be transferred from its list of segments, or equivalents"	Function: "select a second current segment of a high-access storage device to read the first program data" Structure: "Indefinite OR a control/management device that moves a read pointer to the oldest full segment of data"
"means for selecting a first current segment of the high-capacity archival medium for writing the first program data" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "selecting a first current segment of the high-capacity archival medium for writing the first program data" Structure: "Control Management Device 14 that selects a free segment from a directory of available segments of the high-capacity archival medium, or equivalents"	Function: "select a first current segment of a high-capacity archival medium to write the first program data" Structure: "Indefinite OR a control/management device that selects a segment M of the high-capacity archival medium by mapping segment M to the second current segment of the high-access storage device"

"means for selecting a second current segment of the high-capacity archival medium for reading the second program data" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "selecting a second current segment of the high-capacity archival medium for reading the second program data" Structure: "Control Management Device 14 that selects a second segment of the high-capacity archival medium from its directory of segments, or equivalents"	Function: "select a second current segment of the high-capacity archival medium to read the second program data" Structure: "Indefinite OR a control/management device that selects a segment M-1 of the high-capacity archival medium"
"means for selecting a third current segment of the high-access storage device for writing the second program data" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "selecting a third current segment of the high-access storage device for writing the second program data" Structure: "Control Management Device 14 that selects a third current segment of the high-access storage device from its list of available segments, or equivalents"	Function: "select a third current segment of the high-access storage device to write the second program data" Structure: "Indefinite OR a control/management device that maps a third current segment of the high-access storage device to the second current segment of the high-capacity archival medium"

"means for selecting a fourth current segment of the high-access storage device for reading the second program data" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "selecting a fourth current segment of the high-access storage device for reading the second program data" Structure: "Control Management Device 14 that selects the segment of the high-access storage device that contains the next portion of the second program data, or equivalents"	Function: "select a fourth current segment of the high-access storage device to read the second program data" Structure: "Indefinite OR a control/management device that moves a read pointer in a clockwise or counterclockwise direction to a segment of the high-access storage device"

(Dkt. No. 173, at 10-11.)

(a) The Parties' Positions

Motorola argues that "the structure that performs the recited function includes the control management device that selects a free segment from a list of available segments, or equivalents." (Dkt. No. 173, at 11.) Motorola submits that "the patent refers to the structure TiVo seeks to add to claim 10 as being 'for purposes of simplicity and explanation'—not as being necessary for performing the recited function." (*Id.*, at 12 (citing '714 Patent at 7:10-13).) Motorola also notes the disclosure that a chronological segment of video data "need not be stored in one place on the disk." (*Id.* (citing '714 Patent at 7:28-32).)

TiVo responds that Motorola's proposed constructions "fail[] to state how a particular segment is selected." (Dkt. No. 182, at 10.) In other words, TiVo argues that "[t]he corresponding structure must include structure that identifies which segment is to be selected from the segments of the archival medium and storage device." (*Id.*) As to TiVo's proposed references to clockwise or counterclockwise directions, TiVo responds that such a construction is

required for the corresponding structure, as illustrated in Figure 4 of the '714 Patent. (*Id.*, at 11.) TiVo notes in this regard: "The fact that the data associated with a particular segment may be located in non-contiguous spaces on a disk is irrelevant. The selecting means clauses pertain to selecting a segment, not how data of a segment is physically stored in memory." (*Id.*, at 12.) TiVo concludes:

> TiVo's constructions accurately describe the different structures required to perform the various segment selection functions. As noted above, the structure for selecting the first current segment of the high-access storage device during the claimed simultaneous storage and playback mode is described at ['714 Patent] at 9:44-50 and is adopted by TiVo's construction. The structure for selecting the second current segment of the high-access storage device includes moving the read pointer to the oldest full segment of data. *Id.* at 8:12-19. TiVo's construction for selecting the first current segment of the archival medium and third current segment of the high-access storage device includes structure that maps segments of the archival medium to the high-access storage device. *Id.* at 7:21-25. As previously mentioned, the structure for selecting the second current segment of the high-capacity archival medium includes structure that selects segment M-1. *Id.* at 7:19-20; Fig. 5. Finally, the structure for selecting the fourth current segment of the high-access storage device includes moving the read pointer in a clockwise or counterclockwise direction. *Id.* at 7:10-15.

(Dkt. No. 182, at 12-13.)

Motorola replies that "the terms 'first,' 'second,' 'third,' and 'fourth' do not denote any particular temporal or logical relationship among the various segments of the high-access storage device and the high-capacity archival medium." (Dkt. No. 189, at 4 (citing *Free Motion Fitness, Inc. v. Cybex Int'l, Inc.*, 423 F.3d 1343, 1348 (Fed. Cir. 2005) ("The use of the terms 'first' and 'second' is a common patent-law convention to distinguish between repeated instances of an element or limitation.")).) Motorola also argues that "TiVo inexplicably interprets the patent figures as physical structure, then imports these interpreted structures into its constructions."

(*Id.*, at 4.) Motorola concludes that "the only required structure for the claimed selecting functions is the Control Management Device 14 and a directory of segments." (*Id.*, at 5.)

(b) Analysis

Claim 10 of the '714 Patent recites (emphasis added):

> 10. An apparatus for simultaneously recording first digital program data onto a high-capacity archival medium partitioned into segments and playing back second digital program data from the same high-capacity archival medium, comprising:
> an input buffer;
> an output buffer;
> a high-access storage device partitioned into segments;
> means for receiving the first program data and storing the received first program data into the input buffer;
> *means for selecting a first current segment of the high-access storage device for writing the first program data*;
> means for transferring the first program data from the input buffer to the first current segment of the high-access storage device;
> *means for selecting a second current segment of the high-access storage device for reading the first program data*;
> *means for selecting a first current segment of the high-capacity archival medium for writing the first program data*;
> means for transferring the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium;
> *means for selecting a second current segment of the high-capacity archival medium for reading the second program data*;
> *means for selecting a third current segment of the high-access storage device for writing the second program data*;
> means for transferring the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device;
> *means for selecting a fourth current segment of the high-access storage device for reading the second program data*;
> means for transferring the second program data from the fourth current segment of the high-access storage device to the output buffer;
> means for maintaining the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing;
> means for interleaving the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium,

the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer; and

means for reading the second program data from the output buffer,

wherein the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer appear simultaneous.

The parties agree that the disputed terms are means-plus-function terms governed by 35 U.S.C. § 112, ¶ 6. The parties also substantially agree on the claimed functions.

General legal principles regarding indefiniteness are discussed in Section II., above. As to means-plus-function terms, "[i]f there is no structure in the specification corresponding to the means-plus-function limitation in the claims, the claim will be found invalid as indefinite." *Biomedino, LLC v. Waters Techs. Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007). Further, "the written description must clearly link or associate structure to the claimed function." *Telcordia Techs., Inc. v. Cisco Sys., Inc.*, 612 F.3d 1365, 1376 (Fed. Cir. 2010).

On balance, the disclosure of a "control/management device 14" is sufficient corresponding structure to avoid indefiniteness. TiVo has not met its burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50.

As to the proper construction, TiVo's alternative proposed construction agrees that the corresponding structure includes the "control/management device 14." The remaining dispute, then, is whether the "control/management device 14" is programmed simply to select appropriate

segments or is programmed to move pointers in the particular manner set forth in the specification.

The term "control/management device" refers to a processor programmed according to particular algorithms. *See Ergo Licensing, LLC v. Carefusion 303, Inc.*, 673 F.3d 1361, 1363-64 (Fed. Cir. 2012) ("The recitation of 'control device' provides no more structure than the term 'control means' itself, rather it merely replaces the word 'means' with the generic term 'device.'"); *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999) ("In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm.").

At a general level, the specification discloses:

> [T]he control/management device 14 communicates with the high-access storage device 17, directing it to accept data from the input buffer 16 or from the archival storage medium 20 via a buffer, or to transfer data to the output buffer 18, or the archival storage medium 20, and indicating which segments are to be read from or written to.

('714 Patent at 6:17-23.) Figure 4 is illustrative of the "segments" and is reproduced here:

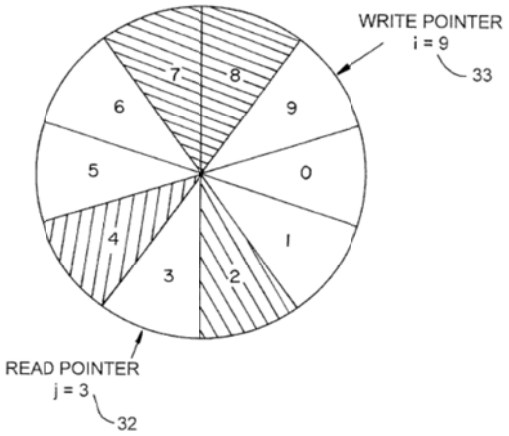


FIG. 4.

The specification explains with reference to Figure 4:

> FIG. 4 illustrates a high-access storage device divided into ten segments. The number of segments may be varied depending on disk capacity and the desired amount of data to be stored in each segment. As illustrated by FIG. 4 (for purposes of simplicity and explanation), data is stored to the disk in a clockwise direction. Data is read from the disk in a clockwise direction for forward playback, counter-clockwise for reverse playback. The current segment being written to is designated by a write pointer 33, designated "i" in the illustration. The current disk segment being read from is designated by a read pointer 32, designated "j" in the illustration. Next and previous read segments are designated by "j+1" and "j-1" respectively.
>
> Each disk segment is mapped to a corresponding tape segment. Thus, tape segment "m" corresponds to disk segment "j", and tape segment "n" corresponds to disk segment "i". Each disk or tape segment can contain a set amount of compressed video data. On the tape medium, each segment would consist of a physically contiguous portion of the tape. A segment on the disk, however, may actually consist of several physically separate spaces on the magnetic medium, in other words, one chronological portion of the video data (as seen when played back in real time), although designated as one "segment" need not be stored in one place on the disk. For purposes of this illustration, it is assumed that each segment contains, on average, one half hour of program data. So, for example, the information in tape segment "m" would be copied to disk segment "j" (and retained for some time) as necessary to maintain enough video information on the disk for the user to be able to view, fast forward, or rewind through a program. As discussed previously, accessing information from the disk 17, rather than

directly from the DVT [(digital video tape)] 20, allows the viewer to take advantage of the high-access medium 17 to jump in near real time from one part of a program to another. Similarly, data collected on the disk 17 from an outside source (such as broadcast or cable) through the input buffer 16 and stored in segment "i" of the disk would be written to tape segment "n" at the direction of the control/management device 14.

Thus, through the procedures detailed below, the control/management device 14 handles data transfer between outside source, display 12, tape 20, and disk 17 such that the user may view a taped program, via tape segments stored to disk, while the same tape is recording information from the outside source, again through data previously stored to segments of the high-access storage device.

EXAMPLE

Simultaneous Tape Playback and Recording

Referring again to FIG. 4, the read pointer 32 is currently in segment no. 3 (i.e. j=3). Data from this segment is currently being decoded and displayed to the viewer. Segment no. 4 contains the next half hour of programming information, while segment no. 2 contains the previous half hour. If the viewer desires to watch the program at normal speed, the read pointer 32 will rotate clockwise, next pointing to segment no. 4. Eventually, older data, such as that in segment no. 2, will be overwritten with new information. However, if the viewer wishes to "rewind" to an earlier portion of the program, the read pointer 32 will rotate counter-clockwise to segment no. 2. If he or she wishes to "fast forward" the read pointer 22 will rotate clockwise at a higher speed than during normal playback. In fact, the speed of read pointer 32 rotation is proportional to the commanded playback speed.

At the same time, the write pointer 33 is currently in segment no. 9. After this segment becomes completely filled with data from the input buffer 6, a new segment, in the preferred embodiment, the available segment farthest away from the read pointer 32 (as shown in the flow chart of FIG. 6 detailing the input interrupt function, discussed later), will be selected. In this example, segment nos. 7 and 8 have been completely filled, but have not yet been transferred to tape. Segment nos. 0, 1, 5, and 6 are free segments that have not yet been allocated for reading or writing.

* * *

This main process may be interrupted by the Input Interrupt function detailed in the flowchart of FIG. 6, or the Output Interrupt function detailed in the flowchart of FIG. 7. The Input Interrupt is triggered when the input buffer 16 achieves a

> certain level of fullness, indicating that data must be removed and transferred to disk to prevent the input buffer 6 from overflowing. Each interrupt causes a block of data to be sequentially written to disk segment "i," (element 47) and this process continues until disk segment "i" becomes full. A new segment is then selected from the list of available segments, and the write pointer 33 is placed at the beginning of that segment. If simultaneous playback is not in progress, then this new segment can be determined simply by incrementing the value of "i" (elements 50 and 53). During simultaneous recording and playback, the process of the present invention places the write pointer 33 as far from the current position of the read pointer 32 as possible (setting i=j+(number of segments)/2), and then finds the nearest free segment and designates it for writing (elements 50-60). Data is then transferred from the input buffer 16 to the beginning of the designated disk segment.
>
> * * *
>
> In practice, and in the preferred embodiment, these segments can be stored in random order by maintaining a directory which maps the chronological segment number to an actual sequence number on the DVT 20.

('714 Patent at 7:7-8:22, 9:28-50 & 10:29-33.) Although TiVo's alternative proposed corresponding structures are generally consistent with this disclosure, the specific pointer algorithms disclosed are not necessary to perform the claimed functions. *Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) (noting that the court may not import "structural limitations from the written description that are unnecessary to perform the claimed function").

The Court therefore hereby construes the disputed "means for selecting . . ." terms as follows:

Term	Construction
"means for selecting a first current segment of the high-access storage device for writing the first program data" (Claim 10)	Function: "selecting a first current segment of the high-access storage device for writing the first program data" Structure: "Control Management Device 14 that selects a free segment of the high-access storage device from a list of available segments, and equivalents thereof"
"means for selecting a second current segment of the high-access storage device for reading the first program data" (Claim 10)	Function: "selecting a second current segment of the high-access storage device for reading the first program data" Structure: "Control Management Device 14 that selects the next segment to be transferred from the high-access storage device, and equivalents thereof"
"means for selecting a first current segment of the high-capacity archival medium for writing the first program data" (Claim 10)	Function: "selecting a first current segment of the high-capacity archival medium for writing the first program data" Structure: "Control Management Device 14 that selects a free segment from a directory of available segments of the high-capacity archival medium, and equivalents thereof"

“means for selecting a second current segment of the high-capacity archival medium for reading the second program data” (Claim 10)	Function: “selecting a second current segment of the high-capacity archival medium for reading the second program data” Structure: “Control Management Device 14 that selects a second segment of the high-capacity archival medium from its directory of segments, and equivalents thereof”
“means for selecting a third current segment of the high-access storage device for writing the second program data” (Claim 10)	Function: “selecting a third current segment of the high-access storage device for writing the second program data” Structure: “Control Management Device 14 that selects a third current segment of the high-access storage device from its list of available segments, and equivalents thereof”
“means for selecting a fourth current segment of the high-access storage device for reading the second program data” (Claim 10)	Function: “selecting a fourth current segment of the high-access storage device for reading the second program data” Structure: “Control Management Device 14 that selects the segment of the high-access storage device that contains the next portion of the second program data, and equivalents thereof”

(6) "means for transferring . . ." (Claim 10)

"means for transferring the first program data from the input buffer to the first current segment of the high-access storage device" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "transferring the first program data from the input buffer to the first current segment of the high-access storage device" Structure: "Control Management Device 14 that communicates with the high-access storage device, directing it to accept data from the input buffer, or equivalents"	Function: "transfer the first program data from the input buffer to the first current segment of the high-access storage device" Structure: "Indefinite OR a control/management device that receives an interrupt from the input buffer and controls the transfer of the first program data from the input buffer to the first current segment of the high-access storage device"
"means for transferring the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "transferring the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium" Structure: "Control Management Device 14 that controls the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium and updates its list of free segments, or equivalents"	Function: "transfer the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium" Structure: "Indefinite OR a control/management device that controls the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium and then updates the value of a table to -1 as described in elements 34-38 of Figure 5"

"means for transferring the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "transferring the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device" Structure: "Control Management Device 14 that controls the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device and updates its list of free segments, or equivalents"	Function: "transfer the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device" Structure: "Indefinite OR a control/management device that controls the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device then updates the value of a table to 1 as described in elements 39-46 of Figure 5"
"means for transferring the second program data from the fourth current segment of the high-access storage device to the output buffer" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "transferring the second program data from the fourth current segment of the high-access storage device to the output buffer" Structure: "Control Management Device 14 that controls the transfer of the second program data from the fourth current segment of the high-access device to the output buffer, or equivalents"	Function: "transfer the second program data from the fourth current segment of the high-access storage device to the output buffer" Structure: "Indefinite OR a control/management device that receives an interrupt from the output buffer and controls the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer"

(Dkt. No. 173, at 13-14.)

The Joint Claim Chart Pursuant to P.R. 4-5(d) states the parties have reached agreement on all of these "means for transferring . . ." terms. (Dkt. No. 192, Ex. 1, 11/14/2012 Joint Claim Construction Chart for '714 Patent, at 9-13.)

The Court therefore hereby construes the "means for transferring . . ." terms in accordance with the parties' agreements as follows:

Term	Construction
"means for transferring the first program data from the input buffer to the first current segment of the high-access storage device" (Claim 10)	Function: "transferring the first program data from the input buffer to the first current segment of the high-access storage device" Structure: "Control Management Device 14 that communicates with the high-access storage device, directing it to accept data from the input buffer, or equivalents"
"means for transferring the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium" (Claim 10)	Function: "transferring the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium" Structure: "Control Management Device 14 that controls the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium and updates its list of free segments, or equivalents"

“means for transferring the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device” (Claim 10)	Function: “transferring the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device” Structure: “Control Management Device 14 that controls the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device and updates its list of free segments, or equivalents”
“means for transferring the second program data from the fourth current segment of the high-access storage device to the output buffer” (Claim 10)	Function: “transferring the second program data from the fourth current segment of the high-access storage device to the output buffer” Structure: “Control Management Device 14 that controls the transfer of the second program data from the fourth current segment of the high-access device to the output buffer, or equivalents”

(7) "means for maintaining the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing" (Claim 10)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "maintain the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing" Structure: "Control Management Device 14 that receives status information from input buffer and output buffer, or equivalents"	Function: "maintain a level of fullness of the input and output buffers to prevent overflowing of the input buffer, or underflowing of the output buffer" Structure: "Indefinite OR a control/management device that receives an interrupt from the input buffer to transfer data from the input device when the input buffer has achieved a certain level of fullness, and receives an interrupt from the output buffer to transfer data to the output buffer when the output buffer has achieved a certain level of emptiness"

(Dkt. No. 173, at 15; Dkt. No. 192, Ex. 1, 11/14/2012 Joint Claim Construction Chart for '714 Patent, at 13.)

(a) The Parties' Positions

Motorola argues that TiVo's proposal is too narrow because it would "limit the phrase to a single embodiment in which the control/management device receives an interrupt." (Dkt. No. 173, at 16.)

TiVo responds that "[r]eceiving status information from the input and output buffers," as proposed by Motorola, "does not correspond to the function of maintaining a level of fullness" because "[t]he status information may be unrelated to buffer fullness and is too general of a term." (Dkt. No. 182, at 14.)

Motorola replies that "TiVo's proposed corresponding structure . . . adds two unrecited interrupt signals and two unrecited functions to the claim." (Dkt. No. 189, at 5.) Motorola

concludes that "Motorola's identified structure (Control Management Device 14) implements the actual claimed function of maintaining a level of fullness by, for example, prioritizing the transfers from and to the input and output buffers." (*Id.* (citing '714 Patent at 6:23-26, 9:57-60 & 9:61-10:24).)

(b) Analysis

The parties agree that the disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6.

As to the recited function, TiVo proposes that the function is limited to "prevent[ing] overflowing of the input buffer, or underflowing of the output buffer," whereas Motorola proposes that the function is preventing either buffer from overflowing or underflowing. As discussed in subsection IV.A.(3), above, regarding the "maintaining . . ." term, TiVo's proposal should be adopted in this regard because the specification consistently discloses that the direction of data flow is out of the input buffer and into the output buffer.

As with the "means for selecting . . ." and "means for transferring . . ." terms discussed in the preceding subsections, the disclosure of a "control/management device 14" is sufficient corresponding structure to avoid indefiniteness. TiVo has not met its burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50.

As to the proper corresponding structure, the specification discloses "status information" received from the buffers (emphasis added):

> The control/management device 14 also receives status information from an input buffer 16 . . . . The input buffer 16 signals to the control/management device 14 when it has achieved a certain level of fullness, so that its contents may be written to the disk 17 at the direction of the control/management device 14. The control/management device 14 also receives updates from an output buffer 18 which tells the control/management device 14 when it achieves a certain state of

> 'emptiness' and is ready to receive more data from the disk 17. The output buffer 18 also sends data to the television set 12 or monitor after decoding at the direction of the control/management device 14.

('714 Patent at 5:62-6:8.)

The specification further discloses "interrupts" that can interrupt normal processing and cause data to be removed from, or written to, the buffers:

> This main process may be interrupted by the Input Interrupt function detailed in the flowchart of FIG. 6, or the Output Interrupt function detailed in the flowchart of FIG. 7. The Input Interrupt is triggered when the input buffer 16 achieves a certain level of fullness, indicating that data must be removed and transferred to disk to prevent the input buffer 6 from overflowing. Each interrupt causes a block of data to be sequentially written to disk segment "i," (element 47) and this process continues until disk segment "i" becomes full. A new segment is then selected from the list of available segments, and the write pointer 33 is placed at the beginning of that segment. If simultaneous playback is not in progress, then this new segment can be determined simply by incrementing the value of "i" (elements 50 and 53). During simultaneous recording and playback, the process of the present invention places the write pointer 33 as far from the current position of the read pointer 32 as possible (setting i=j+(number of segments)/2), and then finds the nearest free segment and designates it for writing (elements 50-60). Data is then transferred from the input buffer 16 to the beginning of the designated disk segment.
>
> Likewise, an Output Interrupt is triggered when the output buffer 18 achieves a certain level of emptiness, and is, thus, ready to receive more program information. Data is then transferred from the segment indicated by the current position of the read pointer 32 to the output buffer 18 (step represented by element 63). In the preferred embodiment of the invention, the Output Interrupt would have a lower priority than the Input Interrupt to prevent the input buffer from overflowing.

('714 Patent at 9:28-60.) The corresponding structure should therefore include the "status information" and "interrupts" as alternatives. *See Ishida Co., Ltd. v. Taylor*, 221 F.3d 1310, 1316 (Fed. Cir. 2000) (noting that a patent can "disclose[] alternative structures for accomplishing the claimed function"). Finally, although both alternative structures refer to transferring data to or from "disk," neither Motorola nor TiVo propose such a limitation, and the

particular source or sink for the data is not of consequence to maintaining the levels of fullness. The "disk" is therefore not a necessary part of the corresponding structure. *Wenger*, 239 F.3d at 1233 (noting that the court may not import "structural limitations from the written description that are unnecessary to perform the claimed function").

The Court therefore hereby finds that the term **"means for maintaining the level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing"** is not indefinite, that the function is to **"maintain a level of fullness of the input and output buffers to prevent said input and output buffers from underflowing or overflowing,"** and that the corresponding structure is **"Control Management Device 14 that transfers data from an input buffer or to an output buffer in response to status information (or an interrupt) received from the buffer indicating a certain level of fullness, and equivalents thereof."**

(8) "means for interleaving . . ." (Claim 10)

The full disputed term is "means for interleaving the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer."

Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "interleaving the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer" Structure: "Control Management Device 14 that interleaves the recited transfers over a single data path to the high-access storage device at a rate faster than real time, or equivalents"	Function: "interleaving the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, with the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, and the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer" Structure: "Indefinite OR a control/management device that controls the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, then the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, then the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and finally the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer at a rate faster than the normal presentation rate of the program data"

(Dkt. No. 173, at 16.)

The Joint Claim Chart Pursuant to P.R. 4-5(d) sets forth an agreed construction for this term. (Dkt. No. 192, Ex. 1, 11/14/2012 Joint Claim Construction Chart for '714 Patent, at 9-13.) The Court accordingly construes the term according to the parties' agreement, as follows:

The Court hereby finds that for the **"means for interleaving . . ."** term, the function is **"interleaving the transfer of the first program data from the input buffer to the first current segment of the high-access storage device, the transfer of the first program data from the second current segment of the high-access storage device to the first current segment of the high-capacity archival medium, the transfer of the second program data from the second current segment of the high-capacity archival medium to the third current segment of the high-access storage device, and the transfer of the second program data from the fourth current segment of the high-access storage device to the output buffer"** and the corresponding structure is **"Control Management Device 14 that interleaves the recited transfers over a single data path to the high-access storage device at a rate faster than real time, or equivalents thereof."**

(9) "means for receiving the first program data and storing the received first program data into the input buffer" and "means for reading the second program data from the output buffer" (Claim 10)

"means for receiving the first program data and storing the received first program data into the input buffer" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "receiving the first program data and storing the received first program data into the input buffer " Structure: "Broadcast signal or cable system, optional encoder 22, and input to input buffer 16, or equivalents"	Function: "receive first program data and store the received first program data into an input buffer" Structure: "Indefinite OR an encoder"
"means for reading the second program data from the output buffer" (Claim 10)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "reading the second program data from the output buffer" Structure: "decoder 19"	Function: "read the second program data from the output buffer" Structure: "Indefinite OR a decoder"

(Dkt. No. 173, at 17-18.)

(a) The Parties' Positions

Motorola argues that the encoder is optional structure for the "means for receiving . . ." because "[t]he patent discloses a preferred embodiment where the incoming signals are already encoded, such as broadcast or cable data streams." (Dkt. No. 173, at 18 (citing '714 Patent at 5:64-65 & 7:44-49).) Motorola also submits that "[o]n the output side, the parties agree that the disclosed structure for reading the second program data is a decoder." (Dkt. No. 173, at 18.)

TiVo responds that "[a]s shown in Fig. 2 of the '714 Patent . . . , the only structure disclosed in the specification that receives data and stores the data in the input buffer is the encoder 22." (Dkt. No. 182, at 14.) TiVo also argues that the passages cited by Motorola do not clearly disclose that the incoming data stream is already encoded, and TiVo poses the question that "[i]f the incoming signal was always encoded then why does the only embodiment disclosed in the '714 Patent show an encoder[?]" (*Id.*, at 15.) Finally, TiVo urges that the "broadcast signal or cable system" proposed by Motorola refers to signals, which cannot constitute structure for receiving, storing, or reading. (*Id.*)

Motorola replies that "that the incoming signals, such as broadcast or cable signals, are 'possibly encoded.'" (Dkt. No. 189, at 5 (citing '714 Patent at 5:62-65).) Motorola concludes that "[i]f the incoming signal is already encoded, an encoder cannot be required structure for the claimed function of receiving and storing first program data into an input buffer" because then "[a]ll that is required is the input to the input buffer, or the broadcast signal or cable system itself." (*Id.*) Finally, as to TiVo's argument that the above-cited reference to "possibly encoded" refers to action of the encoder, Motorola replies that "[b]ecause the invention is directed to handling variable bit rate compressed digital data (that is, encoded data), the only plausible reading of 'possibly' is that the incoming data is possibly already encoded." (*Id.*)

(b) Analysis

The parties agree that the disputed terms are means-plus-function terms governed by 35 U.S.C. § 112, ¶ 6. The parties also substantially agree on the recited function.

The encoder that TiVo argues must be part of the corresponding structure for the "means for receiving . . ." is illustrated in Figure 2, on which TiVo relies and which is reproduced here:

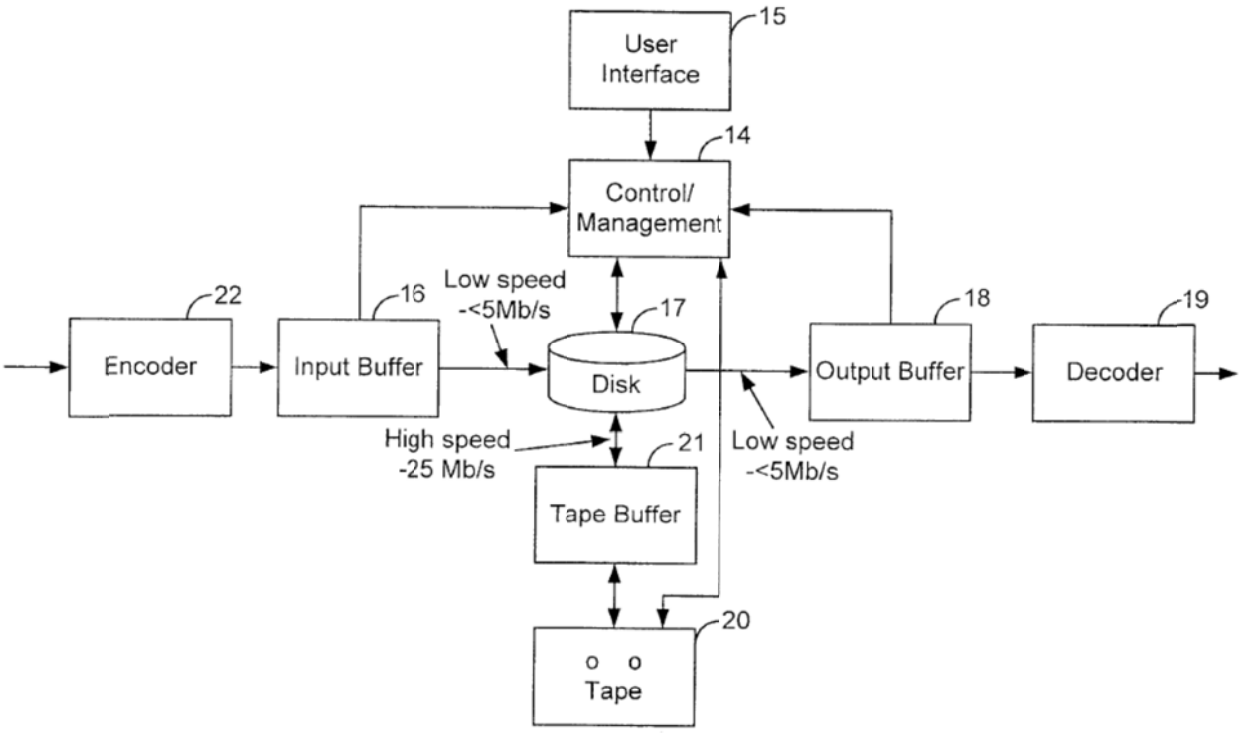


FIG. 2.

The specification discloses:

> The control/management device 14 also receives status information from an input buffer 16, which provides temporary storage for incoming signals, *possibly encoded* and encrypted, *such as broadcast or cable data streams*.

('714 Patent at 5:64-65 (emphasis added).) The specification also later refers to "data collected on the disk 17 from an outside source (*such as broadcast or cable*)." (*Id.* at 7:44-45.)

Even though the incoming signals may themselves be encoded or encrypted in some manner, the only structure disclosed for performing the recited function of receiving program data and storing to the input buffer is the encoder 22. This fact is underscored by Motorola's contorted proposal for the corresponding structure, which attempts to bring in the broadcast or cable system as well as some undefined "input" to the input buffer. Instead, Figure 2 illustrates

encoder 22 as the structure that receives program data and stores it into the input buffer. On balance, the encoder 22 is the corresponding structure for the "means for receiving . . ." term. *Frank's Casing Crew & Rental Tools, Inc. v. Weatherford Int'l, Inc.*, 389 F.3d 1370, 1377 (Fed. Cir. 2004) (affirming that a "lift plate" is a necessary structure for the term "means for selectively pivoting" when the "only structure identified" in the patent for performing the function includes a lift plate).

As for the "means for reading . . .," TiVo's alternative proposal agrees with Motorola that the corresponding structure is the decoder 19.

Finally, the disclosures of a "encoder 22" and "decoder 19" are sufficient corresponding structure to avoid indefiniteness. TiVo has not met its burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50.

The Court therefore hereby finds that the term **"means for receiving the first program data and storing the received first program data into the input buffer"** is not indefinite, that the function is **"receive first program data and store the received first program data into an input buffer,"** and that the corresponding structure is **"encoder 22, and equivalents thereof."**

The Court also hereby finds that the term **"means for reading the second program data from the output buffer"** is not indefinite, that the function is **"read the second program data from the output buffer,"** and that the corresponding structure is **"decoder 19, and equivalents thereof."**

B. U.S. Patents No. 5,949,948 and 6,356,708

The '948 Patent, titled "Method and Apparatus for Implementing Playback Features for Compressed Video Data," issued on September 7, 1999, and bears a filing date of November 20,

1995. The '708 Patent, which issued on March 12, 2002, is a divisional of the '948 Patent. The '708 Patent and the '948 Patent share a common title, common figures, and a common written description. The Abstracts of the '948 Patent and the '708 Patent are the same and state:

> A compressed video playback system which eliminates playback mode transition artifacts. Transitions between various playback modes are effected in such a manner that transition artifacts are eliminated by delaying playback mode transitions until appropriate frames of data are detected for propagation to the compressed video decoder. In addition, compressed video data retrieval methods are improved for supporting multi-speed playback modes in both forward and reverse directions in an optimal manner.

Thus, the '948 Patent and the '708 Patent generally relate to so-called "trick play" features for compressed digital video playback, such as fast-forward and rewind.

> (1) "A system for decoding and displaying compressed video data on a display device" ('948 Patent, Claim 1) and "A system for providing compressed video data in a controlled sequence, the system receiving the compressed video data from a compressed program source" ('948 Patent, Claim 16)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"Preamble is limiting; plain language"	"Plain meaning"

(Dkt. No. 173, at 20.)

The Joint Claim Chart Pursuant to P.R. 4-5(d) states the parties have reached agreement that the preambles of Claim 1 and 16 are limiting and should be construed to have their plain meaning. (Dkt. No. 192, Ex. 2, 11/14/2012 Joint Claim Construction Chart for '948 Patent, at 17-18.)

The Court therefore hereby finds in accordance with the parties' agreement that as to the preambles of Claims 1 and 16 of the '948 Patent, **"preamble is limiting; plain language."**

(2) "a storage device for storing the compressed video data" and "the storage and playback controller coupled to communicate with the storage device" ('948 Patent, Claims 1, 6, 16 & 20)

"a storage device for storing the compressed video data" ('948 Patent, Claims 1, 6, 16 & 20)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language)"	"one or more hard disks or memory or other device that stores compressed video data"
"the storage and playback controller coupled to communicate with the storage device" ('948 Patent, Claims 1, 6, 16 & 20)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language)"	"a controller that controls the writing and reading of compressed video data onto and from the storage device"

(Dkt. No. 173, at 20-22.)

(a) The Parties' Positions

As to "a storage device for storing the compressed video data," Motorola proposes plain meaning, arguing that "TiVo's proposed construction, which broadly includes any 'other device that stores compressed video data,' is nearly identical to the claim language itself and subsumes the additional words TiVo adds to its proposed construction." (Dkt. No. 173, at 21.) As to "the storage and playback controller coupled to communicate with the storage device," Motorola argues "the language of this limitation is self-explanatory" and that "[o]ther limitations of the claim specify what the controller does, so there is no need to insert 'writing' and 'reading' into a construction of what the controller is." (*Id.*, at 22.)

TiVo responds that construction is necessary because "coupled to communicate" in the "storage and playback controller" term is vague and does not convey the true relationship

between the storage and playback controller and the storage device." (Dkt. No. 182, at 18.) TiVo further responds that Motorola's contention "that writing and reading of data is not a required function of the storage and playback controller . . . contradicts the very name of the controller." (*Id.*)

Motorola replies as to "a storage device for storing the compressed video data" that TiVo's proposal, which includes "or other device," is "an exercise of meaningless redundancy." (Dkt. No. 189, at 6.) Motorola also argues that "coupled to communicate" is readily understandable because "'[c]oupled' simply indicates a connection." (*Id.* (citing *Gen. Elec. Co. v. Int'l Trade Comm'n*, 685 F.3d 1034, 1045 (Fed. Cir. 2012).) Motorola concludes that the disputed term "does not require any particular functions to be implemented through the recited coupling." (*Id.*, at 6.)

(b) Analysis

Claims 1, 6, 16, and 20 recite (emphasis added):

> 1. A system for decoding and displaying compressed video data on a display device comprising:
>
> *a storage device for storing the compressed video data*, the compressed video data comprising independent picture data and dependent picture data and the compressed video data not being specially formatted to facilitate a high speed playback mode;
>
> a decoder coupled to communicate with a *storage and playback controller* for decoding the compressed video data for display on the display device; and
>
> the *storage and playback controller coupled to communicate with the storage device* for controlling the delivery of the compressed video data to the decoder, the *storage and playback controller* configured for operation during a transition interval between a current playback mode and a desired playback mode, wherein the current playback mode lacks certain picture data needed for operation of the desired playback mode, the *storage and playback controller* further configured to prevent decoding artifacts by discarding the compressed video data until receipt of a next independent picture data in response to an instruction for transitioning to the desired playback mode from the current playback mode,

forwarding the next frame of independent picture data to the decoder, and thereafter selectively forwarding frames of dependent picture data to the decoder.

* * *

6. The system of claim 5 further comprising a host processor for incorporating the table maintenance means and for providing the playback mode transition instruction to the *storage and playback controller*.

* * *

16. A system for providing compressed video data in a controlled sequence, the system receiving the compressed video data from a compressed program source, the system comprising:

a *storage device for storing the compressed video data* when it is received from the compressed program source, the compressed video data comprising at least first and second picture data types, and the compressed video data not being specifically formatted to facilitate a high speed playback mode;

a first picture data type detector coupled to monitor the compressed video data from the compressed program source as the compressed video data are stored in the *storage device*;

a table maintenance means coupled to communicate with the first picture data type detector for maintaining a table of *storage device* locations corresponding to storage locations for the independent picture data detected by the detector; and

a *storage and playback controller coupled to communicate with the storage device* for storing the compressed video data therein and for controlling delivery of the compressed video data, the *storage and playback controller* configured for retrieving data from the *storage device* by referring to the table for a storage location in the *storage device* for a next desired frame of compressed video data of the first picture data type.

* * *

20. The system of claim 16 further comprising a host processor for incorporating the table maintenance means and for providing the playback mode transition instruction to the *storage and playback controller*.

The specification discloses:

The compressed program data are typically written to a Storage Device 140 under the control of Controller 130. Alternatively, the Compressed Program Source 110 may deliver the data directly to the Storage Device 140. Storage Device 140 may comprise one or more hard disks that stores the entire data stream for delayed

> decoding, a computer memory which buffers a moving window of the data stream needed for on-the-fly decoding, or any other storage device.

('948 Patent at 6:39-47). This disclosure, relied upon by TiVo, relates to preferred embodiments and should not be imported into the claims. *Electro Med.*, 34 F.3d at 1054 ("[A]lthough the specifications may well indicate that certain embodiments are preferred, particular embodiments appearing in a specification will not be read into the claims when the claim language is broader than such embodiments.").

On balance, the disputed terms are plain on their faces, particularly in the context of the claims in which they appear, quoted above. The Court need not construe terms under such circumstances, and attempting to do so here would likely obfuscate rather than clarify the scope of the claims. *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see O2 Micro*, 521 F.3d at 1362 ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.").

The Court therefore hereby construes the terms **"a storage device for storing the compressed video data"** and **"the storage and playback controller coupled to communicate with the storage device"** to have their plain meaning.

(3) "the compressed video data not being specially [specifically] formatted to facilitate a high speed playback mode" ('948 Patent, Claims 1, 6, 16 & 20)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language)"	"the stored compressed video data does not include markers inserted into the compressed video data that identify independent picture data and facilitate a high speed playback mode"[2]

(Dkt. No. 173, at 21.)

(a) The Parties' Positions

Motorola argues that during prosecution, the patentee distinguished the "Hatakenaka" reference as having a special high-speed format. (Dkt. No. 173, at 21.) Motorola urges that "TiVo's flawed construction would erroneously recapture the specialized high-speed formats disclosed in Hatakenaka because such specialized formats 'do not include markers that identify independent picture data.'" (*Id.*, at 21-22.) Instead, Motorola argues, Hatakenaka disclosed a separate high-speed stream. (*Id.*, at 21.) Motorola further argues that "TiVo's construction improperly excludes [the] preferred [MPEG] embodiment, because an MPEG data stream by definition must include 'markers that identify independent picture data and facilitate a high speed playback mode.'" (*Id.*, at 22.)

TiVo responds that the patentee added the language at issue not to distinguish Hatakenaka but rather to distinguish the "Fujinami" reference, which disclosed a specialized format "in which I-pictures are specially marked for detection upon playback . . . ." (Dkt. No.

[2] TiVo's response brief modified its proposal, which originally was "the stored compressed video data does not include markers that identify independent picture data and facilitate a high speed playback mode." (*See* Dkt. No. 167, Ex. A1, 10/17/2012 Joint Claim Construction Chart for '948 Patent, at 2.)

182, at 19-20 (quoting Ex. F, 1/22/1998 Preliminary Amendment, at 7).) TiVo argues that its proposed construction would not exclude the preferred MPEG embodiment because "Fujinami disclosed inserting special markers into an MPEG stream." (*Id.*, at 20.) TiVo concludes that MPEG-formatted data is not "specially formatted" and is not excluded from the scope of the claims. (*Id.*)

Motorola replies that "TiVo's new proposed construction continues to exclude the preferred MPEG embodiment and therefore cannot be correct." (Dkt. No. 189, at 6.) Motorola submits that the language at issue was added in response to Hatakenaka, not Fujinami, and that Hatakenaka "used two separate data streams, one dedicated for only high speed and the other for normal playback." (*Id.*, at 6-7.) Finally, Motorola notes that "Fujinami inserts an entry packet immediately in front of an I-frame that includes, among other things, the location of other entry packets in front of other preceding and subsequent I-frames . . . ." (*Id.*, at 7.)

(b) Analysis

Although Motorola proposes plain meaning, the parties have presented a "fundamental dispute regarding the scope of a claim term," and the Court has a duty to resolve that dispute. *O2 Micro*, 521 F.3d at 1362-63.

The April 21, 1997 Amendment and Response added the ". . . not being specially formatted . . ." term that is here in dispute. (Dkt. No. 173, Ex. I, 4/21/1997 Amendment and Response, at 2.) Motorola has not provided the Office Action to which the patentee was responding, but according to the patentee's response, Hatakenaka, United States Patent No. 5,282,049, "*requires a specially formatted data stream for facilitating a high speed playback mode*." (*Id.*, at 8.) The patentee explained that Hatakenaka was distinguishable because

application claim 28 (which issued as Claim 1) used "only a single data stream suitable for both normal and high-speed playback":

> [N]o matter how Hatakenaka's elements are corresponded to Applicant's storage and playback controller, *Hatakenaka requires a specially formatted data stream for facilitating a high speed playback mode*. In contrast, the invention of claims 28 and 53 do not require any such specially formatted data. Rather, only a single data stream suitable for both normal and high-speed playback need be provided to the storage and playback controller. Applicants have amended independent claims 28 and 53 to more clearly emphasize this difference over Hatakenaka.
>
> It is axiomatic that for a reference to be anticipating, each and every element claimed must be disclosed. *Hatakenaka completely fails to disclose or suggest either transitioning during the playback process or operability without a specially formatted data stream for enabling high speed playback and, for these reasons, can not anticipate independent claims 28 or 53 or their respective dependent claims, 29-33, 36, and 54-55.*

(*Id*. (italics in original; underlining added).)

The prosecution history cited by TiVo occurred later and involved a rejection based on Fujinami, United States Patent No. 5,568,274. TiVo has not provided the Office Action to which the patentee was responding, but the patentee's response explains that:

> Fujinami discloses a method and apparatus for producing a specially formatted compressed data stream in which I-pictures are specially marked for detection upon playback, while claims 39, 43 & 48 of the present invention explicitly use "compressed video data not being specifically formatted to facilitate a high speed playback mode." In addition, Fujinami's specially formatted data are usable only with a specially modified decoder, while claims 39, 43 & 48 may be used without such a specially modified decoder.

(Dkt. No. 182, Ex. F, 1/22/1998 Preliminary Amendment, at 7) (emphasis omitted).) Although TiVo has not shown that the patentee made these statements with regard to the same claims that are here at issue, the statements relate to the same term. *Phillips*, 415 F.3d at 1314 (noting that "claim terms are normally used consistently throughout the patent").

In sum, Hatakenaka disclosed a separate stream for high-speed playback, whereas Fujinami disclosed specially modifying a stream, so as to facilitate high-speed playback of that same stream, by adding markers that identify independent picture data. The parties dispute which of these concepts the patentee disclaimed by adding the ". . . not being specially formatted . . ." limitation. On balance, both of the above-quoted portions of the prosecution history constitute "definitive statements" disclaiming from the claim scope any separate high-speed stream or any stream that has been specially modified for high-speed playback by the addition of markers that identify independent picture data. *Omega Eng.*, 334 F.3d at 1324. They do not, however, exclude a standard MPEG stream because such a stream is not specially formatted for high-speed playback.

The Court therefore hereby construes **"the compressed video data not being specially [specifically] formatted to facilitate a high speed playback mode"** to mean **"the stored compressed video data: (1) has not been specially modified, with the addition of markers that identify independent picture data, to facilitate a high speed playback mode; and (2) does not include a separate high-speed data stream."**

(4) "a transition interval between a current playback mode and a desired playback mode" ('948 Patent, Claims 1 & 6) and "detecting a playback transition instruction ('708 Patent, Claims 1, 9 & 11)

"a transition interval between a current playback mode and a desired playback mode" ('948 Patent, Claims 1 & 6)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language); alternatively, the interval during which the system transitions between the current playback mode and the desired playback mode"	"an interval of time during which the storage and playback controller operates in a state that is not the current playback mode or the desired playback mode"[3]
"detecting a playback transition instruction" ('708 Patent, Claims 1, 9 & 11)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language); alternatively, detecting an instruction that causes a playback transition"	"detecting an instruction that causes a transition interval during which the method operates in a state that is not a current playback mode or a desired playback mode"[4]

(Dkt. No. 173, at 23; Dkt. No. 192, Ex. A3, 11/14/2012 Joint Claim Construction Chart for '708 Patent, at 22.)

(a) The Parties' Positions

Motorola submits that "during this [playback mode] transition, the decoder may continue to decode and display images as long as its buffer does not empty." (Dkt. No. 173, at 23.) Motorola cites an example wherein: "At all times, the system is either in the current fast forward playback mode, sending I-frames to the decoder, or the desired normal playback mode, sending

[3] TiVo's response brief modified its proposal, which previously had been "an interval of time during which the system is not in the current playback mode or the desired playback mode." (*See* Dkt. No. 167, Ex. A1, 10/17/2012 Joint Claim Construction Chart for '948 Patent, at 3.)
[4] TiVo previously proposed "detecting an instruction that causes a transition interval that is not a current playback mode or a desired playback mode." (Dkt. No. 182, at 21.)

all frames to the decoder. TiVo's constructions requiring a mode other than a current or desired mode would impermissibly read this embodiment out of the claims." (*Id.*, at 24.)

TiVo responds that Motorola "tries to blur the lines" between the "current playback mode, a desired playback mode, and a transition interval 'between' these playback modes." (Dkt. No. 182, at 21.) Specifically, TiVo submits that "[t]he third state of operation is a transition interval in which compressed video data is discarded until independent picture data (I-frame) is received." (*Id.*, at 22.) TiVo also argues that Motorola's reliance on the disclosure of the continued displaying of images by the decoder "is irrelevant to the claimed operating states of the storage and playback controller." (*Id.*) In other words, TiVo argues, what is relevant for the claims at issue is what is being provided to the decoder, not what the decoder is causing to be displayed. (*Id.*)

Motorola replies that "[t]he claims simply require an interval during which the system transitions between the current and desired playback modes." (Dkt. No. 189, at 7.) Motorola notes that during the transition between fast forward and regular playback, for example, only I-frames are displayed, which is also true during fast forward. (*Id.*) Motorola submits that in this example, the purposed transition interval is not distinguishable from the current playback mode. (*Id.*) Motorola therefore concludes that TiVo's proposed negative limitation that the transition interval is "not the current playback mode or the desired playback mode" should be rejected.

(b) Analysis

Claims 1 and 6 of the '948 Patent recite (emphasis added):

> 1. A system for decoding and displaying compressed video data on a display device comprising:
>
> a storage device for storing the compressed video data, the compressed video data comprising independent picture data and dependent picture data and

the compressed video data not being specially formatted to facilitate a high speed playback mode;

a decoder coupled to communicate with a storage and playback controller for decoding the compressed video data for display on the display device; and

the storage and playback controller coupled to communicate with the storage device for controlling the delivery of the compressed video data to the decoder, the storage and playback controller configured for operation during *a transition interval between a current playback mode and a desired playback mode*, wherein the current playback mode lacks certain picture data needed for operation of the desired playback mode, the storage and playback controller further configured to prevent decoding artifacts by discarding the compressed video data until receipt of a next independent picture data in response to an *instruction for transitioning* to the desired playback mode from the current playback mode, forwarding the next frame of independent picture data to the decoder, and thereafter selectively forwarding frames of dependent picture data to the decoder.

* * *

6. The system of claim 5 further comprising a host processor for incorporating the table maintenance means and for providing the playback mode *transition instruction* to the storage and playback controller.

Claims 1, 9, and 11 of the ‘708 Patent recite (emphasis added):

1. A method for preventing decoding artifacts when changing playback characteristics of a video data stream, comprising the steps of:

receiving encoded data including frames of at least first and second frame types, the first and second frame types operable for normal playback of the video data stream;

stepping through the encoded data on a frame-by-frame basis;

detecting a playback transition instruction;

after *detecting the playback transition instruction*, inhibiting forwarding the encoded data until receipt of data corresponding to a frame of the first frame type;

forwarding the frame of the first frame type for decoding; and

after forwarding the frame of the first frame type, selectively forwarding frames of the second frame type for decoding.

* * *

9. A method for preventing decoding artifacts when changing playback characteristics of a video data stream, comprising the steps of:

receiving encoded data including frames of at least first and second frame types, the first and second frame types operable for normal playback of the video data stream;

stepping through the encoded data on a frame-by-frame basis;

detecting a playback transition instruction;

detecting a frame of the first frame type;

forwarding the frame of the first frame type for decoding; and

after forwarding the frame of the first frame type, selectively forwarding frames of the second frame type for decoding.

* * *

11. The method of claim 9 wherein the step of forwarding the frame of first frame type comprises the steps of:

forwarding the frame of the first frame type for decoding upon detecting a predetermined occurrence of the frame of the first frame type; and

granting forwarding permission for the frames of the second frame type upon determining from the *transition instruction* that the frames of the second frame type are to be provided for decoding.

The specification discloses (emphasis added):

From the foregoing it can be appreciated that it is desirable, and is therefore an object of the present invention, to prevent transition artifacts when changing playback modes in a multi-speed playback compressed video system.

* * *

In accordance with one embodiment of the present invention where the compressed video data are encoded in accordance with the MPEG standard, the storage controller will *delay switching to the requested playback mode until the transition is completed*. *Upon entry into a transition interval*, all retrieved data frames will be discarded until the occurrence of the next I-frame. This eliminates the possibility of interframe images being supplied to the decoder for which no reference frame is available for accurate frame depiction. . . . In some implementations it may be desirable to instruct the decoder to flush or empty its associated buffer *upon entering a transition interval*. However, since this will not shorten the *duration of the interval*, a more pleasing effect may be achieved by allowing the decoder to continue decoding and displaying images as long as its buffer does not become empty. In this way the halting of the decoding and display processes may be delayed and in some cases prevented depending on the duration of the transition interval.

('948 Patent at 4:41-44, 5:1-20 & 7:22-32.) This disclosure of "delay[ing] switching" and of continuing to decode from the output buffer during the delay does *not* mean that the system is always either in the current playback mode or the desired playback mode. Motorola has also relied on the following passage from the specification:

> For example, during forward playback at high speed or reverse playback at any speed, generally only the I-frames are selected by the Controller 130 and provided to the decoder . . . . When transitioning from one of these modes to normal playback, the sequence in which frames are selected by the Controller 130 and presented to the decoder, is altered. In this particular case, the Controller 130 will stop discarding P-frames and B-frames from the compressed bit stream and instead will pass all types of frames to the Decoder 150.

('948 Patent at 7:22-32.) Although this passage might be read as disclosure of an embodiment in which the transition occurs instantly, without any interval between the current playback mode and the desired playback mode, Claims 1 and 6 of the '948 Patent expressly recite a "transition interval *between* a current playback mode and a desired playback mode," during which data is discarded in order to avoid presenting artifacts to the viewer. Motorola has failed to justify reading out the "transition interval," which is recited as a distinct period of time "between" the current playback mode and the desired playback mode in Claims 1 and 6 of the '948 Patent.

Claims 1, 9, and 11 of the '708 Patent, quoted above, recite a "playback transition instruction" but do not recite a "transition interval." TiVo's attempt to import the "transition interval" from the claims of the '948 Patent into the claims of the '708 Patent is hereby expressly rejected. Also, the term "detecting a playback transition instruction" is sufficiently clear, on its face and in the context of the claims, such that no construction is necessary. *U.S. Surgical*, 103 F.3d at 1568 ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use

in the determination of infringement. It is not an obligatory exercise in redundancy."); *see O2 Micro*, 521 F.3d at 1362 ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.").

The Court therefore hereby construes **"a transition interval between a current playback mode and a desired playback mode"** in Claims 1 and 6 of the '948 Patent to mean **"an interval of time during which the storage and playback controller stops the current playback mode and operates to start the desired playback mode."**

The Court hereby construes **"detecting a playback transition instruction"** in Claims 1, 9, and 11 of the '708 Patent to have its plain meaning.

(5) "discarding the compressed video data until receipt of a next independent picture data" ('948 Patent, Claims 1 & 6) and "inhibiting forwarding the encoded data until receipt of data corresponding to a frame of the first frame type" ('708 Patent, Claim 1)

"discarding the compressed video data until receipt of a next independent picture data" ('948 Patent, Claims 1 & 6)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language); alternatively, disabling the processing of compressed video data until receipt of a next independent picture data"	"disabling the selection of detected dependent picture data until a next independent picture data is detected"
"inhibiting forwarding the encoded data until receipt of data corresponding to a frame of the first frame type" ('708 Patent, Claim 1)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language); alternatively, disabling the processing of encoded data until receipt of data corresponding to a frame of the first frame type"	"disabling the selection of detected frames of the second frame type until data corresponding to a frame of the first frame type is detected"

(Dkt. No. 173, at 24.)

(a) The Parties' Positions

Motorola submits that "the specification uses both 'discarding' and 'disabling the selection of' to describe various aspects of the preferred embodiment, but the claim only incorporates 'discarding.'" (Dkt. No. 173, at 24 (citing '948 Patent at 8:6-23).) Motorola argues that the claim recites receipt of independent picture data, *not* detection of dependent picture data. (*Id.*, at 25.) Motorola also argues claim differentiation as to dependent Claim 5 of the '948 Patent, which recites an "independent picture data detector." (*Id.*) As to the term "inhibiting forwarding the encoded data," Motorola also argues claim differentiation as to dependent Claim 2 of the '708 Patent, which "explicitly adds a step of 'detecting' a frame of the first frame type, so this detecting is presumptively not present in independent claim 1." (*Id.*)

TiVo responds that "[t]he association of selecting with discarding is reflected in the language of the claims" because "[t]he storage and playback controller has the function of selectively forwarding frames to the decoder." (Dkt. No. 182, at 23.) TiVo concludes that "[i]f forwarding data includes the act of selecting, then the corollary is that discarding requires disabling the selection of data." (*Id.*) As to TiVo's proposal of "detected," TiVo responds that "[t]he detection of frame type is inherently required by the claim" because "the storage and playback controller must evaluate or somehow know whether a particular frame of data is of the independent frame [(I-frame)] type." (*Id.*) Finally, TiVo argues that the dependent claims cited by Motorola are irrelevant because they do not relate to forwarding data to the decoder. (*Id.*, at 25.)

Motorola replies:

> The main problems with TiVo's construction, which reads in limitations of "disabling the selection" and "detected data," are demonstrated by the specification passage that TiVo quotes: "For the majority of transitions, in which disablement is implemented, a variable called SELECT is set to 0 in step 220 to indicate that any subsequent data are also to be discarded rather than passed onto the decoder, SELECT will remain unchanged until the beginning of the first I-frame is detected at step 240." TiVo Response at 24; '948 patent 8:20-25. First, the passage states that for the "majority of transitions," the claim can be practiced by detecting "the first I-frame" data without detecting the data frames that are to be discarded or inhibited. Second, this passage describes the SELECT function merely as an embodiment for indicating that "data are to be discarded." Third, the specification discloses another embodiment for discarding data, which is to avoid retrieving storage locations that do not correspond to any I-frame data. '948 patent at 9:22[-]27, 11:35-55. Data that is not retrieved cannot be detected and the selection of such data need not be disabled.

(Dkt. No. 189, at 8.)

(b) Analysis

Although Motorola proposes plain meaning, the parties have presented a "fundamental dispute regarding the scope of a claim term," and the Court has a duty to resolve that dispute. *O2 Micro*, 521 F.3d at 1362-63.

Claims 1 and 6 of the '948 Patent recite (emphasis added):

> 1. A system for decoding and displaying compressed video data on a display device comprising:
>
> a storage device for storing the compressed video data, the compressed video data comprising independent picture data and dependent picture data and the compressed video data not being specially formatted to facilitate a high speed playback mode;
>
> a decoder coupled to communicate with a storage and playback controller for decoding the compressed video data for display on the display device; and
>
> the storage and playback controller coupled to communicate with the storage device for controlling the delivery of the compressed video data to the decoder, the storage and playback controller configured for operation during a transition interval between a current playback mode and a desired playback mode, wherein the current playback mode lacks certain picture data needed for operation of the desired playback mode, the storage and playback controller further configured to prevent decoding artifacts by *discarding the compressed video data* until receipt of a next independent picture data in response to an instruction for

transitioning to the desired playback mode from the current playback mode, forwarding the next frame of independent picture data to the decoder, and thereafter selectively forwarding frames of dependent picture data to the decoder.

* * *

6. The system of claim 5 further comprising a host processor for incorporating the table maintenance means and for providing the playback mode transition instruction to the storage and playback controller.

Claim 1 of the '708 Patent recites:

1. A method for preventing decoding artifacts when changing playback characteristics of a video data stream, comprising the steps of:

receiving encoded data including frames of at least first and second frame types, the first and second frame types operable for normal playback of the video data stream;

stepping through the encoded data on a frame-by-frame basis;

detecting a playback transition instruction;

after detecting the playback transition instruction, *inhibiting forwarding the encoded data* until receipt of data corresponding to a frame of the first frame type;

forwarding the frame of the first frame type for decoding; and

after forwarding the frame of the first frame type, selectively forwarding frames of the second frame type for decoding.

TiVo relies upon Figure 2 as showing "[t]he inherent steps of detecting frame type and determining whether the detected frame type should be forwarded to the decoder" (Dkt. No. 182, at 24):

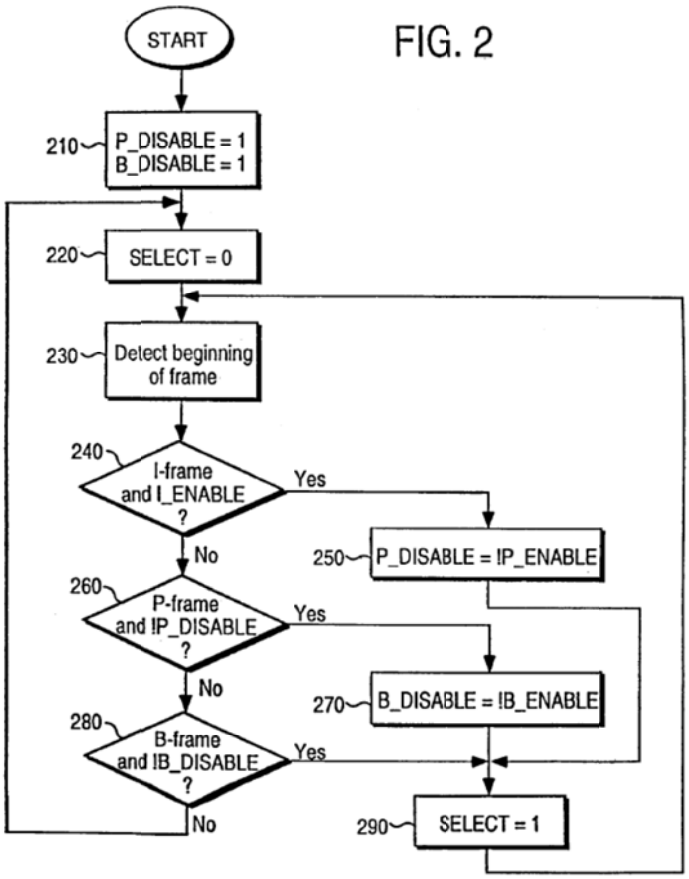


FIG. 2

The specification discusses Figure 2 as follows (emphasis added):

> A method for preventing such transition artifacts is described with reference to FIG. 2. Upon receiving a command to transition to a different playback mode, the Controller 130 determines the types of frames that are needed for the specified playback mode according to Table I below:

TABLE I

PLAYBACK MODE	I_ENABLE	P_ENABLE	B_ENABLE
NORMAL PLAYBACK	1	1	1
SLOW MOTION FORWARD	1	1	1
MEDIUM FORWARD	1	1	0
FAST FORWARD	1	0	0
SLOW REVERSE	1	0	0
MEDIUM REVERSE	1	0	0
FAST REVERSE	1	0	0

For example, normal playback or slow motion forward playback requires I-, P- and B-frames, medium forward requires only I- and P-frames, and fast forward or any reverse speed requires only I-frames. The required frame types for a given playback mode are indicated by setting I_ENABLE, B_ENABLE and P_ENABLE to 1 or 0, depending on whether I-frames, P-frames, and B-frames are to be *allowed or disallowed* respectively during the particular mode of playback subsequent to the transition.

Once the required frame types are specified, the Controller 130 implements the process shown in FIG. 2 in accordance with the specified frame types. In step 210, frame-forwarding variables P_DISABLE and B_DISABLE are set to 1 in order to temporarily *disable the selection* of P-and B-frames that would cause artifacts absent the prerequisite frames. Such disablement is required for most playback transitions; however, those skilled in the art will appreciate that for certain transitions, temporary disablement need not occur. For example, in transitioning from medium forward playback (I- and P-frames) to normal playback (I-, P- and B-frames), it would not be necessary to disable either P- or B-frames prior to the first I-frame after the transition command. For the majority of transitions, in which disablement is implemented, *a variable called SELECT is set to 0 in step 220 to indicate that any subsequent data are also to be discarded rather than passed on to the decoder*. SELECT will remain unchanged until the beginning of the first I-frame is detected at step 240. When this occurs, SELECT will be set to 1, in step 290, so that the I-frame data will be *selected and provided to the decoder*. Once the first I-frame has been detected and *forwarded to the Decoder 150*, subsequent P-frames can be *forwarded to the Decoder 150* without danger of transition artifacts due to a missing prerequisite I- or P-frame. P_DISABLE is then turned off to allow subsequent selection of P-frames if P-frames are required for the specified playback mode. Thus, in step 250, if P-frames are required (P_ENABLE=1), then P_DISABLE is set to 0, but if P-frames are not required (P_ENABLE=0), then P_DISABLE remains set at 1.

Steps 260 and 270 illustrate a process for enabling the selection of B-frames analogous to that for enabling the selection of P-frames in steps 240 and 250. That is, once the first P-frame has been selected (P_DISABLE=0 in step 260), B-frame selection can be enabled if B-frames are required (B_ENABLE =1 in step 270) and any required B-frames can be sent to the Decoder 150 in step 280 without danger of transition artifacts due to a missing prerequisite P- or I-frame. Of course, if P-frames are not required (P_DISABLE=1), B-frame selection will never be enabled (step 270 is skipped and B_DISABLE remains at 1 as initialized in step 210), and B-frames will always be discarded (condition ‘n’) at step 280.

At this point, the transition process is completed and a steady state process begins. This method of *frame selection during transitions* will insure that the Decoder 150-will only receive frames that can be properly decoded during the entire

> transition period. Of course, any subsequent transition, either prior to or after completion of the present transition, would restart the process in its entirety. For example, whenever a new playback mode is specified, a reset signal could be sent to the Controller 130 to jump to step 210 of FIG. 2. The method can also be used when accessing a compressed bit stream for the first time or when randomly accessing one or more bit streams at any point thereafter.

('948 Patent at 7:47-8:62.)

At first blush, TiVo's proposal of disabling the selection of dependent picture data comports with the above-quoted disclosure as well as the recitation of "selectively forwarding" in the claims. The disputed terms themselves, however, recite discarding or inhibiting the encoded data as a whole, not selectively discarding dependent picture data. TiVo's proposal in that regard should therefore be rejected.

Nonetheless, TiVo's proposal of "disabling the selection" should prevail over Motorola's proposal of "disabling the processing" because the specification repeatedly refers to disabling "selection." (*Id.* at 8:7-9:11.) "Processing," by contrast, might be read to refer to decoding, but the disputed terms require that discarded or inhibited data is not sent to the decoder. TiVo's proposal of "disabling the selection" is therefore more accurate than Motorola's proposal of "disabling the processing."

The Court therefore hereby construes **"discarding the compressed video data until receipt of a next independent picture data"** in Claims 1 and 6 of the '948 Patent to mean **"disabling the selection of compressed video data until receipt of a next independent picture data."**

The Court similarly hereby construes **"inhibiting forwarding the encoded data until receipt of data corresponding to a frame of the first frame type"** in Claim 1 of the '708

Patent to mean **"disabling the selection of encoded data until receipt of data corresponding to a frame of the first frame type."**

(6) "table maintenance means . . ." ('948 Patent, Claims 6, 16 & 20)

"a table maintenance means coupled to communicate with the independent picture data detector and with the storage and playback controller, the table maintenance means for maintaining a table of storage locations in the storage device corresponding to storage locations for the independent picture data detected by the independent picture detector" ('948 Patent, Claim 6)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "maintaining a table of storage locations in the storage device corresponding to storage locations for the independent picture data detected by the independent picture detector" Structure: "logic that updates the table in memory of the storage locations of the independent picture data detected by the independent picture detector, by reading the sequence number corresponding to the detected I-frame and matching it with the current storage location, or equivalents" "Otherwise, no construction necessary (plain language"[5]	Function: "maintaining a table of storage device locations corresponding to storage locations in the storage device for the independent picture data detected by the independent picture data detector" Structure: "Indefinite OR a table that identifies the locations in the storage device of blocks of data that can be retrieved and scanned to identify independent picture data"

[5] This final paragraph was added by the parties' Joint Claim Chart Pursuant to P.R. 4-5(d). (Dkt. No. 192, Ex. 2, 11/14/2012 Joint Claim Construction Chart for '948 Patent, at 20.)

"a table maintenance means coupled to communicate with the first picture data type detector for maintaining a table of storage device locations corresponding to storage locations for the independent picture data detected by the detector" ('948 Patent, Claims 16 & 20)	
Motorola's Proposed Construction	**TiVo's Proposed Construction**
Function: "maintaining a table of storage device locations corresponding to storage locations for the independent picture data detected by the detector" Structure: "the logic that updates the table in memory of the storage locations corresponding to the storage locations for the independent picture data detected by the detector, by reading the sequence number corresponding to the detected I-frame and matching it with the current storage location, or equivalents" "Otherwise, no construction necessary (plain language"[6]	Function: "maintaining a table of storage device locations corresponding to storage locations in the storage device for the first picture data detected by the first picture data type detector" Structure: "Indefinite OR a table that identifies the locations in the storage device of blocks of data that can be retrieved and scanned to identify independent picture data"

(Dkt. No. 173, at 25-26; Dkt. No. 192, Ex. 2, 11/14/2012 Joint Claim Construction Chart for '948 Patent, at 20.)

(a) The Parties' Positions

Motorola argues that "rather than disclose a table that maintains itself, the '948 patent discloses that the table is maintained by Host Processor 520," which "maintains the table, by (1) 'read[ing] the sequence number corresponding to the detected I-frame' and (2) 'match[ing] it with the storage block currently being addressed on Storage Device 140.'" (Dkt. No. 173, at 26 (citing '948 Patent at 5:33-35, 11:64-12:1 & 12:5-8).)

[6] This final paragraph was added by the parties' Joint Claim Chart Pursuant to P.R. 4-5(d). (Dkt. No. 192, Ex. 2, 11/14/2012 Joint Claim Construction Chart for '948 Patent, at 20.)

TiVo responds that because for efficiency reasons the I-frames are not necessarily located at block boundaries, "the '948 Patent discloses identifying storage locations associated with blocks of data that contain I-frames, not to the exact location of the I-frames within the storage device." (Dkt. No. 182, at 26.) As a result, the specification discloses, the blocks must be scanned to find the I-frames. (*Id.*)

Motorola replies that TiVo's proposed alterations to the recited function are inappropriate, that "TiVo proposes a construction for a table rather than for structure that maintains a table," that "TiVo adds improper descriptions of the data that the table should contain, such as 'blocks of data,'" and that the claim "does not require that the data be at some later moment exposed to unclaimed functions such as the 'retrieved and scanned' clause in TiVo's construction." (Dkt. No. 189, at 9.)

(b) Analysis

The parties agree that the disputed terms are means-plus-function terms governed by 35 U.S.C. § 112, ¶ 6.

The specification explains the problem of non-sequential playback of frames:

> Ideally, the storage blocks which are retrieved would correspond to the frames which are to be displayed and the storage blocks which are skipped would correspond to the frames which are to be discarded. However, in practice, an exact correspondence is difficult to achieve. Storage devices are typically sub-divided into fixed-size storage blocks and any transfer of information must be rounded upwards to the nearest integral number of storage blocks. Frames, on the other hand, are variable in size with I-frames typically containing more data than P-frames and P-frames typically containing more data than B-frames. These frames need not begin at storage block boundaries and it would be inefficient to force such a constraint. Moreover, the size of these frames would not be known at the time they are to be retrieved unless additional steps are taken to calculate and store these values in advance. The preferred solution is to transfer at least a fixed minimum number of storage blocks to the Controller each time data are to

> be retrieved. For simplicity, this fixed minimum amount of data corresponding to an arbitrary number of storage blocks, will be referred to as a single storage block.

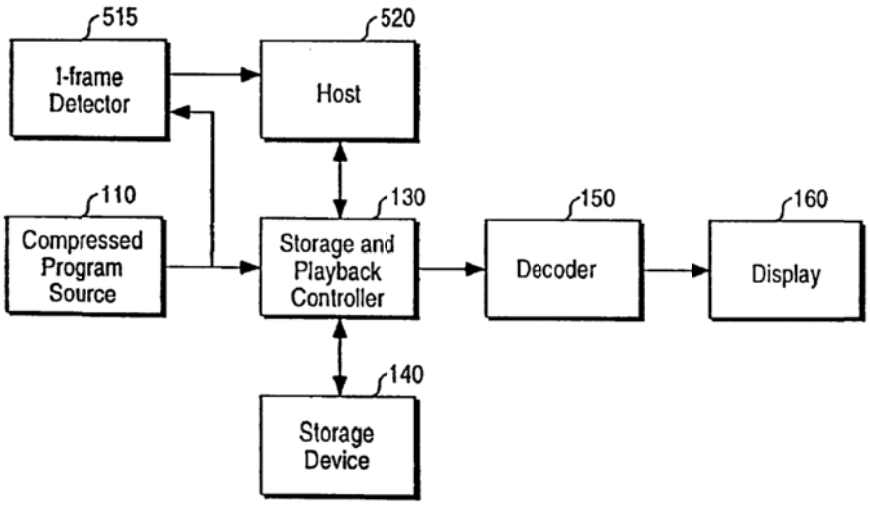
('948 Patent at 9:24-45.) In one embodiment, the locations of I-frames are unknown and are located by estimating the location of the next I-frame and then searching for it. (*Id.* at 5:21-32.)

An alternative embodiment involves the claimed "table maintenance means" that is here at issue:

> In an alternative embodiment of the present invention, a mechanism is introduced for tabling the memory location of each I-frame in a compressed video program. As the compressed program is received by a storage device, an I-frame detector notes the arrival of each I-frame and provides this information to a host system which may control the maintenance of a table which corresponds I-frames to particular blocks of memory in the storage device. In this way, efficient and rapid retrieval of I-frame data blocks may be provided by the storage controller for providing appropriate blocks of memory to the decoder for effecting various playback modes.
>
> * * *
>
> FIG. 5 illustrates a block diagram of a compressed video display system in which tables are maintained to facilitate the efficient retrieval of compressed video data for display at various playback speeds in accordance with the flow diagram at FIG. 4.

(*Id.* at 5:33-45 & 5:63-67.) Figure 5, reproduced here, depicts an "I-frame Detector 515" and a "Host 520":

FIG. 5



The specification explains the embodiment of Figure 5 as follows (emphasis added):

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

> shown in FIG. 5. In this embodiment, the User Interface 120 has been replaced by a more flexible *Host Processor 520 which not only performs the functions of the User Interface 120 but also maintains the I-frame block mapping table*. As will be appreciated by those skilled in the art, Host 520 can be any computer, microprocessor, microcontroller or other programmable or nonprogrammable logic capable of handling the necessary memory management functions. An I-frame Detector Circuit 515 monitors the compressed program data as they are transferred from the Compressed Program Source 110 to the Controller 130. *The I-frame Detector 515 interrupts the Host 520 each time an I-frame is detected. Host 520 reads the sequence number corresponding to the detected I-frame and matches it with the storage block currently being addressed on Storage Device 140*. In most systems, the storage block addressing information would originate on the Host 520, and therefore, would be readily available when generating the table. As will be appreciated by those skilled in the art, the I-frame Detector Circuit need not be present if I-frame occurrence is signaled directly from the Compressed Program Source 100 to the Controller 130.

(*Id.* at 11:33-12:13.)

On balance, in light of the above-quoted disclosures, Motorola is correct that "TiVo's construction is inappropriate because the claimed table maintenance means structure does not specify the additional functions to be performed on the stored I-frame data." (Dkt. No. 173, at 27.) Instead, the specification discloses that the I-frame Detector 515 is used to detect the independent picture data and that the Host 520 is configured to read the sequence number corresponding to the detected I-frame, match it with the current storage location, and update the table accordingly.

Motorola's proposal of "logic," however, should be rejected. The above-cited portion of the specification does disclose that "Host 520 can be any computer, microprocessor, microcontroller or other programmable or nonprogrammable logic capable of handling the necessary memory management functions." ('948 Patent at 11:65-12:1.) The only structure actually disclosed, however, is the Host 520.

Finally, because the parties dispute the operation of the Host 520, the construction of the corresponding structure should specify the required functionality.

The Court therefore hereby construes the disputed "table maintenance means . . ." terms as follows:

Term	Construction
"a table maintenance means coupled to communicate with the independent picture data detector and with the storage and playback controller, the table maintenance means for maintaining a table of storage locations in the storage device corresponding to storage locations for the independent picture data detected by the independent picture detector" ('948 Patent, Claim 6)	Function: "maintaining a table of storage locations in the storage device corresponding to storage locations for the independent picture data detected by the independent picture detector" Structure: "Host 520 configured to update the table of the storage locations of the independent picture data detected by the independent picture detector by reading the sequence number corresponding to the detected picture and matching it with the current storage location, and equivalents thereof"
"a table maintenance means coupled to communicate with the first picture data type detector for maintaining a table of storage device locations corresponding to storage locations for the independent picture data detected by the detector" ('948 Patent, Claims 16 & 20)	Function: "maintaining a table of storage device locations corresponding to storage locations for the independent picture data detected by the first picture data type detector" Structure: "Host 520 configured to update the table of the storage locations of the independent picture data detected by the independent picture detector by reading the sequence number corresponding to the detected picture and matching it with the current storage location, and equivalents thereof"

(7) Order of Steps ('708 Patent, Claims 1, 9 & 11)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain meaning)"	"The stepping step occurs after detecting a playback transition"

(Dkt. No. 173, at 27.)

Motorola argued that "[t]he stepping step and the detecting step identified by TiVo have no specified order and therefore should not be limited to any particular order." (Dkt. No. 173, at 27.) Motorola also argued that TiVo's proposal of an order of steps was inconsistent with the specification because "[t]o determine which data to send to the decoder, Controller 130 must . . . step through the data on a frame-by-frame basis both before and after it receives a playback transition instruction." (*Id.* (citing '948 Patent at 7:22-52).)

The Joint Claim Chart Pursuant to P.R. 4-5(d) states the parties have agreed to "No construction necessary (plain meaning)" for the order of steps in Claims 1, 9, and 11 of the '708 Patent. (Dkt. No. 192, Ex. A3, 11/14/2012 Joint Claim Construction Chart for '708 Patent, at 22.) The Court hereby adopts the parties' agreed proposal in that regard.

(8) "stepping through the encoded data on a frame-by-frame basis" ('708 Patent, Claims 1, 9 & 11)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language)"	"detecting the beginning of each frame and determining the frame type of the detected frame"

(Dkt. No. 173, at 27-28.)

At the November 27, 2012 hearing, the parties announced their agreement that this term does not require construction. The Court therefore does not construe this term.

(9) "granting forwarding permission for the frames of the second frame type upon determining from the transition instruction that the frames of the second frame type are to be provided for decoding" ('708 Patent, Claim 11)

Motorola's Proposed Construction	**TiVo's Proposed Construction**
"No construction necessary (plain language)[7]	"enabling frames of the second frame type to be provided to the decoder after determining that the transition instruction permits providing frames of the second frame type to the decoder"

(Dkt. No. 173, at 28; Dkt. No. 192, Ex. A3, 11/14/2012 Joint Claim Construction Chart for '708 Patent, at 23.)

At the November 27, 2012 hearing, the parties announced their agreement that this term does not require construction. The Court therefore does not construe this term.

V. CONSTRUCTION OF DISPUTED TERMS IN THE "TIVO" PATENTS

The TiVo patents have been construed in three other cases: *TiVo Inc. v. EchoStar Communications Corp., et al.*, No. 2:04-CV-1-DF, 2005 WL 6225413 (E.D. Tex. Aug. 18, 2005) ("*EchoStar Markman*"); *TiVo Inc. v. AT&T, Inc., et al.*, No. 2:09-cv-259-DF, 2011 WL 6961021 (E.D. Tex. Oct. 13, 2011) ("*AT&T Markman*"); *TiVo Inc. v. Verizon Communications, Inc., et al.*, No. 2:09-cv-257-DF, Dkt. No. 268 (E.D. Tex. Mar. 12, 2012) ("*Verizon Markman*"). The *EchoStar Markman* was affirmed on appeal. *TiVo Inc. v. EchoStar Commc'ns Corp.*, 516 F.3d 1290, 1306-1310, 1312 (Fed. Cir. 2008) ("*EchoStar Appeal*"). Further, Claims 31 and 61 of the '389 Patent were later applied "as construed by this Court and upheld by the Federal Circuit" in subsequent contempt proceedings. *TiVo Inc. v. Dish Network,*

[7] Previously, Motorola had proposed an alternative construction as follows: "Alternatively, enabling forwarding of frames of the second frame type upon determining from the transition instruction that the frames of the second frame type are to be provided for decoding." (Dkt. No. 173, at 28.)

Corp., 640 F. Supp. 2d 853, 864 (E.D. Tex. 2009) ("*EchoStar Contempt*"), *aff'd in part and vacated in part sub nom., TiVo Inc. v. EchoStar Corp.*, 646 F.3d 869 (Fed. Cir. 2011).

A. U.S. Patent No. 6,233,389

The '389 Patent, titled "Multimedia Time Warping System," issued on May 15, 2001, and bears a filing date of July 30, 1998. The '389 Patent generally relates to the ability of a user to view one program while simultaneously recording another program. The Abstract of the '389 Patent states:

> A multimedia time warping system. The invention allows the user to store selected television broadcast programs while the user is simultaneously watching or reviewing another program. A preferred embodiment of the invention accepts television (TV) input streams in a multitude of forms, for example, National Television Standards Committee (NTSC) or PAL broadcast, and digital forms such as Digital Satellite System (DSS), Digital Broadcast Services (DBS), or Advanced Television Standards Committee (ATSC). The TV streams are converted to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation and are parsed and separated it [sic] into video and audio components. The components are stored in temporary buffers. Events are recorded that indicate the type of component that has been found, where it is located, and when it occurred. The program logic is notified that an event has occurred and the data is extracted from the buffers. The parser and event buffer decouple the CPU from having to parse the MPEG stream and from the real time nature of the data streams which allows for slower CPU and bus speeds and translate to lower system costs. The video and audio components are stored on a storage device and when the program is requested for display, the video and audio components are extracted from the storage device and reassembled into an MPEG stream which is sent to a decoder. The decoder converts the MPEG stream into TV output signals and delivers the TV output signals to a TV receiver. User control commands are accepted and sent through the system. These commands affect the flow of said MPEG stream and allow the user to view stored programs with at least the following functions: reverse, fast forward, play, pause, index, fast/slow reverse play, and fast/slow play.

The '389 Patent is sometimes referred to by the parties as the "Time Warp Patent."

(1) "A process for the simultaneous storage and play back of multimedia data" (Claim 31) and "An apparatus for the simultaneous storage and play back of multimedia data" (Claim 61)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"plain meaning"	The preamble does not limit Claim 31 or Claim 61.

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent.)

The Joint Claim Chart Pursuant to P.R. 4-5(d) states the parties have agreed that the preambles of Claims 31 and 61 of the '389 Patent are not limiting. (Dkt. No. 192, Ex. A4, 11/14/2012 Joint Claim Construction Chart for '389 Patent, at 25-26.) The Court hereby adopts the parties' agreed proposal in that regard.

(2) "parses," "parses video and audio data from said broadcast data," "physical data source . . . parses video and audio data from said broadcast data, and temporarily stores said video and audio data" (Claims 31 & 61)

"parses" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"analyzes"	"Construe as in ['physical data source . . . parses video and audio data from said broadcast data, and temporarily stores said video and audio data'] with surrounding language"
"parses video and audio data from said broadcast data" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"analyzes video and audio data from the broadcast data"	"Construe as in ['physical data source . . . parses video and audio data from said broadcast data, and temporarily stores said video and audio data'] with surrounding language"

"physical data source . . . parses video and audio data from said broadcast data, and temporarily stores said video and audio data" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"No further construction necessary due to prior constructions of 'parses' and 'parses video and audio data from said broadcast data'"	"Physical data source breaks down the broadcast data to detect and separately store the video data components and the audio data components"

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent; Dkt. No. 192, Ex. A4, 11/14/2012 Joint Claim Construction Chart for '389 Patent, at 26.)

(a) The Parties' Positions

TiVo argues that the Court should apply the same construction reached in the *EchoStar Markman*, and TiVo notes that the same construction proposed here by Motorola/TWC was rejected in the *AT&T Markman*. (Dkt. No. 177, at 7 (citing 2011 WL 6961021, at *4-*5).) TiVo reiterates that "parsing does not require a separation or breakdown of the data." (*Id.*) TiVo further notes that unlike Claims 31 and 61, Claims 1 and 32 recite separating an MPEG stream into audio and video components. (*Id.*, at 8.) Finally, TiVo urges that the Motorola/TWC proposed construction

> attempts to limit the 'physical data source' element of claims 31 and 61 to the "Media Switch" that is disclosed in an embodiment of the specification and recited in claims 1 and 32. But this Court has twice held that the Media Switch is a non-limiting example of the "physical data source." *AT&T Markman*, 2011 WL 6961021, at *4 (citing *TiVo Inc. v. Dish Network Corp.*, 640 F. Supp. 2d 853, 868 (E.D. Tex. 2009) [(*EchoStar Contempt*)]).

(Dkt. No. 177, at 8.)

Motorola and TWC respond that because the claimed source object fills a buffer with video data, the claims require separating the video data and the audio data from one another.

(Dkt. No. 183, at 6.) Motorola and TWC argue that TiVo's reading of the claims "runs afoul of the Federal Circuit's decision in *Dippin' Dots v. Mosey*, 476 F.3d 1337, 1343 (Fed. Cir. 2007)," which held, in the words of Motorola and TWC, that "method steps affirmatively reciting spherically shaped beads excludes steps performed with both bead and irregularly shaped particles." (*Id.*, at 5.)

In reply, TiVo reiterates that the interpretation of "parses" proposed by Motorola and TWC has been repeatedly rejected by this Court in prior cases. (Dkt. No. 190, at 3.) TiVo also argues that *Dippin' Dots* is inapplicable because "TiVo does not argue that 'video data' in the asserted claims can be stricken and replaced by 'audio data,' just that at least video data be stored in the buffer." (*Id.*, at 4.)

(b) Analysis

Claims 31 and 61 recite (emphasis added):

> 31. A process for the simultaneous storage and play back of multimedia data, comprising the steps of:
>
> providing a *physical data source, wherein said physical data source accepts broadcast data from an input device, parses video and audio data from said broadcast data, and temporarily stores said video and audio data*;
>
> providing a source object, wherein said source object extracts video and audio data from said physical data source;
>
> providing a transform object, wherein said transform object stores and retrieves data streams onto a storage device;
>
> wherein said source object obtains a buffer from said transform object, said source object converts video data into data streams and fills said buffer with said streams;
>
> wherein said source object is automatically flow controlled by said transform object;
>
> providing a sink object, wherein said sink object obtains data stream buffers from said transform object and outputs said streams to a video and audio decoder;
>
> wherein said decoder converts said streams into display signals and sends said signals to a display;

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

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

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

* * *

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

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

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

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

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

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

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

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

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

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

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

The *EchoStar Markman* found:

Although the court finds persons of ordinary skill in the art understand the meaning of the term "parses," for clarification purposes, it defines the term as "analyzes." The claim language and the specification are instructive in this regard as both "parse" and "separate" are at times used in the same sentences and claims indicating that the terms are not interchangeable. '389 patent at col. 2:15-16; claims 1 and 32; Abstract; *see Innova*, 381 F.3d at 1119 (noting that each term

> used in a claim is presumed to have meaning and that it is permissible to infer, where different terms are used in a claim, that the patentee intended a differentiation in the meaning of those terms). As further evidence that the terms are not interchangeable, "parse" is often used without the term "separate" several times in the specification. '389 patent at cols. 2:22-24, 4:52-54, 5:3-6, 6:36-39, 7:12-16; '389 patent Abstract; *see Innova*, 381 F.3d at 1119; *see Phillips*, 415 F.3d 1303, 2005 WL 1620331 at *7.

2005 WL 6225413, at *9.

The *AT&T Markman* then found:

> The Court previously considered "parse" during the *Echostar* litigation and construed the term to mean "analyze." Defendants argue that the Court's prior construction would leave a fundamental dispute about claim scope but have not disclosed or explained the nature of this dispute. Accordingly, the Court is not persuaded that its previous construction should be changed. The Court therefore adopts its prior construction of "parse" to mean "analyze." Similarly, the Court adopts its prior construction and construes "parses video and audio data from said broadcast data" to mean "analyzes video and audio data from the broadcast data." Finally, the Court finds that "physical data source . . . parses video and audio data from said broadcast data, and temporarily stores said video and audio data" does not need further construction in light of the Court's construction of the terms "parse" and "parses video and audio data from said broadcast data."

2011 WL 6961021, at *4-*5 (citation omitted).

As noted in the *EchoStar Markman*, the Summary of the Invention discloses that "[t]he invention parses the resulting MPEG stream and separates it into its video and audio components." ('389 Patent at 2:15-16.) Also, Claim 1 of the '389 Patent recites "providing a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components." "This Court has never held that the 'physical data source' in the Software Claims [(Claims 31 and 61)] is limited to a Media Switch. The Media Switch must parse and separate the incoming data, whereas the physical data source of the Software Claims need only parse." *EchoStar Contempt*, 640 F. Supp. 2d at 868.

On one hand, "[t]hat the patentee chose several words in drafting a particular limitation of one claim, but fewer (though similar) words in drafting the corresponding limitation in another, does not mandate different interpretations of the two limitations . . . ." *Kraft Foods, Inc. v. Int'l Trading Co.*, 203 F.3d 1362, 1368 (Fed. Cir. 2000).

On the other hand, the specification discloses that an MPEG stream is "separated" to create separate video and audio streams (emphasis added):

> Referring to FIG. 3, the incoming MPEG stream 301 has interleaved video 302, 305, 306 and audio 303, 304, 307 segments. These elements must be *separated* and recombined to create separate video 308 and audio 309 streams or buffers. This is necessary because separate decoders are used to convert MPEG elements back into audio or video analog components. Such separate delivery requires that time sequence information be generated so that the decoders may be properly synchronized for accurate playback of the signal.

('389 Patent at 4:23-32.) The specification then uses the different term "parses" to refer to finding events in the stream (emphasis added):

> The input stream flows through a parser 401. The parser 401 *parses* the stream looking for MPEG distinguished events indicating the start of video, audio or private data segments. For example, when the parser 401 finds a video event, it directs the stream to the video DMA ([direct memory access)] engine 402. The parser 401 buffers up data and DMAs it into the video buffer 410 through the video DMA engine 402. At the same time, the parser 401 directs an event to the event DMA engine 405 which generates an event into the event buffer 413. When the parser 401 sees an audio event, it redirects the byte stream to the audio DMA engine 403 and generates an event into the event buffer 413. Similarly, when the parser 401 sees a private data event, it directs the byte stream to the private data DMA engine 404 and directs an event to the event buffer 413. The Media Switch notifies the program logic via an interrupt mechanism when events are placed in the event buffer.
>
> * * *
>
> With respect to FIGS. 5 and 6, the program logic reads accumulated events in the event buffer 602 when it is interrupted by the Media Switch 601. From these events the program logic generates a sequence of logical segments 603 which correspond to the *parsed* MPEG segments 615.

* * *

> The parser 705 *parses* the input data stream from the MPEG encoder 703, audio encoder 704 and VBl decoder 702, or from the transport demultiplexor in the case of a digital TV stream. The parser 705 detects the beginning of all of the important events in a video or audio stream, the start of all of the frames, the start of sequence headers—all of the pieces of information that the program logic needs to know about in order to both properly play back and perform special effects on the stream, e.g. fast forward, reverse, play, pause, fast/slow play, indexing, and fast/slow reverse play.
>
> The parser 705 places tags 707 into the FIFO ([first-in-first-out) 706 when it identifies video or audio segments, or is given private data. The DMA 709 controls when these tags are taken out. The tags 707 and the DMA addresses of the segments are placed into the event queue 708. The frame type information, whether it is a start of a video I-frame, video B-frame, video P-frame, video PES [(packetized elementary stream)], audio PES, a sequence header, an audio frame, or private data packet, is placed into the event queue 708 along with the offset in the related circular buffer where the piece of information was placed. The program logic operating in the CPU 713 examines events in the circular buffer after it is transferred to the DRAM [(dynamic random access memory)] 714.

(*Id.* at 5:3-19, 5:33-37 & 6:37-58.)

The above-quoted disclosures are consistent with the findings in the *EchoStar Markman* and the *AT&T Markman* that "parses" means "analyzes" and that separation of audio and video is not required by the term "parses."

The Court therefore hereby construes the "parses" terms as follows:

Term	Construction
"parses" (Claims 31 & 61)	"analyzes"
"parses video and audio data from said broadcast data" (Claims 31 & 61)	"analyzes video and audio data from the broadcast data"
"physical data source . . . parses video and audio data from said broadcast data, and temporarily stores said video and audio data" (Claims 31 & 61)	Plain meaning

(3) "input device" (Claims 31 & 61)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a device that includes at least one tuner"	"plain meaning"

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent; Dkt. No. 177, at 17.)

(a) The Parties' Positions

TiVo notes that this term has not been previously construed and submits that "[i]t is well known that some type of tuning function is required for a user to select a broadcasted television program." (Dkt. No. 177, at 18.) TiVo concludes that "[b]ecause the claimed process and apparatus recited in claims 31 and 61, respectively, inherently require a tuner that selects a program from the broadcast data, TiVo's construction should be adopted." (*Id.*)

Motorola and TWC respond that "input device" is a "generic" term and that the patent places no restriction on the type of input device. (Dkt. No. 183, at 3.) Motorola and TWC also submit that TiVo's proposed construction would exclude the video surveillance embodiment disclosed in the specification. (*Id.*, at 4 (citing '389 Patent at 12:20-32).) Finally, Motorola and TWC argue claim differentiation as to Claim 32 of the '389 Patent, which recites a tuner. (*Id.*, at 4.)

TiVo replies that "the system input requires tuning in order to select a television broadcast program and for the broadcast data to flow through the system." (Dkt. No. 190, at 2 (citing '389 Patent at 1:5-6, 3:46-49, 4:14-16 & 15:12).) As to the video surveillance embodiment cited by Motorola and TWC, TiVo replies that not only is there no requirement that the claims encompass all embodiments, but also Motorola and TWC "fail to explain why a video

surveillance system might not require a tuner." (*Id.*) As to Motorola and TWC's claim differentiation argument, TiVo replies that such an argument is not persuasive here, particularly because independent claims are involved. (*Id.*)

(b) Analysis

On one hand, the specification, as well as Claims 31 and 61, refer to "broadcast data" that can be received with a tuner. (*See* '389 Patent at 1:5-9 & 3:19-29.) The specification refers to "tuners" in one instance, with respect to "Input Sections" (emphasis added):

> The Input Section 101 *tunes* the channel to a particular program, extracts a specific MPEG program out of it, and feeds it to the rest of the system.
>
> * * *
>
> With respect to FIG. 2, the invention easily expands to accommodate multiple Input Sections (*tuners*) 201, 202, 203, 204, each can be tuned to different types of input. Multiple Output Modules (decoders) 206, 207, 208, 209 are added as well. Special effects such as picture in a picture can be implemented with multiple decoders. The Media Switch 205 records one program while the user is watching another. This means that a stream can be extracted off the disk while another stream is being stored onto the disk.

('389 Patent at 3:46-49 & 4:14-22.)

On the other hand, the term "input device" does not appear in the specification, and TiVo has failed to justify restricting the scope of a term that is so broad on its face. *See Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1331 (Fed. Cir. 2001) ("If the claim language is clear on its face, then our consideration of the rest of the intrinsic evidence is restricted to determining if a deviation from the clear language of the claims is specified."). On balance, the claims should not be limited to the preferred embodiment of a device that includes a tuner. *Electro Med.*, 34 F.3d at 1054 ("[A]lthough the specifications may well indicate that certain embodiments are preferred, particular embodiments appearing in a specification will not

be read into the claims when the claim language is broader than such embodiments."). Thus, TiVo's proposal that the term "input device" means "a device that includes at least one tuner" is hereby expressly rejected. No further construction is required. *U.S. Surgical*, 103 F.3d at 1568 ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see O2 Micro*, 521 F.3d at 1362 ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims.").

The Court therefore hereby construes **"input device"** to have its plain meaning.

(4) "object," "source object," "sink object," and "control object" (Claims 31 & 61)

"object" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a collection of data and operations" "This same construction of 'object' applies to the terms 'source object,' 'transform object,' 'sink object,' and 'control object.'"[8]	"a functionally interrelated set of data and operations" "This same construction of 'object' applies to the terms 'source object,' 'transform object,' 'sink object,' and 'control object.'"

[8] Both parties added this "same construction of 'object'" language in the Joint Claim Construction Chart Pursuant to P.R. 4-5(d). (Dkt. No. 192, Ex. A4, 11/14/2012 Joint Claim Construction Chart for '389 Patent, at 26.)

"source object" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a collection of data and operations that (1) extracts video and audio data from a physical data source, (2) obtains a buffer from a transform object, (3) converts video data into data streams, and (4) fills the buffer with the streams"	"an object that (1) extracts video and audio data from a physical data source, (2) obtains a buffer from a transform object, (3) converts video data into data streams, and (4) fills the buffer with the streams"
"sink object" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a collection of data and operations that (1) obtains data stream buffers [memory where data can be temporarily stored for transfer] from a transform object and (2) outputs the streams to a video and audio decoder"	"an object that (1) obtains data stream buffers from a transform object and (2) outputs the streams to a video and audio decoder"
"control object" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a collection of data and operations that receives commands from a user that control the flow of broadcast data"	"an object that receives commands from a user that control the flow of broadcast data"

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent.)

(a) The Parties' Positions

TiVo submits that its proposal for "object" is the construction reached in the *EchoStar Markman*. (Dkt. No. 177, at 9-10.) TiVo also notes that the "functionally interrelated" language proposed by Motorola and TWC was rejected by the Court in the *AT&T Markman* and the *Verizon Markman*. (*Id.*, at 10 (citing *AT&T Markman*, 2011 WL 6961021, at *5; *Verizon Markman* at 5-6).) TiVo also argues that Motorola and TWC "seek to import into the

construction a portion of TiVo's explanation of the term 'collection'" during reexamination proceedings. (*Id.*, at 10-11.) TiVo concludes that the Motorola/TWC proposed construction "provides no meaningful guidance for the jury beyond the construction already provided by the Court and 'contribute[s] nothing but meaningless verbiage to the definition of the claimed invention.'" (*Id.*, at 11 (quoting *Harris Corp. v. IXYS Corp.*, 114 F.3d 1149, 1152 (Fed. Cir. 1997)).)

Motorola and TWC respond that TiVo argued to the Federal Circuit that the collected data and operations "are connected logically, that they all refer to, call upon, and relate to each other, and that they pass data one from the other." (Dkt. No. 183, at 14 (quoting *TiVo, Inc. v. EchoStar Corp.*, No. 2006-1574, Audio Tr. at 26:50 (Fed. Cir. Oct. 4, 2007)).)

TiVo replies that during reexamination, "TiVo's expert did not disagree with the Court's construction or rely on a narrower construction." (Dkt. No. 190, at 7.) TiVo reiterates that the *AT&T Markman* and the *Verizon Markman* rejected the reexamination arguments here advanced by Motorola and TWC. (*Id.*)

(b) Analysis

The *EchoStar Markman* found:

> After a thorough examination of the intrinsic record, the Court has concluded that "object" is used according to its plain meaning to one of ordinary skill in the art at the time of the invention. Neither the claims nor specification, however, elaborate on the plain meaning of this term. The Court therefore turns to extrinsic evidence in order to assist its understanding of the term. *Phillips*, 415 F.3d 1303, 2005 WL 1620331 at *15. In this instance, the Court looked to a technical dictionary, the IEEE 100: THE AUTHORITATIVE DICTIONARY OF IEEE STANDARD TERMS at 752 (7th ed. 2000) which defines "object" as "a collection of data and operations." The Court notes that EchoStar's expert witness, Dr. Rhyne, has acknowledged that this is a widely accepted technical dictionary in the electrical engineering field. Rhyne Decl. at 45. Thus, for clarification purposes the Court construes "object" as "a collection of data and operations." This same

construction of "object" applies to the terms "transform object," "sink object," and "control object."

The Court further finds that persons of ordinary skill in the art readily understand the meaning of "source object" upon a reading of the claim language and its context in the specification. *See* '389 patent at cols. 14:59-61, 14:65-15:2, 15:15-16, 18:9-10, 18:13-17, 18:29-30. The specification states: "[w]ith respect to FIG. 8, the program logic within the CPU has three conceptual components: sources 801, transforms 802, and sinks 803." *Id.* at col. 7:48-50. In addition, [the] specification describes a class hierarchy of the program logic according to the invention and refers to the source 901, transform 902, and sink 903 objects. *See id.* at col. 8:9-18 & Fig. 9. Therefore, in accordance with its ordinary meaning, the Court construes "source object" as **"a collection of data and operations that (1) extracts video and audio data from a physical data source, (2) obtains a buffer [memory where data can be temporarily stored for transfer] from a transform object, (3) converts video data into data streams, and (4) fills the buffer [memory where data can be temporarily stored for transfer] with the streams."**

2005 WL 6225413, at *13 (square brackets in original).

In the *EchoStar Appeal*, the Federal Circuit affirmed the *EchoStar Markman*:

After assessing the competing expert declarations and the evidence to which the parties directed the court's attention, the district court accepted as the proper definition of "object" the definition offered by TiVo, i.e., "a collection of data and operations." The court concluded that TiVo's definition represented the plain meaning of the term "object" to one of ordinary skill in the art. The court also concluded that persons of ordinary skill in the art would "readily understand the meaning of 'source object' upon a reading of the claim language and its context in the specification." Based on both intrinsic and extrinsic evidence, the court concluded that "in accordance with its ordinary meaning" the term "source object" means "a collection of data and operations that (1) extracts video and audio data from a physical data source, (2) obtains a buffer [memory where data can be temporarily stored for transfer] from a transform object, (3) converts video data into data streams, and (4) fills the buffer [memory where data can be temporarily stored for transfer] with the streams." Additionally, the court defined "transform object" to mean "a collection of data and operations that transforms the form of the data upon which it operates"; it defined "sink object" to mean "a collection of data and operations that (1) obtains data stream buffers [memory where data can be temporarily stored for transfer] from a transform object and (2) outputs the streams to a video and audio decoder"; and it defined "control object" as "a collection of data and operations that receives commands from a user that control the flow of broadcast data."

> On appeal, EchoStar argues that the district court erred in failing to construe the term "object" to require the use of object-oriented software. EchoStar points out that the patent describes how three conceptual components that are featured in the software claims—source object, transform object, and sink object—work in the context of software written in the C++ programming language, which employs an "object-based approach" that collects together logical operations and software elements that perform those operations.
>
> We discern no error in the district court's claim construction. While the patent specification includes an embodiment showing the use of "a C++ class hierarchy derivation of the program logic," '389 patent, col. 8, ll. 9-10, and uses terms characteristic of object-oriented programming in connection with that example, neither the written description nor the claims anywhere state or imply that the invention must use object-oriented programming in general, or C++ in particular. Without more, the use of an example that employs object-oriented programming is not sufficient to require that the claims be limited to embodiments using C++ or a similar programming language. Moreover, while EchoStar criticizes the court for using an alternative definition in a technical dictionary as the basis for its definition of the term "object," TiVo offered evidence other than the dictionary that supported that definition—in particular, its expert's declaration—and the district court concluded that persons of ordinary skill in the art would understand that term according to its ordinary meaning, which accorded with TiVo's definition.
>
> Importantly, the term "object" was not used by itself in the claims, but rather as part of the terms "source object," "transform object," "sink object," and "control object." The district court defined each of those terms by reference to the functions performed by the collection of data and operations, and aside from its contention that the claims should be read to require object-oriented programming, EchoStar does not object to those definitions. Because the intrinsic evidence did not limit the scope of the software claims in the manner that EchoStar urges, and because the district court's construction of each of the claim terms was soundly based on the extrinsic evidence proffered by TiVo, we find no error in the court's decision not to limit the software claims to embodiments employing object-oriented programming such as C++.

516 F.3d at 1306-07 (square brackets in original).

The *AT&T Markman* then considered and rejected an argument that TiVo narrowed the terms during reexamination:

> The Court previously considered "object," and "source object" during the Echostar litigation and construed "object" to mean "a collection of data and operations" and applied this construction to "control object," and "source object." The Court does not find that Plaintiff narrowed the scope of the term "object" during reexamination and is not persuaded that its previous construction should be changed. The Court therefore adopts its prior construction of "object" to mean "a collection of data and operations." The Court further construes "source object" to mean "a collection of data and operations that (1) extracts video and audio data from a physical data source, (2) obtains a buffer from a transform object, (3) converts video data into data streams, and (4) fills the buffer with the streams." Finally, in light of the Court's prior construction of the terms "source object" and "physical data source," no further construction is required for "wherein said source object extracts video and audio data from said physical data source."

2011 WL 6961021, at *5 (citation omitted). The *Verizon Markman* reached the same conclusion. *Verizon Markman* at 5-6.

First, the intrinsic evidence supports the construction reached by the *EchoStar Markman* and reaffirmed by the *AT&T Markman* and the *Verizon Markman*. *See* '389 Patent at 7:47-50, 8:9-65 & Fig. 8.

Second, TiVo's counsel stated during oral argument of the *EchoStar Appeal* that the collected data and operations "are connected logically, that they all refer to, call upon, and relate to each other, and that they pass data one from the other." *TiVo, Inc. v. EchoStar Corp.*, No. 2006-1574, Audio Tr. at 26:50 (Fed. Cir. Oct. 4, 2007). On balance, even assuming that this statement is binding on TiVo in the present case, this statement does not warrant limiting "object" to "a functionally interrelated set of data and operations," as Motorola and TWC have proposed.

Third, during the second reexamination of the '389 Patent, TiVo's expert, Dr. John C. Villasenor, opined that "the term 'collection' would be understood in this context to refer to a set of functionally interrelated data and operations, as explained in the specification." (Dkt. No.

183, Ex. G, 9/9/2010 Villasenor 2d Decl., at ¶ 16.) TiVo then argued, in response to an office action:

> Within the definition set forth in the Office Action, those of skill in the art would understand that the recited "objects" are functionally interrelated sets of state information typically sets of variable values which include information concerning the state or progress of the operations that manipulate the state information. (Second Villasenor Dec. ¶¶12-17) This flows directly from the well-understood meanings of the respective terms used in the definition set forth in the Office Action. (Id.) Therein it was noted that the term "object" was given "the widely accepted computer science meaning of a 'collection of data and operations.'" (OA at 3) The terms "collection," "data," and "operations" likewise have widely accepted meanings that provide further context and meaning to the term "object." (Id.) As explained in the Second Declaration of Professor John Villasenor, submitted herewith, the term "collection" would be clearly understood in this context to mean a set of functionally interrelated items. (Second Villasenor Dec. ¶16) This understanding of the term "collection" is supported throughout the '389 patent specification, in particular by the exemplary object class hierarchy depicted in Figure 9 and the associated passages in the detailed description explaining that in the preferred embodiment "[e]ach object (source 901, transform 902, and sink 903) is multi-threaded by definition and can run in parallel." (Id.; '389 patent 8:16-18)

(*Id.*, Ex. H, 9/9/2010 Response to Office Action, at 7.)

On balance, TiVo's discussion during the second reexamination of words appearing in the Court's construction of "object" did not further limit the term. *See, e.g., Cordis Corp. v. Medtronic Ave, Inc.*, 511 F.3d 1157, 1177 (Fed. Cir. 2008) ("[A]rgument-based disavowals will be found, however, only if they constitute clear and unmistakable surrenders of subject matter.") No additional construction is necessary. *U.S. Surgical*, 103 F.3d at 1568 ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy."); *see O2 Micro*, 521 F.3d at 1362 ("[D]istrict courts

are not (and should not be) required to construe every limitation present in a patent's asserted claims.").

The Court therefore hereby construes the "object" terms as follows:

Term	Construction
"object" (Claims 31 & 61)	"a collection of data and operations"
"source object" (Claims 31 & 61)	"a collection of data and operations that (1) extracts video and audio data from a physical data source, (2) obtains a buffer from a transform object, (3) converts video data into data streams, and (4) fills the buffer with the streams"
"sink object" (Claims 31 & 61)	"a collection of data and operations that (1) obtains data stream buffers from a transform object and (2) outputs the streams to a video and audio decoder"
"control object" (Claims 31 & 61)	"a collection of data and operations that receives commands from a user that control the flow of broadcast data"

(5) "wherein said source object extracts video and audio data from said physical data source" and "said source object converts video data into data streams and fills said buffer with said streams" (Claims 31 & 61)

"wherein said source object extracts video and audio data from said physical data source" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"wherein said source object obtains video and audio data from said physical data source"	"the source object takes video and audio data out of the physical data source"
"said source object converts video data into data streams and fills said buffer with said streams" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"No further construction necessary"	"said source object converts the video data it has taken from the physical data source into video data streams and fills said buffer with said streams"

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent.)

(a) The Parties' Positions

TiVo argues that it "asks the Court to adopt this previous construction while [Motorola and TWC] ask the Court to adopt verbatim the same construction proposed by Verizon and rejected by this Court." (Dkt. No. 177, at 17 (citing *Verizon Markman* at 10-11).)

Motorola and TWC respond that "[i]f the video is not separated by the physical data source, then it must be separated by the source object that extracts the video data, converts it into streams, and fills the buffer with those streams." (Dkt. No. 183, at 7.)

TiVo replies that "[t]he claim requires, at a minimum, that video data be stored in the buffer, but does not require that no audio data also be stored or that the buffer have no room left for anything else." (Dkt. No. 190, at 4.) TiVo also submits that no separation is required because "the plain language of the claims refer to the movement of 'video and audio' data through the system from the 'physical data source' to the 'video and audio decoder.'" (*Id.*)

(b) Analysis

The *Verizon Markman* considered and rejected the same proposals that Motorola and TWC present here:

> Verizon proposes that the Court construe "wherein said source object extracts video and audio data from said physical data source" to mean "the source object takes video and audio data out of the physical data source" and "said source object converts video data into data streams and fills said buffer with said streams" to mean "said source object converts the video data it has taken from the physical data source into video data streams and fills said buffer with said streams." Verizon explains that its proposed construction is consistent with the specification which states that the "source object 901 takes data out of the physical data source . . . and places it into a PES [(packetized elementary stream)] buffer." Verizon also argues that the plain language of the claim requires the source object[] to extract video and audio data from the physical data source.

> TiVo replies that nothing prevents the source object from simply obtaining or deriving a copy of the data from the physical data source rather than taking the data out of the physical data source.
>
> **. . . Discussion**
>
> The Court addressed the construction of "source object" and "buffer" above. The parties' main dispute regarding this term is the meaning of "extract." Verizon's proposed construction would have the source object remove data from the physical data source. However, nowhere does the specification or claim state that the physical data source no longer contains the data that was just extracted. Accordingly, the Court hereby construes for [*sic*] "wherein said source object extracts video and audio data from said physical data source" to mean "wherein the source object obtains video and audio data from said physical data source." In light of the Court's previous construction of the terms "source object" and "buffer," no further construction is required for "said source object converts video data into data streams and fills said buffer with said streams."

Verizon Markman at 10-11 (citations omitted).

Motorola and TWC emphasize the disclosure in the specification that the physical data source only stores data temporarily: "The source object 901 takes data out of a physical data source, such as the Media Switch, and places it into a PES buffer." ('389 Patent at 8:43-44.) Motorola and TWC also cite the limitation in Claim 31 of (emphasis added): "a physical data source, wherein said physical data source accepts broadcast data from an input device, parses video and audio data from said broadcast data, and *temporarily* stores said video and audio data." Motorola and TWC further highlight disclosure of the importance of not copying data from one memory location to another: "Thus, the MPEG data is not copied from one location in memory to another by the processor. This results in a more cost effective design since lower memory bandwidth and processor bandwidth is required." (*Id.* at 5:61-65.)

On balance, these references to "temporary" storage in the physical data source are insufficient to limit the claims. Likewise, the above-quoted disclosure that data is not copied

from one location to another relates to a preferred embodiment and should not be imported into the claims. *See Electro Med.*, 34 F.3d at 1054. The Court therefore adopts the *Verizon Markman* analysis and hereby construes the disputed terms as follows:

Term	Construction
"wherein said source object extracts video and audio data from said physical data source" (Claims 31 & 61)	"wherein said source object obtains video and audio data from said physical data source"
"said source object converts video data into data streams and fills said buffer with said streams" (Claims 31 & 61)	"No further construction necessary"

(6) "transform object," "wherein said source object is automatically flow controlled by said transform object," "wherein said sink object is automatically flow controlled by said transform object," and "automatically flow controlled" (Claims 31 & 61)

"transform object" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a collection of data and operations that transforms the form of data upon which it operates"	"a centralized object that intelligently manages buffers or the manipulation of video so as to facilitate the system's ability to handle asymmetric memory demands of the source and sink objects"
"wherein said source object is automatically flow controlled by said transform object" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"wherein said source object is self-regulated by said transform object"	"The memory demands of the source object are intelligently managed by the transform object"

"wherein said sink object is automatically flow controlled by said transform object" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"wherein said sink object is self-regulated by said transform object"	"The memory demands of the sink object are intelligently managed by the transform object"
"automatically flow controlled" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"self-regulated"	"Construe as in [the above-listed terms] with surrounding language."

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent.)

(a) The Parties' Positions

TiVo argues these terms together with the term "object." (Dkt. No. 177, at 9-11.) TiVo also argues that it here proposes the same constructions reached in the *EchoStar Markman* and affirmed on appeal. (Dkt. No. 177, at 13 (citing *EchoStar Markman*, 2005 WL 6225413, at *12; *EchoStar Appeal*, 516 F.3d at 1306-07).) TiVo also submits that the Court has twice rejected arguments that this term was redefined during reexamination. (*Id.* (citing *Verizon Markman* at 8; *AT&T Markman*, 2011 WL 6961021, at *6, *8).)

Motorola and TWC respond that TiVo should be held to its statements to the PTO during the second reexamination of the '389 Patent. (Dkt. No. 183, at 8 & 10-11.) Motorola and TWC also note that "automatically flow controlled" was not part of the *Echostar Appeal*. (Dkt. No. 183, at 9.) Motorola and TWC argue that TiVo's proposed construction should be rejected because "[i]t makes no sense to say an object is self-regulated by another object." (*Id.*) Motorola and TWC submit that "TiVo's proposed construction of automatic flow control

conflates the concept of a self-regulating pipeline with self-regulating software objects within a pipeline." (*Id.*, at 10.) Motorola and TWC also argue that TiVo's proposed construction "would not exclude the buffer management schemes of the prior art devices that TiVo has argued [during reexamination] lack the claims [*sic*] automatic flow control." (*Id.*, at 13.) In other words, argue Motorola and TWC, "TiVo 'clarified and further defined' the claims to require 'intelligent management' to avoid the types of self-regulating systems discussed" during reexamination. (*Id.*) Motorola and TWC urged at the November 27, 2012 hearing that the jury should have benefit of this clarification, and Motorola and TWC cited *Funai Electric Co., Ltd. v. Daewoo Electronics Corp.*, 616 F.3d 1357, 1366 (Fed. Cir. 2010) ("The criterion is whether the explanation aids the court and the jury in understanding the term as it is used in the claimed invention.").

TiVo replies that the Court's construction of "automatic flow control" as meaning "self-regulated" was readily applied by the jury in the *EchoStar* case and led to a judgment that was affirmed on appeal. (Dkt. No. 190, at 5.) TiVo reiterates that the *AT&T Markman* and the *Verizon Markman* again reaffirmed the Court's prior construction, despite arguments regarding the reexamination history that Motorola and TWC here assert.

(b) Analysis

The *EchoStar Markman* analyzed "transform object" as follows:

> TiVo argues no construction for this term beyond a definition for "object" is necessary, or, if construed, should mean "the portion of computer program that 'stores and retrieves data streams onto a storage device.'"
>
> EchoStar argues "transform object" means "a software object that changes the form of the data upon which it operates."

> The Court finds it need look no further than the claims themselves to arrive at the plain and ordinary meaning for this term. For clarification purposes, however, this Court construes the term "transform object" as "a collection of data and operations that transforms the form of data upon which it operates."

2005 WL 6225413, at *13-*14 (citations omitted). The *EchoStar Appeal* affirmed. 516 F.3d at 1307. The *AT&T Markman* considered the reexamination history but nonetheless adopted the construction for "transform object" that was reached in the *EchoStar Markman*:

> The Court previously considered "transform object" during the *Echostar* litigation and is not persuaded that its previous construction should be changed. The Court therefore adopts its prior construction of "transform object" to mean "a collection of data and operations that transforms the form of data upon which it operates."

2011 WL 6961021, at *6 (citation omitted).

As to "automatically flow controlled," the *EchoStar Markman* found:

> TiVo argues these terms mean "the flow of data is self-regulating." . . . *'389 patent at col. 8:48-49 ("[T]he pipeline is self-regulating; it has automatic flow control.")* . . .
>
> EchoStar argues the terms mean "the transform object controls when and where video and audio data is stored by the source object." . . .
>
> The Court agrees with TiVo's position and defines "automatically flow controlled" as **"self-regulated"** due to its clear definition in the specification. *See* '389 patent at col. 8:48-49.

2005 WL 6225413, at *12 (emphasis added). The *EchoStar Appeal* did not address this term. *See* 516 F.3d 1290. The *AT&T Markman* considered the reexamination history but nonetheless adopted the Court's earlier construction:

> The Court previously considered "automatically flow controlled" during the *Echostar* litigation and construed "automatically flow controlled" to mean "self-regulated." The Court does not find that Plaintiff redefined "transform object" and "automatic flow control" during reexamination and is not persuaded that its previous construction should be changed.

2011 WL 6961021, at *8 (citation omitted).

The *Verizon Markman* reached the same conclusions:

> The Court previously considered "transform object" during the *Echostar* litigation and is not persuaded that its previous construction should be changed. The Court also previously considered "automatically flow controlled" and construed "automatically flow controlled" to mean "self-regulated." The Court does not find that TiVo redefined "transform object" and "automatic flow control" during reexamination and is not persuaded that its previous construction should be changed. The Court therefore adopts its prior construction of "transform object" to mean "a collection of data and operations that transforms the form of data upon which it operates" and "automatically flow controlled" to mean "self-regulated." Because of the Court's prior construction of "source object" and "sink object," the Court finds that the phrases "wherein said source object is automatically flow controlled by said transform object," "wherein said transform object stores and retrieves data streams onto a storage device" and "wherein said sink object is automatically flow controlled by said transform object" need no further construction.

Verizon Markman at 8 (citations omitted).

During the second reexamination, TiVo's expert, Dr. Villasenor, opined:

> [A] person skilled in the art would, in my opinion, understand from the claims and the specification of the '389 patent that *the transform object of the invention intelligently manages buffers or the manipulation of the video data* so as to facilitate the system's ability to handle asymmetric memory demands of the source and sink objects.

(Dkt. No. 183, Ex. G, 9/9/2010 Villasenor 2d Decl. at ¶ 11 (emphasis added).) The patentee cited Dr. Villasenor's opinions in responding to an Office Action:

> As outlined in the Second Villasenor declaration, given the well-understood meaning of the term object and the recited *centralized transform object* architecture, [the] Thomason [reference] fails to meet the claim language for various independent reasons. First, Thomason lacks a *transform object that intelligently manages* buffers or the manipulation of the video and audio data so as to facilitate the system's ability to handle asymmetric memory demands of the source and sink objects.

(*Id.*, Ex. H, 9/9/2010 Response to Office Action, at 4 (emphasis added); *see id.* at 8 (similar).)

The examiner then stated:

> Patent owner's arguments filed September 9, 2010 in light of the second declaration from Villasenor are persuasive and the record is now made clear.
>
> Specifically, Patent owner has now clarified and further defined the meaning of the claim terms "transform object", "source object", "sink object", and "automatic[ally] flow control[led]" in light of the understanding of the terms provided in the '389 specification. The examiner now interprets these terms in light of Patent owner's arguments, and as expressly disclosed in the '389 specification.

(*Id.*, Ex. I, 10/6/2010 Notice of Intent to Issue Ex Parte Reexamination Certificate, at 2.)

As discussed above, the *AT&T Markman* and the *Verizon Markman* considered this reexamination history but found that TiVo did not limit or redefine the disputed terms. This Court reaches the same conclusion here, finding that TiVo's assertions during reexamination are consistent with the Court's prior claim construction and do not amount to "definitive statements" of further limitation. *Omega Eng.*, 334 F.3d at 1324. Instead, TiVo merely reiterated during reexamination that rather than the source object and sink object being merely reactive to the data flow, they are flow controlled by the transform object, as recited in Claims 31 and 61. The Court therefore hereby construes the disputed terms as follows:

Term	Construction
"transform object" (Claims 31 & 61)	"a collection of data and operations that transforms the form of data upon which it operates"
"wherein said source object is automatically flow controlled by said transform object" (Claims 31 & 61)	"wherein said source object is self-regulated by said transform object"
"wherein said sink object is automatically flow controlled by said transform object" (Claims 31 & 61)	"wherein said sink object is self-regulated by said transform object"
"automatically flow controlled" (Claims 31 & 61)	"self-regulated"

(7) "obtains a buffer" and "obtains data stream buffers" (Claims 31 & 61)

"obtains a buffer" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"obtains memory where data can be temporarily stored for transfer"	"No construction necessary"
"obtains data stream buffers" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"obtains data stream buffers [memory where data can be temporarily stored for transfer]"	"obtains buffers containing data streams"

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent.)

(a) The Parties' Positions

TiVo submits:

> This Court has construed the phrase "obtains a buffer" to mean "obtains memory where data can be temporarily stored for transfer." *EchoStar Markman*, 2005 WL 6225413, at *12; *AT&T Markman*, 2011 WL 6961021, at *7; *Verizon Markman* at 6-7. This Court further found that "the claim phrase 'obtains data stream buffers' has a plain meaning readily understood by persons of ordinary skill in the art" but for clarification incorporated its definition of "buffer." *EchoStar Markman*, 2005 WL 6225413, at *14 ("obtains data stream buffers [memory where data can be temporarily stored for transfer]"); *AT&T Markman*[,] 2011 WL 6961021, at *7; *Verizon Markman* at 6-7. These constructions are all consistent with the specification. *See, e.g.*, '389 [Patent], 7:49-55, 8:39-51.

(Dkt. No. 177, at 12.) TiVo argues that the Motorola/TWC proposal of "no construction necessary" would deny the jury "the benefit of the Court's guidance." (*Id.*) TiVo also submits that Motorola and TWC ask the Court to adopt the same construction for "obtains data stream buffers" "that was proposed by Verizon and rejected by the Court a few months ago . . . ." (*Id.*, at 12 (citing *Verizon Markman* at 6-7).)

The entire response of Motorola and TWC is: "The only dispute for these terms is the extent to which obtaining 'a buffer' differs from obtaining 'data stream buffers.' Motorola and TWC's construction of 'data stream buffers' 'reflects that data stream buffers contain data streams.'" (Dkt. No. 183, at 15 (citing '389 Patent at Fig. 8 & 7:48-57).)

TiVo replies that Motorola and TWC's proposal for "obtains data stream buffers" "invites further arguments, such as when the data stream buffer must 'contain' data streams and whether the buffer can contain anything else." (Dkt. No. 190, at 7.)

(b) Analysis

As to the term "obtains a buffer," adopting the Court's prior construction would seem preferable to providing the jury with no guidance on the meaning of the term. Here, however, the Court's prior construction of "obtains a buffer" as "obtains memory where data can be temporarily stored for transfer" would be redundant in light of the parties' agreement that the constituent term "buffer" means "memory where data can be temporarily stored for transfer." (Dkt. No. 167, 10/17/2012 Joint P.R. 4-3 Claim Construction and Prehearing Statement, at 2.) The Court accordingly construes "obtains a buffer" to have its plain meaning apart from the agreed construction of "buffer."

As to the term "obtains data stream buffers," the parties present no substantive dispute, and the parties' proposed constructions do not add meaning or clarity to the term beyond the agreed construction of the constituent term "buffer." Instead, no further construction is necessary. *U.S. Surgical*, 103 F.3d at 1568 ("Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an

obligatory exercise in redundancy."); *see O2 Micro*, 521 F.3d at 1362 ("[D]istrict courts are not (and should not be) required to construe every limitation present in a patent's asserted claims."). The *Verizon Markman* reached essentially the same conclusion. *Verizon Markman* at 7 ("The Court is not persuaded that its previous construction should be changed or that 'obtains data stream buffers' requires additional clarification or construction."). The Court therefore construes "obtains data stream buffers" to have its plain meaning apart from the agreed construction of "buffer."

In sum, the Court hereby construes **"obtains a buffer"** and **"obtains data stream buffers"** to have their plain meaning.

(8) "control the flow of the broadcast data through the system," "physical data source," and "accepts broadcast data" (Claims 31 & 61)

"control the flow of the broadcast data through the system" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"control the flow of the broadcast data within the system"	"No construction necessary"
"physical data source" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"hardware and software that parses video and audio data from said broadcast data"	"No construction necessary"
"accepts broadcast data" (Claims 31 & 61)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"accepts data that was transmitted"	"No construction necessary"

(Dkt. No 167, Ex. A4, 10/17/2012 Joint Claim Construction Chart for '389 Patent.)

TiVo submits that the Court recently construed the term "control the flow of the broadcast data through the system" in the *Verizon* case. (Dkt. No. 177, at 15 (citing *Verizon Markman* at 11-12).) TiVo urges that despite the Motorola/TWC proposal that no construction is necessary, construction is appropriate to prevent Motorola and TWC from misconstruing the term at trial. (*Id.*, at 16.) TiVo also submits that the Court recently construed the term "physical data source" in the *AT&T Markman*. (*Id.*, at 15 (citing 2011 WL 6961021, at *4).) TiVo notes that "EchoStar and AT&T both attempted to limit the 'physical data source' to the 'Media Switch' and the Court disagreed both times." (*Id.*, at 16 (citing *EchoStar Contempt*, 640 F. Supp. 2d at 868; *AT&T Markman*, 2011 WL 6961021, at *4).) TiVo further submits that the Court recently construed the term "accepts broadcast data" in the *AT&T Markman*. (*Id.*, at 15 (citing 2011 WL 6961021, at *4).)

Motorola and TWC respond that "TiVo seeks to construe these terms solely because they were previously construed by the Court. The disputes leading to these constructions, however, are not at issue in this case. If such a dispute arises, Motorola and TWC reserve the right to address the Court at that time." (Dkt. No. 183, at 15.)

TiVo replies that the Court should reject Motorola and TWC's attempt to "reserv[e] rights" and should instead "continue to apply its constructions for these terms." (Dkt. No. 190, at 8.)

Because Motorola and TWC have presented no substantive argument, the Court hereby adopts its prior constructions as set forth here:

Term	Construction
"control the flow of the broadcast data through the system" (Claims 31 & 61)	"control the flow of the broadcast data within the system"
"physical data source" (Claims 31 & 61)	"hardware and software that parses video and audio data from said broadcast data"
"accepts broadcast data" (Claims 31 & 61)	"accepts data that was transmitted"

B. U.S. Patent No. 7,529,465

The '465 Patent, titled "System for Time Shifting Multimedia Content Streams," issued on May 5, 2009. The '465 Patent is a continuation of a continuation of the '389 Patent, so the '465 Patent and the '389 Patent share common figures and a common written description. In general, the '465 Patent relates to simultaneous control of two different programs. The Abstract of the '465 Patent states:

> A multimedia time warping system. The TV streams are converted to a[] Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation and are parsed and separated it [*sic*] into video and audio components. The components are stored in temporary buffers. Events are recorded that indicate the type of component that has been found, where it is located, and when it occurred. The program logic is notified that an event has occurred and the data is extracted from the buffers. The parser and event buffer decouple the CPU from having to parse the MPEG stream and from the real time nature of the data streams which allows for slower CPU and bus speeds and translate to lower system costs. The video and audio components are stored on a storage device and when the program is requested for display, the video and audio components are extracted from the storage device and reassembled into an MPEG stream which is sent to a decoder. The decoder converts the MPEG stream into TV output signals and delivers the TV output signals to a TV receiver.

The '465 Patent is sometimes referred to by the parties as the "Multi-Room Patent."

(1) "video segment" and "video segment identifying information" (Claims 1 & 10)

"video segment" (Claims 1 & 10)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a portion of video from a multimedia program"	"all or a portion of video from a multimedia program"
"video segment identifying information" (Claims 1 & 10)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"information that identifies a portion of video from a multimedia program"	"information that identifies all or a portion of video from a multimedia program"

(Dkt. No 167, Ex. A5, 10/17/2012 Joint Claim Construction Chart for '465 Patent.)

(a) The Parties' Positions

TiVo argues that the Motorola/TWC proposed constructions "should be rejected because they seek to add new, unfounded limitations to the claims, which the Court already rejected in the *Verizon* matter." (Dkt. No. 177, at 20 (citing *Verizon Markman* at 26-27 (citing *AT&T Markman*, 2011 WL 6961021, at *17)).)

Motorola and TWC respond that "the ordinary meaning of video segment includes single-segment videos, and nothing in the intrinsic or extrinsic record excludes them." (Dkt. No. 183, at 18.) Motorola and TWC also emphasize that TiVo relies on an extrinsic definition of the constituent term "segment" to justify construing the terms to exclude retrieving a single-segment video. (*Id.*, at 19.)

TiVo replies that "[t]he claims require video segment identifying information for a video segment in said multimedia program. This language relates to a portion of the program, not the entire program." (Dkt. No. 190, at 9.)

(b) Analysis

The *Verizon Markman* considered Verizon's proposal that "video segment" means "all or part of a multimedia program comprising a video," which is substantially similar to the Motorola/TWC proposal here. *Verizon Markman* at 26-27. The *Verizon Markman* rejected that proposal and adopted the construction reached in the *AT&T Markman*, where the Court rejected a proposal to construe "video segment" to mean "two or more video frames within a multimedia program":

> The parties dispute whether a "video segment" should be limited to only portions of a multimedia program or if it can include the entire multimedia program. The patent specification does not exclude retrieving the entire multimedia program, and actually discloses playing back the entire recorded program. Defendants argue that Plaintiff's proposed construction could also include a single frame of video, which, according to Defendants, would be an image and not video. However, Defendants do not present any authority for this argument. Defendants also do not point to any portion of the specification that states that a video segment must include more than one frame or that the invention cannot play back one frame only. Accordingly, the Court hereby construes "video segment" as "a portion of video from a multimedia program" and "video segment identifying information" as "information that identifies a portion of video from a multimedia program."

2011 WL 6961021, at *17.

Further, Claims 1 and 10 of the '465 Patent refers to "at least one video segment *in* said multimedia program." Finally, the specification discloses: "Referring to FIG. 3, the incoming MPEG stream 301 has *interleaved* video 302, 305, 306 and audio 303, 304, 307 *segments*." ('465 Patent at 4:28-30 (emphasis added).)

On balance, Motorola and TWC have failed to justify departing from the Court's prior construction, which the Court hereby adopts as follows:

Term	Construction
"video segment" (Claims 1 & 10)	"a portion of video from a multimedia program"
"video segment identifying information" (Claims 1 & 10)	"information that identifies a portion of video from a multimedia program"

(2) "frame step" (Claims 1 & 10)

TiVo's Proposed Construction	Motorola/TWC Proposed Construction
"moving from one frame to another frame in a manner that is not a fast forward, rewind or play function"	"manually stepping frame-by-frame (i.e., picture-by-picture) through the video program"

(Dkt. No 167, Ex. A5, 10/17/2012 Joint Claim Construction Chart for '465 Patent.)

(a) The Parties' Positions

TiVo submits that the term "frame step" has not been previously construed by any court. (Dkt. No. 177, at 22.) TiVo also notes that the '465 Patent does not expressly define the term. (*Id.*) TiVo argues that Motorola and TWC's "support for their construction comes from a patchwork of extrinsic evidence unrelated to the Multi-Room Patent or the intrinsic record." (*Id.*) TiVo further argues that the Motorola/TWC proposal of "manually" is unclear and that stepping "frame-by-frame (i.e., picture-by-picture)" is unclear and unsupported. (*Id.*, at 23.)

Motorola and TWC respond that "the patent examiner correctly recognized the claimed frame step as "the well-known VCR [(video cassette recorder)] frame step function . . . to allow a user to observe one frame at a time." (Dkt. No. 183, at 16 (citing Ex. L, 5/20/2005 Office Action, at 3).) Motorola and TWC also argue that TiVo is improperly relying upon general-purpose definitions for the individual words "frame" and "step" such that "TiVo's cobbled-together construction would encompass every possible type of trick play that moves between

frames." (*Id.*, at 17.) Motorola and TWC argue that TiVo's attempt to solve this problem with a "carve-out" of "fast forward, rewind or play" is not supportable. (*Id.*, at 17-18.)

TiVo replies that "[e]xamples [of 'frame step'] can include advancing frame-by-frame, skipping forward, and skipping back, and other discontinuous motions from one frame to another that are embraced within the term 'frame step.'" (Dkt. No. 190, at 8 (citing Ex. E, 11/17/2011 Barton dep., at 201:25-202:3) (named inventor discussing "frame step" as "the ability to move around to -- arbitrarily [*sic*] places in the video in a discontinuous manner")).) TiVo also submits that "there is no basis for making 'manual stepping' the touchstone for frame step." (*Id.*, at 8.) TiVo concludes that "just as a person can step up or down a ladder one, two or more steps at a time, there is no reason to exclude from the scope of the claims stepping through a number of frames at a time or stepping through frames in other ways." (*Id.*, at 8-9.)

(b) Analysis

Claim 1 of the '465 Patent recites (emphasis added):

> 1. A process for a digital video recorder, comprising the steps of:
> storing a plurality of multimedia programs in digital form on at least one storage device;
> wherein a user selects previously recorded multimedia program(s) from said at least one storage device;
> simultaneously retrieving for play back a video segment from at least one of said selected previously recorded multimedia program(s) and a video segment from a multimedia program whose storage is in progress using video segment identifying information generated by the digital video recorder for at least one video segment in said at least one of said selected previously recorded multimedia program(s) and video segment identifying information generated by the digital video recorder for at least one video segment in said multimedia program whose storage is in progress to cause delivery of selected video segments to an output subsystem, the digital video recorder automatically generating video segment identifying information for specific video segments in multimedia programs as each multimedia program is being stored on said at least one storage device; and
> wherein said simultaneously retrieving for play back step allows playback rate and direction of each multimedia program to be controlled individually and

> simultaneously to perform any of: fast forward, rewind, *frame step*, pause, and play functions.

Claim 10 is substantially similar to Claim 1 but recites an apparatus rather than a method.

The specification discloses several functions:

> The invention additionally provides the user with the ability to store selected television broadcast programs while simultaneously watching or reviewing another program and *to view stored programs with at least the following functions: reverse, fast forward, play, pause, index, fast/slow reverse play, and fast/slow play*.

('465 Patent at 3:30-36 (emphasis added).) The term "frame step" does not appear in the specification outside of the claims.

During prosecution, the examiner noted that "VCR frame step function is old and well known in the art and; therefore, Official Notice is taken," and the Examiner concluded that "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to [incorporate] the well known VCR frame step function into Hooper et al's [prior art] system in order *to allow user to observe one frame at a time*." (Dkt. No. 183, Ex. L, 5/20/2005 Office Action, at 3 (emphasis added).) Patent examiners are ". . . assumed . . . to be familiar from their work with the level of skill in the art." *Am. Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359 (Fed. Cir. 1984), *abrogated on other grounds, Therasense, Inc. v. Becton, Dickinson & Co.*, 649 F.3d 1276 (Fed. Cir. 2011); *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1304 (Fed. Cir. 2008) (citing *American Hoist*); *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1347 (Fed. Cir. 2005) ("Statements about a claim term made by an Examiner during prosecution of an application may be evidence of how one of skill in the art understood the term at the time the application was filed."). The examiner did not, however, state that frame step advancement

must be manual. Instead, the examiner merely referred to the frame step function as "allow[ing] user to observe one frame at a time." (Dkt. No. 183, Ex. L, 5/20/2005 Office Action, at 3.)

One of the named inventors, Alan Moskowitz, testified that "frame step" uses "manual intervention" of the user to move the video "one frame at a time." (Dkt. No. 183, Ex. P, 10/25/2011 Moskowitz Dep. Tr., at 128:21-130:3.). Inventor testimony, however, is extrinsic evidence and is generally of limited weight during claim construction. *See Howmedica Osteonics Corp. v. Wright Med. Tech., Inc.*, 540 F.3d 1337, 1346-47 (Fed. Cir. 2008).

At first blush, TiVo's proposed construction seems overbroad, particularly because it would seemingly encompass slow play and slow reverse. On balance, nothing in the specification defines "frame step" or "step" as requiring manually stepping through each frame. The prosecution history, discussed above, contains no "definitive statements" by the patentee that would require such a construction. *Omega Eng.*, 334 F.3d at 1324.

Focusing on the context of Claims 1 and 10 of the '465 Patent, the "frame step" must be distinct from fast forward, rewind, or play, which are recited separately in the list that includes "frame step." Further, to distinguish those other modes, the term "frame step" requires stepping "frame-by-frame," as proposed by Motorola and TWC. Despite TiVo's arguments to the contrary, skipping frames is a skip, not a step.

The Court therefore hereby construes **"frame step"** to mean **"moving frame-by-frame in a manner that is not a fast forward, rewind, or play function."**

(3) "to cause delivery of selected video segments to an output subsystem," "output subsystem," and "module" (Claims 1, 10 & 17)

"to cause delivery of selected video segments to an output subsystem" (Claims 1 & 10)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"to cause delivery of selected video segments to a subsystem in the digital video recorder, wherein the subsystem produces output signals"	"No construction necessary"
"output subsystem" (Claims 1 & 10)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a subsystem in the digital video recorder wherein the subsystem produces output signals"	"No construction necessary"
"module" (Claims 10 & 17)	
TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a portion of a device and/or a software program that carries out a specific function and may be used alone or combined with other modules of the same device or program"	"No construction necessary"

(Dkt. No 167, Ex. A5, 10/17/2012 Joint Claim Construction Chart for '465 Patent.)

TiVo argues that Motorola and TWC provide no reason why the Court should not adopt its previous constructions." (Dkt. No. 177, at 21 (citing *Verizon Markman* at 28 & 31; *AT&T Markman*, 2011 WL 6961021, at *18, *19).)

Motorola and TWC respond that "TiVo asks the Court to adopt constructions from prior cases even though those constructions addressed disputes that are not present in this case. If

such a dispute arises, Motorola and TWC reserve the right to address the Court at that time." (Dkt. No. 183, at 19.)

TiVo replies that the Court should continue to apply its prior constructions. (Dkt. No. 190, at 9.)

Because Motorola and TWC present no substantive dispute, the Court hereby adopts its prior constructions as set forth here:

Term	Construction
"to cause delivery of selected video segments to an output subsystem" (Claims 1 & 10)	"to cause delivery of selected video segments to a subsystem in the digital video recorder, wherein the subsystem produces output signals"
"output subsystem" (Claims 1 & 10)	"a subsystem in the digital video recorder wherein the subsystem produces output signals"
"module" (Claims 10 & 17)	"a portion of a device and/or a software program that carries out a specific function and may be used alone or combined with other modules of the same device or program"

C. U.S. Patent No. 6,792,195

The '195 Patent, titled "Method and Apparatus Implementing Random Access and Time-Based Functions on a Continuous Stream of Formatted Digital Data," issued on September 14, 2004, and bears a priority date of October 10, 1997 (based on a provisional patent application). In general, the '195 Patent relates to a data cache for buffering a linear stream of information so as to enable, for example, pausing, rewinding, and fast forwarding within the cache. The Abstract of the '195 Patent states:

> A continuous stream of formatted digital data, such as a video segment, audio segment, or information stream, appears to be a fixed length segment under certain circumstances, defining a virtual segment within the continuous stream which moves forward in time in synchrony with the continuous stream. The virtual segment thus defined can be explored in a non-linear fashion at arbitrary

playback rates. For instance, concepts such as rewind, pause, frame advance, and fast forward become meaningful even though the continuous stream never ceases.

The '195 Patent is sometimes referred to by the parties as the "Trick Play Patent."

(1) "cache access means for selecting a portion of the linear cache for streaming access to information stored therein" (Claim 58)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
35 U.S.C. 112, ¶ 6 Function: "To select a portion of the linear cache to access information stored in the linear cache." Structure: "A playback pointer (current block indicator) that selects a portion of information stored in the linear cache that can be retrieved from the linear cache."	35 U.S.C. 112, ¶ 6 This claim limitation is invalid as indefinite for failure to disclose any structure that corresponds to the recited function. In the alternative, Motorola & TWC propose the following: Function: "selecting a portion of the linear cache for streaming access to information stored therein" Corresponding Structure: "current block indicator & buffer controller (201) in Fig. 2"

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

(a) The Parties' Positions

TiVo argues that the term is not indefinite and that Motorola and TWC have failed to link the "current block indicator" or the "buffer controller" to the recited function. (Dkt. No. 177, at 24.) TiVo also argues that the "buffer controller" is a general-purpose computer and is therefore not corresponding structure. (*Id.*, at 24-25 (citing *WMS Gaming*, 184 F.3d at 1349).)

Motorola and TWC argue that this term, as well as all of the other means-plus-function terms in the '195 Patent, are invalid because of lack of disclosure of corresponding structure in the specification. (Dkt. No. 183, at 20-21.) Motorola and TWC also urge that "the specification

never discloses or links any structure for a single-cache system that would correspond to the claimed functions." (*Id.*, at 21.)

Alternatively, Motorola and TWC argue that the corresponding structure should include the "buffer controller 201, which moves the current block indicator to perform the claimed 'selecting.'" (Dkt. No. 183, at 22.) Motorola and TWC further argue that "[d]ependent claims 70-71[] and 73-77 also confirm that the cache access means is not merely the current block indicator, but is the structure that moves the current block indicator." (*Id.*) Again, Motorola and TWC urge that "[b]ecause the position of the playback pointer is what 'selects,' the structure required to position the playback pointer is required to perform the claimed 'selecting' function." (*Id.*, at 22-23.) Finally, Motorola and TWC agree with TiVo that the disclosure of "buffer controller" is a general purpose structure that requires an algorithm. (*Id.*, at 23.) This, Motorola and TWC argue, is why the claim is indefinite. (*Id.*)

TiVo replies that "the bar for disclosing sufficient structure to avoid an indefiniteness finding 'is not a high bar: all one needs to do . . . is to recite some structure corresponding to the means in the specification . . . so that one can readily ascertain what the claim means.'" (Dkt. No. 190, at 10 (quoting *Biomedino*, 490 F.3d at 950).)

TiVo also replies:

> The parties differ on whether the buffer controller also is corresponding structure for the "cache access means" or whether the buffer controller corresponds to the claimed "cache control means" or "synchronization means." In other words, the parties dispute which means clause provides the instruction to move the playback pointer. TiVo's construction makes clear that the corresponding structure for the cache access means is the playback pointer and that the buffer controller corresponds to the cache control means and synchronization means.

(*Id.*, at 11.) TiVo submits that the Motorola/TWC proposal "conflates the function of the cache access means with the claimed cache control means and synchronization means." (*Id.*)

(b) Analysis

The parties agree that the disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6. The parties also substantially agree on the claimed function.

Claim 58 recites (emphasis added):

> 58. A process for capturing and storing a data stream, comprising the steps of:
> providing a linear cache for storing information from said data stream;
> providing *cache access means for selecting a portion of the linear cache for streaming access to information stored therein*;
> providing cache control means for controlling a rate of said streaming access to said linear cache;
> providing synchronization means for synchronizing streamed information from said linear cache for delivery to said cache access means;
> wherein said cache control means controls a rate and direction of said streaming access;
> wherein said linear cache maintains a window that represents a time span into a past history of said data stream that includes a most recently stored portion of said data stream; and
> wherein said linear cache discards any information that falls outside of said window.

On one hand, the specification discloses a "playback pointer" that "selects a portion of the media cache that is to be accessed":

> The invention provides a method and apparatus for providing pass through or capture of continuous linear streams of digital information represented in various formats while providing the appearance of a locally stored stream. The preferred embodiment of the invention comprises at least one media cache for copying blocks of data from the information stream. Data in the media cache can be viewed as a snapshot of the continuous stream of digital information. The invention also comprises a playback pointer. The *playback pointer position selects a portion of the media cache that is to be accessed* to provide functions including any of pause, rewind, fast forward, play, play faster, play slower, and play in reverse.
>
> * * *

> FIG. 1 provides a general overview of how the preferred embodiment of the invention operates on a continuous stream of data. In particular, one or more media caches 10 copy blocks of data from an information stream 12. The position of a *playback pointer 14 selects a portion of the media cache that is to be accessed*, thus allowing such functions as pause, rewind, fast forward, and play, as well as more sophisticated and unique operations, such as play faster, play slower, and play in reverse.

('195 Patent at 4:15-27 & 4:46-54 (emphasis added).)

On the other hand, the specification also discloses a "current block indicator" that is repositioned by a linear cache upon request by a buffer controller (emphasis added):

> The LC [(linear cache)] maintains an indication of the next block to be presented to the decoding process, which is referred to as the current block indicator (305). . . .
>
> *Random access to the information stream is achieved by moving the current block indicator to some other block in the LC.* If the LC is requested to move the indicator, and the current block indicated is not a key frame, the LC instructs the decoding process to reset its decoding state, thus purging any partially constructed presentation data. . . .
>
> Referring again to FIG. 2, *the BC [(buffer controller)] requests repositioning of an LC by specifying a PTS [(Presentation Time Stamp)] value. The LC finds the block containing a PTS which is closest to that requested by the BC. . . .*
>
> If the LC is marked as a key stream, the LC scans the blocks in the cache to find the key frame which is nearest to the requested PTS value, searching both before and after the desired value. Once properly positioned, the LC returns to the BC the PTS of the key frame block which was identified.
>
> Following positioning of the key stream, *the BC instructs each remaining stream to position itself to the PTS returned by the key-stream*.

('195 Patent at 7:27-55.) Further, "[t]he BC implements the pause function by locking the current block indicator in the key stream to that block." (*Id.* at 8:58-59.)

The specification thus refers both to a "playback pointer" and to a "current block indicator." The discussion of the buffer controller recites a "current block pointer," which

suggests that the term "playback pointer" is synonymous with "current block indicator." (*Id.* at 5:42.) Such a reading is particularly appropriate because after this reference to the "current block pointer," the specification switches from referring to a "playback pointer" to referring to a "current block indicator." TiVo appears to agree that the two terms are used synonymously, having proposed, as discussed above, that the corresponding structure includes "playback pointer (current block indicator)." (Dkt. No. 177, at 24.)

On balance, the above-quoted portions of the specification disclose that the position of the current block indicator is controlled by the buffer controller. Such a reading is consistent with the introductory discussion of the buffer controller as "the main management device":

> 1. The Buffer Controller (201) is the main management device. It accepts external requests (generated, for instance, from a remote control device) for operations on the digital stream and, in turn, generates appropriate control messages for the other devices of the invention . . . .

(*Id.* at 5:6-11.) The "buffer controller (201)" is thus part of the corresponding structure that performs the claimed function of "*selecting* a portion of the linear cache."

General legal principles regarding indefiniteness are discussed in Section II., above. As to means-plus-function terms, "[i]f there is no structure in the specification corresponding to the means-plus-function limitation in the claims, the claim will be found invalid as indefinite." *Biomedino*, 490 F.3d at 950. Further, "the written description must clearly link or associate structure to the claimed function." *Telcordia*, 612 F.3d at 1376.

On balance, the disclosure of a "buffer controller" is sufficient corresponding structure to avoid indefiniteness. *See id.* at 1376-77 (holding that "controller" was sufficient disclosure because "[t]he record shows that an ordinary artisan would have recognized the controller as an

electronic device with a known structure"). Motorola and TWC have not met their burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50.

The Court therefore hereby finds that the term **"cache access means for selecting a portion of the linear cache for streaming access to information stored therein"** is not indefinite, that the function is **"selecting a portion of the linear cache for streaming access to information stored therein,"** and that the corresponding structure is **"buffer controller (201) and a current block indicator, and equivalents thereof."**

(2) "cache control means for controlling a rate of said streaming access to said linear cache" and "wherein said cache control means controls a rate and direction of said streaming access" (Claim 58)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
35 U.S.C. 112, ¶ 6 Function: "Controlling a rate and direction of streaming access to the linear cache." Structure: "A buffer controller that provides an instruction to retrieve information from the linear cache for presentation at a certain rate and direction, such as fast forward and reverse."	35 U.S.C. 112, ¶ 6 This claim limitation is invalid as indefinite for failure to disclose any structure that corresponds to the recited function. In the alternative, Motorola & TWC propose the following: Function: "controlling a rate and direction of streaming access to the linear cache" Corresponding Structure: "buffer controller (201) in Fig. 2 & stream clock (202) in Fig. 2 & a rate multiplier"

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

The parties agree that these two disputed terms should be construed together.

(a) The Parties' Positions

TiVo argues that Motorola and TWC have identified incorrect structure because "the stream clock and rate multiplier discussed in the specification are inapplicable to the asserted claims." (Dkt. No. 177, at 25-26.) In particular, "[t]he stream clock synchronizes operations in a system that has multiple caches," and "[t]he rate multiplier is used to properly position information stored in different linear caches." (*Id.*, at 25.) TiVo also argues that the Motorola/TWC proposed construction imports a limitation from Claim 1, which TiVo submits "recites a plurality of caches and a cache control means that sends clock events to control rate and direction." (*Id.*, at 26.)

Motorola and TWC argue that this term, as well as all of the other means-plus-function terms in the '195 Patent, are invalid because of lack of disclosure of corresponding structure in the specification. (Dkt. No. 183, at 20-21.) Motorola and TWC also urge that "the specification never discloses or links any structure for a single-cache system that would correspond to the claimed functions." (*Id.*, at 21.)

Alternatively, Motorola and TWC argue that "[t]he buffer controller must work together with the stream clock (202) and its rate multiplier because it is the stream clock that is delivering the clock events to the linear caches, not the buffer controller." (Dkt. No. 183, at 23 (citing '195 Patent at 5:46-52).) Motorola and TWC also argue that their proposed construction does not import a limitation from Claim 1 "because the stream clock sends clock events to the linear caches, not the cache playback means as recited in claim 1." (*Id.*, at 24.) Motorola and TWC conclude that TiVo's proposed construction amounts to functional claiming, which is

impermissible. (*Id.* (citing *Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1334 (Fed. Cir. 2008)).)

TiVo replies that "the bar for disclosing sufficient structure to avoid an indefiniteness finding 'is not a high bar: all one needs to do . . . is to recite some structure corresponding to the means in the specification . . . so that one can readily ascertain what the claim means.'" (Dkt. No. 190, at 10 (quoting *Biomedino*, 490 F.3d at 950).)

TiVo also replies that:

> [Motorola and TWC's] supporting evidence for including the stream clock is based on specification passages that discuss sending clock events to three linear caches. As discussed above and below, claim 58 recites a linear cache and various means for accessing information within the cache. The claim does not recite any means that performs a function related to synchronizing multiple caches. The stream clock is not linked to the recited function of the cache control means which is to control a rate and direction of streaming access to the linear cache.

(Dkt. No. 190, at 12 (citation omitted).) Finally, TiVo argues claim differentiation with respect to Claim 59. (*Id.*, at 12-13.)

(b) Analysis

The parties agree that the disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6. The parties also agree on the claimed function. The parties further agree that if the term is not indefinite, the corresponding structure includes at least the buffer controller. The parties dispute whether the corresponding structure includes the stream clock 202 and a rate multiplier.

The specification introduces the stream clock as follows:

> 2. The Stream Clock (202) provides a general device for synchronizing operations on a set of linear caches, such that multiple streams of data which must

> be presented in a synchronized fashion are correctly positioned, and that they present their data at consistent delivery rates . . . .
>
> Stream Clock
>
> The Stream Clock provides a central synchronization facility that distributes time-based events to a number of LCs. Each stream of information in a broadcast program is encoded using different techniques, each technique having unique notions of, for example, block size, data format, and presentation time stamps for decoding. For instance, in the time it takes for a single MPEG video frame to be decoded and presented, there may be several MPEG audio frames to be decoded and presented. The Stream Clock distributes events to each LC at the proper rate for that LC.

('195 Patent at 5:11-15 & 5:55-65.) The buffer controller and the stream clock must work together to implement a play mode, such as reverse play:

> The reverse function is implemented by moving the current block indicator backwards through the cache by one block for each clock event generated by the SC [(stream clock)]. Again, the key stream LC is used to control positioning. The BC instructs each LC to move to reverse mode, in which the current block indicator is moved backwards one block on each clock event. . . .
>
> The rate at which blocks are presented to the decoding process is controlled by the rate multiplier in the Stream Clock, allowing for arbitrary speed of reverse operation.

('195 Patent at 8:34-46.) The rate multiplier works together with the stream clock:

> The decoupling of the absolute clock value and the actual dispatching of clock events is critical in implementing some of the unique and novel aspects of the invention, e.g. the ability to control easily the rate at which playback of the stream occurs. When initially created, the SC [(stream clock)] records a value referred to as the rate multiplier, which is initially set to one. Whenever the SC requests the underlying operating system to queue a timer event, the actual time delay requested is multiplied by the rate multiplier. A rate multiplier greater than one results in faster playback of the stream, while a multiplier of less than one results in a slower playback of the stream.
>
> For the LCs to position themselves properly (see below), the same rate multiplier must be used to modify the Presentation Time Stamp (PTS) stored in each block when calculating positioning. Thus, the SC makes a small set of functions

> available to the LC which perform comparisons and operations on PTS values, after properly synchronizing those values with the rate multiplier stored in the SC.
>
> The combination of the Stream Clock, with independent event generation for each LC and the ability to modify logically the rate at which all events are dispatched using a single value provides a novel and unique application of common time-based software design techniques.

(*Id.* at 6:28-51; *see id.* at 5:11-15 (stream clock facilitates presenting multiple streams "at consistent delivery rates").)

As to TiVo's reliance on Claim 1, that claim recites that "said cache control means sends clock events *to said cache playback means* to control a rate and direction of streaming access." The recitation of a relationship between the "cache control means" and the "cache playback means" differentiates Claim 1 from Claim 58. TiVo also argues claim differentiation as to Claim 59, which depends from Claim 58 and which recites that "said cache control means sends clock events *to said cache access means* to control the rate and direction of said streaming access." The recitation of a relationship between the "cache control means" and the "cache access means" differentiates Claim 59 from Claim 58. The Motorola/TWC proposal therefore does not improperly import a clock event limitation from Claim 1 or Claim 59. Moreover, "claim differentiation, which is a guide, not a rigid rule, does not override the requirements of § 112, ¶ 6." *Nomos Corp. v. Brainlab USA, Inc.*, 357 F.3d 1364, 1368 (Fed. Cir. 2004) (citations and internal quotation marks omitted).

Because the above-quoted disclosures explain that the buffer controller, stream clock, and rate multiplier work together to perform the recited function, those structures constitute the corresponding structure for this means-plus-function term. These structures are also sufficient corresponding structure to avoid indefiniteness. *See Telcordia*, 612 F.3d at 1376-77 (holding

that "controller" was sufficient disclosure because "[t]he record shows that an ordinary artisan would have recognized the controller as an electronic device with a known structure"). Motorola and TWC have not met their burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50.

The Court hereby finds that the terms **"cache control means for controlling a rate of said streaming access to said linear cache"** and **"wherein said cache control means controls a rate and direction of said streaming access"** are not indefinite, that the function is **"controlling a rate and direction of streaming access to the linear cache,"** and that the corresponding structure is **"buffer controller (201), stream clock (202), and rate multiplier, and equivalents thereof."**

(3) "synchronization means for synchronizing streamed information from said linear cache for delivery to said cache access means" (Claim 58)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
35 U.S.C. 112, ¶ 6 Function: "Synchronizing streamed information from the linear cache for delivery to the cache access means." Structure: "A buffer controller that receives streaming information from the linear cache and provides an instruction(s) to move the position of the playback pointer."	35 U.S.C. 112, ¶ 6 This claim limitation is invalid as indefinite for failure to disclose any structure that corresponds to the recited function. In the alternative, Motorola & TWC propose the following: Function: "synchronizing streamed information from the linear cache for delivery to the cache access means" Corresponding Structure: "stream clock (202) in Fig. 2 & buffer controller (201) executing the synchronization algorithm described at 7:32-67"

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

(a) The Parties' Positions

TiVo argues that "[t]he synchronization algorithm discussed in the . . . passages [cited by Motorola and TWC] synchronizes multiple caches" and is therefore inapplicable to the asserted claim, namely Claim 58. (Dkt. No. 177, at 26.) TiVo submits that its proposal, by contrast, identifies as corresponding structure "a buffer controller that instructs the cache access means (playback pointer) which information is to be selected from the linear cache." (*Id.*, at 27.)

Motorola and TWC argues that this term, as well as all of the other means-plus-function terms in the '195 Patent, are invalid because of lack of disclosure of corresponding structure in the specification. (Dkt. No. 183, at 20-21.) Motorola and TWC also urge that "the specification never discloses or links any structure for a single-cache system that would correspond to the claimed functions." (*Id.*, at 21.)

Alternatively, Motorola and TWC respond that "[t]he only disclosed and linked structure for performing any type of synchronizing is the stream clock 202 for synchronizing the streamed information from the linear cache to streamed information from other linear caches, in combination with the buffer controller (201) that executes the algorithm at '195 patent at 7:32-67 to correctly position those linear caches relative to each other." (*Id.*, at 24-25.) Motorola and TWC argue that TiVo's construction should be rejected because "it merely 'repositions' a single stream without synchronizing anything at all," which "is merely part of the separately claimed cache access means." (*Id.*, at 25-26.)

TiVo replies that "the bar for disclosing sufficient structure to avoid an indefiniteness finding 'is not a high bar: all one needs to do . . . is to recite some structure corresponding to the

means in the specification . . . so that one can readily ascertain what the claim means.'" (Dkt. No. 190, at 10 (quoting *Biomedino*, 490 F.3d at 950).)

TiVo also replies that Motorola and TWC "attempt to import a function that synchronizes multiple caches into the claims, and hence [Motorola and TWC] erroneously include in their proposed structure a stream clock and a buffer controller executing a synchronization algorithm that synchronizes multiple caches." (Dkt. No. 190, at 13.) TiVo also argues that the "clock events" generated by the stream clock "are linked to the cache control means, not the synchronization means." (*Id.*) Finally, TiVo argues that the specification does disclose structure for synchronizing a single stream, such as "the buffer controller providing instructions to move the playback pointer (current block indicator) so, for example, only key frames can be provided to the decoding process during random access modes such as fast forward and reverse." (*Id.*, at 14.)

(b) Analysis

Claim 58 recites (emphasis added):

> 58. A process for capturing and storing a data stream, comprising the steps of:
> providing a linear cache for storing information from said data stream;
> providing cache access means for selecting a portion of the linear cache for streaming access to information stored therein;
> providing cache control means for controlling a rate of said streaming access to said linear cache;
> providing *synchronization means for synchronizing streamed information from said linear cache for delivery to said cache access means*;
> wherein said cache control means controls a rate and direction of said streaming access;
> wherein said linear cache maintains a window that represents a time span into a past history of said data stream that includes a most recently stored portion of said data stream; and
> wherein said linear cache discards any information that falls outside of said window.

The parties agree that the disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6. The parties also agree on the claimed function. The parties further agree that if the term is not indefinite, the corresponding structure includes at least the buffer controller. The parties dispute whether the corresponding structure includes the stream clock 202 and requires the synchronization algorithm described in the '195 Patent at 7:32-67, which discloses as follows (emphasis added):

> Random access to the information stream is achieved by moving the current block indicator to some other block in the LC [(linear cache)]. If the LC is requested to move the indicator, and the current block indicated is not a key frame, the LC instructs the decoding process to reset its decoding state, thus purging any partially constructed presentation data. For example, if the current frame is an MPEG predictive frame (P-frame), then the decoding process has state information, including the current picture to be modified by the P-frame. This data must be purged so that the decoder begins in the proper state.
>
> Referring again to FIG. 2, the BC [(buffer controller)] requests repositioning of an LC by specifying a PTS [(presentation time stamp)] value. The LC finds the block containing a PTS which is closest to that requested by the BC. There are two unique cases for repositioning: the first, if the LC is marked as the key stream, and the second when it is not.
>
> If the LC is marked as a key stream, the LC scans the blocks in the cache to find the key frame which is nearest to the requested PTS value, searching both before and after the desired value. Once properly positioned, the LC returns to the BC the PTS of the key frame block which was identified.
>
> Following positioning of the key stream, *the BC instructs each remaining stream to position itself to the PTS returned by the key-stream*. Key frames in other LCs may not align with those in the key stream. Each LC handles this problem by requesting the decoding process to purge any decoding state, and then stores an indication that suppresses the LC from actually presenting blocks to the decoding process.
>
> Following this, the LC behaves normally, *accepting clock events and advancing the current block indicator to match*, except that the blocks are not actually presented to the decoding process. When the LC encounters a key frame, it deletes the indication suppressing presentation of blocks, and presents the current

> block to the decoding process. *This brings the stream into full synchronization with the key stream.*

The specification also discloses that "[t]he Stream Clock provides a central *synchronization* facility that distributes time-based events to a number of LCs." ('195 Patent at 5:56-58 (emphasis added); *see id.* at 5:11-15 (stream clock "synchronizes operations on a set of linear caches").)

Although the disputed term refers to synchronizing "said linear cache," wherein cache is singular, that synchronization must be with respect to something. On one hand, the specification discloses synchronizing PTS values with the rate multiplier:

> For the LCs to position themselves properly (see below), the same rate multiplier must be used to modify the Presentation Time Stamp (PTS) stored in each block when calculating positioning. The SC [(stream clock)] makes a small set of functions available to the LC which perform comparisons and operations on PTS values, after properly *synchronizing* those values with the rate multiplier stored in the S[tream] C[lock].

(*Id.* at 6:43-46 (emphasis added).) Likewise, the Abstract of the '195 Patent refers to "a virtual segment within the continuous stream which moves forward in time in *synchrony* with the continuous stream." (*Id.* at Abstract (emphasis added).)

On the other hand, the specification as a whole demonstrates that the synchronization is with respect to at least one other cache. For example, the multiple caches may include video, audio, second audio programming, and closed captioning (emphasis added):

> A second issue for a digital computer based implementation of such methods is that multiple streams of information must be handled in parallel. For example, a broadcast stream is actually composed of at least two unique sequences of information, i.e. a stream of digital blocks representing the visual image and a stream of digital blocks representing the audible image. If the audio effect is instead stereo, then two audio streams are included, each unique. A broadcast signal may have additional data, such as the Secondary Audio Program (SAP), where the stream of information is a translation of the audio signal to a different

> language. Another stream which may be present is the Closed Caption (CC) stream, which provides a textual representation of spoken language in the audio stream(s). The simple broadcast stream described earlier may therefore have at least five different components, each one compressed using different techniques. When presenting this complex stream to a viewer, the *blocks of each stream must be* decoded at appropriate times for the compression methods involved and *synchronized with the presentation of all other streams*.

('195 Patent at 3:12-32.)

On balance, Motorola and TWC are correct that "the specification never discloses or links any structure for a single-cache system that would correspond to the claimed functions." (Dkt. No. 183, at 21; *see B. Braun Med. Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997) ("[S]tructure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.").)

Because the above-quoted disclosures explain that the buffer controller and stream clock perform the recited function, those structures constitute the corresponding structure for this means-plus-function term. These structures are also sufficient corresponding structure to avoid indefiniteness. *See Telcordia*, 612 F.3d at 1376-77 (holding that "controller" was sufficient disclosure because "[t]he record shows that an ordinary artisan would have recognized the controller as an electronic device with a known structure"). Motorola and TWC have not met their burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50. Finally, because the parties dispute the appropriate programming of the buffer controller, the construction should identify the algorithm cited by Motorola and TWC. *WMS Gaming*, 184 F.3d at 1349 ("In a means-plus-function claim in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is

not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm.")

The Court therefore hereby finds that the term **"synchronization means for synchronizing streamed information from said linear cache for delivery to said cache access means"** is not indefinite, that the function is **"synchronizing streamed information from the linear cache for delivery to the cache access means,"** and that the corresponding structure is **"stream clock (202) and buffer controller (201) programmed to execute the synchronization algorithm described at 7:32-67, and equivalents thereof."**

(4) "said linear cache maintains a window that represents a time span into a past history of said data stream that includes a most recently stored portion of said data stream" (Claim 58)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"The linear cache continuously buffers information from a stream of information, the buffered information includes a newest block of information and an oldest block of information held by the linear cache."	"The linear cache defines a maximum time, based on PTS values, between when the newest block arrives and the oldest block in the linear cache."

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

(a) The Parties' Positions

TiVo argues that its proposal "clarifies what is meant by the term "maintains," which is that "[t]he window is maintained by continuously buffering information from a stream of information." (Dkt. No. 177, at 27.) TiVo also argues that contrary to the Motorola/TWC proposal of "PTS values," "Claim 58 does not require presentation time stamps." (*Id.*) TiVo concludes that "[i]t is improper to import a function and corresponding structure that is recited in another claim," namely Claim 64, which recites a "presentation means." (*Id.*, at 28.)

Motorola and TWC respond that the constituent terms "window" and "time span" are explained in the specification in terms of a maximum time. (Dkt. No. 183, at 27.) Motorola and TWC argue that TiVo's proposed construction errs "by refusing to define the 'oldest block' in its proposed construction as limited to a maximum time." (*Id.*) Motorola and TWC also state that they "would not object to the Court omitting 'based on PTS values' from its construction." (*Id.*, at 27 n.7.)

TiVo replies that its proposal "includes the terms newest block and oldest blocks, which inherently represent a time span." (Dkt. No. 190, at 15.)

(b) Analysis

"So long as the meaning of an expression is made reasonably clear and its use is consistent within a patent disclosure, an inventor is permitted to define the terms of his claims." *Intellicall*, 952 F.2d at 1388 (quoting *Lear Siegler, Inc. v. Aeroquip Corp.*, 733 F.2d 881, 889 (Fed. Cir. 1984)).

The specification introduces the "linear cache" as a device for buffering a data stream:

> 3. The Linear Cache (204) is a general device for buffering the information contained in a stream of digital information, such that the data in the cache can be viewed as a snapshot of the continuous stream of digital data . . . .

('195 Patent at 5:16-20.) Motorola and TWC cite the following disclosure as being an express definition of a "window" maintained by the linear cache:

> The LC [(linear cache)] maintains a window (302), which is defined as the maximum time, based on PTS [(presentation time stamp)] values, between when the newest block in the LC arrived and the oldest block which the LC may hold. Thus, the window represents a time span into the past history of the stream.

('195 Patent at 7:7-10.) This definition is consistent with other disclosures in the specification, such as the disclosure of the time delay that results when play resumes after attempting to reverse past the oldest block in the linear cache:

> The current block indicator can not be moved past the oldest block in the cache. If a clock event would result in moving the current block indicator past the earliest block, then the indicator is set to that block, and play out continues as described above. The key frame LC indicates to the BC [(buffer controller)] that the oldest cached block was reached. The BC resets the SC rate multiplier to one, and each LC positions the current block indicator to the oldest cached block. Externally, it appears as if the stream began playing in a forward direction again, time delayed by the window size.

(*Id.* at 8:47-56.) On balance, the above-quoted definition of the "window (302)" constitutes a lexicography that governs the construction of the disputed term. The Court nonetheless omits the reference to "PTS" values in accordance with TiVo's request and the statement of non-opposition by Motorola and TWC. (Dkt. No. 183, at 27 n.7.)

The Court hereby construes **"said linear cache maintains a window that represents a time span into a past history of said data stream that includes a most recently stored portion of said data stream"** to mean **"the linear cache continuously buffers a stream of information into a window that is defined by the maximum time between the newest block that has arrived in the linear cache and the oldest block held by the linear cache."**

(5) "discards" (Claim 58)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"plain meaning"	"Deletes"

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

(a) The Parties' Positions

TiVo argues that the Motorola/TWC proposal "is overly narrow, lacks any support in the patent, and is contrary to a common understanding of 'discard.'" (Dkt. No. 177, at 28.) TiVo submits that "[o]ne would understand that something may be discarded without deleting it." (*Id.*)

Motorola and TWC respond that "TiVo has not explained what else 'discards' might mean in this context" and that Figure 1 illustrates that the media cache "according to the invention" will "delete [the] oldest cache block." (Dkt. No. 183, at 28 (citing '195 Patent at 4:31-32 & Fig. 1).) Motorola and TWC also cite prosecution history in which the patentee added the disputed term in response to a rejection that noted the absence, in the cited prior art, of "deletion" of the stored video data. (*Id.*, at 28.) Finally, Motorola and TWC submit that even under TiVo's proposal of "plain meaning," "[e]lectronic devices 'discard' data by deleting it." (*Id.*)

TiVo replies that "although the Patent Office used 'deletion,' the patentee amended the claim to state 'discarding,' not 'deleting.'" (Dkt. No. 190, at 15.) TiVo also submits that "electronic storage space can be made available for subsequent use without deleting the data within that storage space. The data can remain in the available storage space until overwritten by new data." (*Id.*)

(b) Analysis

The specification discloses that blocks falling outside of the window (302) are discarded (emphasis added):

> The capture mechanism for a particular stream type gives each encoded digital block to the LC [(linear cache)] as it arrives (301). The LC marks that block with the current PTS [presentation time stamp)] for the stream. The LC maintains a window (302), which is defined as the maximum time, based on PTS values,

> between when the newest block in the LC arrived and the oldest block which the LC may hold. Thus, the window represents a time span into the past history of the stream. *The LC discards blocks which fall outside the window (303)*, thus the window allows one to look a fixed distance into the past history of a stream. This mechanism allows choices and tradeoffs between available storage space and the availability of past information for viewing.

('195 Patent at 7:10-13.)

The patentee added the disputed term to application claim 64 (which issued as Claim 58, in which the disputed term now appears) in response to a rejection based on the "Iwasaki et al." reference, in which the examiner noted that "the Iwasaki et al[] reference has not indicated *deletion* of the stored video data from the disk array unit." (Dkt. No. 183, Ex. S, 11/24/2003 Office Action, at 4 (emphasis added).) In so amending, the patentee cited the examiner's comment regarding "deletion":

> In particular, Iwasaki does not teach or disclose a system wherein linear caches maintain a window that represents a time span into a past history of a video signal that includes a currently captured portion of said video signal, and *wherein said linear caches discard any information that falls outside of said window as claimed in the invention*. Iwasaki makes no mention of linear caches maintaining a window that represents a time span into a past history of a video signal and *discarding any information that falls outside of the window*.
>
> *Iwasaki* only teaches the storing of video data on disk array units *and does not contemplate* the maintenance of a window or the *discarding of any information that falls outside of the window*. Further, the Office Action states:
>
> "Furthermore, it is noted that the Iwasaki et al's reference has not indicated *deletion* of the stored video data from the disk array unit."

(Dkt. No. 183, Ex. T, 2/24/2004 Response, at 26 (emphasis added).)

A person of ordinary skill in the art reads the claims not only in the context of the specification but also in the context of the prosecution history. *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1373-74 (Fed. Cir. 2008) ("[T]he person of ordinary skill is deemed

to read the claim terms in the context of the entire patent, including the specification and prosecution history.") (citing *Phillips*, 415 F.3d at 1313); *Phillips*, 415 F.3d at 1317 ("[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.").

On balance, a person of ordinary skill in the art would read the above-discussed prosecution history to mean that "discards" means "deletes." In particular, the patentee's express reliance on the examiner's comment regarding "deletion" would demonstrate to a person of ordinary skill in the art that the term "discards" in the patentee's responsive amendment refers to deletion. Finally, such a reading is also consistent with Figure 1 of the '195 Patent, which includes: "Delete oldest cache block."

The Court therefore hereby construes **"discards"** to mean **"deletes."**

(6) "stream capture means for capturing information for a particular data stream and encoding said information before storing said information in said linear cache" (Claim 60)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
35 U.S.C. 112, ¶ 6 Function: "Capturing and encoding information for a particular type of data before storing the information in the linear cache." Structure: "A capture mechanism that adds an attribute to blocks of data that are stored in the linear cache."	35 U.S.C. 112, ¶ 6 This claim limitation is invalid as indefinite for failure to disclose any structure that corresponds to the recited function. In the alternative, Motorola & TWC propose the following: Function: "capturing information for a particular data stream type and encoding it before storing it in the linear cache" Corresponding Structure: "linear cache capture mechanism described in 7:4-26"

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

(a) The Parties' Positions

TiVo argues that whereas "TiVo's construction correctly links the capture mechanism discussed in the '195 specification with the claimed stream capture means, the Motorola/TWC proposal "is again ambiguous in that it cites 22 lines of the specification." (Dkt. No. 177, at 29.)

Motorola and TWC argue that this term, as well as all of the other means-plus-function terms in the '195 Patent, are invalid because of lack of disclosure of corresponding structure in the specification. (Dkt. No. 183, at 20-21.)

Alternatively, Motorola and TWC respond that "[i]n fact, the specification does not disclose any structure for capturing information for a particular stream or encoding it as claimed.

The specification merely discusses what information might be captured . . . and says that those frames should be marked as key frames." (*Id.*, at 29 (citing '195 Patent at 7:16-23 (key frame attributes)).)

TiVo replies that "the bar for disclosing sufficient structure to avoid an indefiniteness finding 'is not a high bar: all one needs to do . . . is to recite some structure corresponding to the means in the specification . . . so that one can readily ascertain what the claim means.'" (Dkt. No. 190, at 10 (quoting *Biomedino*, 490 F.3d at 950).) TiVo's reply brief does not otherwise address this disputed term. (*See* Dkt. No. 190.)

(b) Analysis

The parties agree that the disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6. Also, the parties present no substantive dispute on the claimed function. (*See* Dkt. No. 177, at 29; Dkt. No. 183, at 29.)

Claim 60 recites:

> 60. The process of claim 58, further comprising the step of:
> providing stream capture means for capturing information for a particular data stream type and encoding said information before storing said information in said linear cache.

Both sides propose that the corresponding structure is the "capture mechanism" disclosed in the specification (emphasis added):

> The *capture mechanism* for a particular stream type gives each encoded digital block to the LC [(linear cache)] as it arrives (301). The LC marks that block with the current PTS [(presentation time stamp)] for the stream. The LC maintains a window (302), which is defined as the maximum time, based on PTS values, between when the newest block in the LC arrived and the oldest block which the LC may hold. Thus, the window represents a time span into the past history of the stream. The LC discards blocks which fall outside the window (303), thus the window allows one to look a fixed distance into the past history of a stream. This

> mechanism allows choices and tradeoffs between available storage space and the availability of past information for viewing.
>
> The *capture mechanism* is responsible for providing certain attributes along with each new block (304). The first of these is the key frame attribute, which indicates that this block begins a sequence of interrelated blocks. When performing random access operations on a stream, the LC only allows positioning of the stream to a block marked as a key frame. The second is the End Of Segment (EOS) attribute, which indicates that the stream has ended, and no more data are to be presented. For example, the I-frame of an MPEG GOP [(group of pictures)] is marked as a key frame by the capture mechanism, but all other blocks are not so marked.

('195 Patent at 7:4-26.) The "capture mechanism" by itself, however, is insufficient because the term "mechanism" does not represent meaningful structure in the context of a means-plus-function analysis. *Mass. Inst. of Tech. & Elecs. For Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006) ("The generic terms 'mechanism,' 'means,' 'element,' and 'device,' typically do not connote sufficiently definite structure."). Thus, the corresponding structure is not merely the capture mechanism but is the capture mechanism in accordance with the disclosure in the '195 Patent at 7:4-26 of an algorithm for performing the claimed function.

Because the above-quoted disclosure explains that the "capture mechanism" performs the recited function, this structure constitutes the corresponding structure for this means-plus-function term. This structure, together with the above-quoted algorithm, is also sufficient corresponding structure to avoid indefiniteness. *See Telcordia*, 612 F.3d at 1376-77. Motorola and TWC have not met their burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50.

The Court therefore hereby finds that the term **"stream capture means for capturing information for a particular data stream and encoding said information before storing said information in said linear cache"** is not indefinite, that the function is **"capturing information**

for a particular data stream type and encoding it before storing it in the linear cache," and that the corresponding structure is **"capture mechanism as described in column 7, lines 4 through 26, and equivalents thereof."**

(7) "presentation means for presenting the streaming access from said cache access means to a storage device" (Claim 64)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
35 U.S.C. 112, ¶ 6 Function: "Presenting streaming access from the cache access means to a storage device." Structure: "A buffer controller that specifies a presentation time stamp to a storage device of the linear cache that is used to access information in the storage device."	35 U.S.C. 112, ¶ 6 This claim limitation is invalid as indefinite for failure to disclose any structure that corresponds to the recited function. In the alternative, Motorola & TWC propose the following: Function: "presenting the streaming access from the cache access means to a storage device" Corresponding Structure: "clip capture device (203) with the clip capture module described in 10:6-35"

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

(a) The Parties' Positions

TiVo argues that the "clip capture module" identified by Motorola and TWC "is responsible for selecting a range of blocks from a set of linear caches" and "is not necessary to perform the function of the presentation means." (Dkt. No. 177, at 29.) TiVo further notes in this regard that the "Clip Capture 203" in Figure 2 of the '195 Patent "is connected to the linear caches with a dotted line and is not necessary to present streaming access to a linear cache." (*Id.*, at 30.)

Motorola and TWC argue that this term, as well as all of the other means-plus-function terms in the '195 Patent, are invalid because of lack of disclosure of corresponding structure in the specification. (Dkt. No. 183, at 20-21.)

Alternatively, Motorola and TWC respond that the "clip capture module" "is the closest thing to corresponding structure disclosed by the patent." (*Id.*, at 30.) Motorola and TWC argue that TiVo's proposed construction "essentially converts the claimed function of streaming access *to* a storage device, into streaming access *from* a storage device." (*Id.* (emphasis added).)

TiVo replies that "the bar for disclosing sufficient structure to avoid an indefiniteness finding 'is not a high bar: all one needs to do . . . is to recite some structure corresponding to the means in the specification . . . so that one can readily ascertain what the claim means.'" (Dkt. No. 190, at 10 (quoting *Biomedino*, 490 F.3d at 950).) TiVo's reply brief does not otherwise address this disputed term. (*See* Dkt. No. 190.)

(b) Analysis

The parties agree that the disputed term is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6. The parties also substantially agree on the claimed function.

Claim 64 recites:

> 64. The process of claim 58, further comprising the step of:
> providing presentation means for presenting the streaming access from said cache access means to a storage device.

The specification discloses a "clip capture (203)" that performs the claimed function:

> 4. The Clip Capture (203) device is a general mechanism for capturing all or part of a cached set of information streams and presenting the resulting data as an organized stream of data to a data sink such as, for example, a computer file system or another display device.
>
> * * *

> Clip Capture
>
> The Clip Capture module is responsible for selecting ranges of blocks from a set of LCs [(linear caches)], bringing them together into an appropriate storage or transmission format, and saving or sending them as needed. This collection of blocks from multiple LCs is also referred to as a clip. The Clip Capture operation is invoked by the BC [(buffer controller)] on external request.
>
> There are two ways in which this request may be made:
>
> First, the BC may indicate that capture should occur based on the current block indicator in the key stream LC, which is referred to as a relative capture, in which case a relative range of capture is specified.
>
> Second, the BC may indicate an absolute range, in which case only blocks marked with a PTS [(presentation time stamp)] inclusive in that range are captured. This is referred to as an absolute capture.
>
> The operation of the Clip Capture module is straightforward. For each LC, the CC [(clip capture)] module calls the getclip() function of that LC with parameters as directed by the BC. The Clip Capture module then linearizes the blocks into a multiplexed stream appropriate for the final clip format desired. For example, it might generate an MPEG System Stream, interleaving blocks from the various LCs as needed.
>
> This interleaving is conceptually simple. The CC loops through each clip obtained from an LC, choosing the block with the earliest PTS from among all clips, outputting the block as appropriate, and advancing the block pointer for that clip to the next block. When all the blocks from all clips are exhausted, the capture operation is complete. The CC then loops through all LCs calling the releaseclip() function.

('195 Patent at 5:22-26 & 10:6-36.)

Because the above-quoted disclosure explains that the Clip Capture (203) with the clip capture module performs the recited function, that structure is part of the corresponding structure for this means-plus-function term. This structure is also sufficient corresponding structure to avoid indefiniteness. Motorola and TWC have not met their burden to prove indefiniteness by clear and convincing evidence. *See Halliburton*, 514 F.3d at 1249-50.

The Court expressly rejects TiVo's contention that the clip capture module "is not necessary to perform the function of the presentation means." (Dkt. No. 177, at 29.) Instead, the "clip capture module" is disclosed as presenting data from the cache access means to a storage device, as quoted above and as illustrated in Figure 2, which is reproduced here:

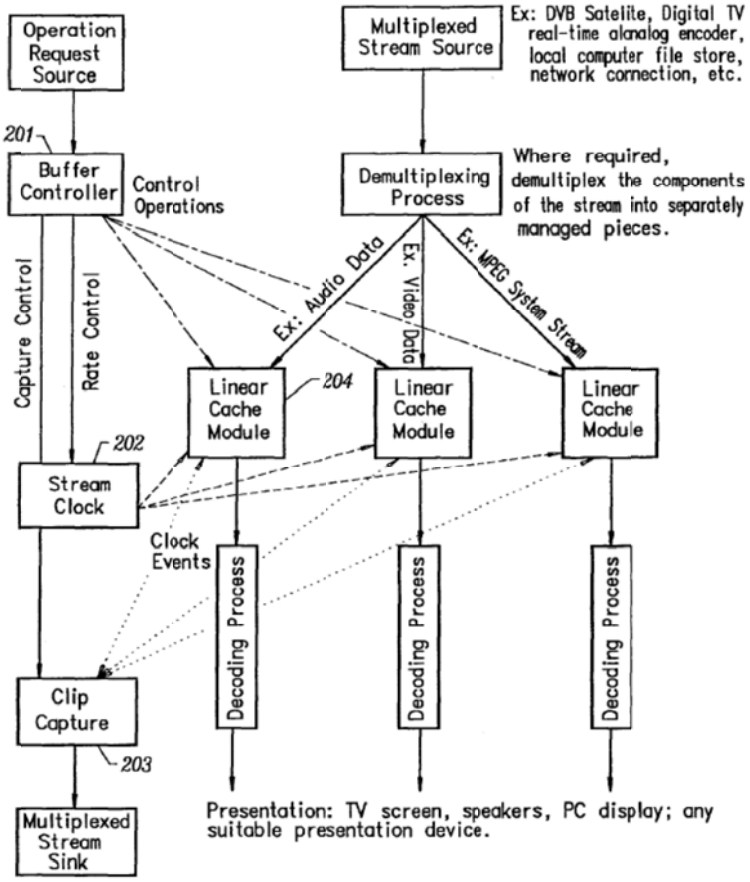


FIG. 2

Even assuming for the sake of argument that the dotted lines connecting the linear cache modules with the Clip Capture 203 signify that the Clip Capture 203 is optional as a general matter, the Clip Capture 203 is required by the "presentation means" limitation of Claim 64.

The Court therefore hereby finds that the term **"presentation means for presenting the streaming access from said cache access means to a storage device"** is not indefinite, that the

function is **"presenting the streaming access from the cache access means to a storage device,"** and that the corresponding structure is **"clip capture device (203) with the clip capture module described in column 10, lines 6 through 35, and equivalents thereof."**

(8) "current block indicator" (Claims 73 & 75)

TiVo's Proposed Construction	**Motorola/TWC Proposed Construction**
"a playback pointer that provides an indication of the next block to be presented to the decoding process"	"An indication of the next block to be presented to the decoding process."

(Dkt. No 167, Ex. A6, 10/17/2012 Joint Claim Construction Chart for '195 Patent.)

(a) The Parties' Positions

TiVo argues that the Motorola/TWC proposed construction "is incomplete because it only describes what the indicator does, not what it is." (Dkt. No. 177, at 30.) TiVo submits that the "current block indicator" is depicted as a pointer in Figure 3. (*Id.*)

Motorola and TWC respond that this term is expressly defined in the specification: "The linear cache maintains an indication of the next block to be presented to the decoding process, which is referred to as the current block indicator (305)." (Dkt. No. 183, at 30 (quoting '195 Patent 7:27-29).) Motorola and TWC also argue that TiVo's proposal of a "playback pointer" is ambiguous and that the arrow in Figure 3 cited by TiVo is merely a visual aid. (*Id.*)

TiVo's reply brief does not separately address this disputed term. (*See* Dkt. No. 190.)

(b) Analysis

"So long as the meaning of an expression is made reasonably clear and its use is consistent within a patent disclosure, an inventor is permitted to define the terms of his claims." *Intellicall*, 952 F.2d at 1388 (quoting *Lear Siegler*, 733 F.2d at 889).

The specification defines “current block indicator” as follows:

> The LC [(linear cache)] maintains an indication of the next block to be presented to the decoding process, which is referred to as the current block indicator (305). For normal viewing, this block is the block last added to the LC by the capture mechanism. Thus, the stream is presented live, with at most a one-frame time delay between capture and presentation.

(‘195 Patent at 7:27-32.) Usage of the “current block indicator” throughout the specification is consistent with this above-quoted definition (emphasis added):

> Random access to the information stream is achieved by moving the *current block indicator* to some other block in the LC.
>
> * * *
>
> The forward function is implemented by moving the *current block indicator* forward through the cache by one block for each event generated by the Stream Clock.
>
> * * *
>
> The reverse function is implemented by moving the *current block indicator* backwards through the cache by one block for each clock event generated by the SC [(stream clock)].
>
> * * *
>
> The BC [(buffer controller)] implements the pause function by locking the *current block indicator* in the key stream LC to that block. The LC can only lock the indicator to a key frame block, thus it searches forward for such a block in the cache. If no key frame is present, the LC stores an indication that a lock has been requested. When the capture process presents a key frame, the LC thus recognizes that the lock was requested, and locks the *current block indicator* to that key frame. The LC also presents this key frame to the decoding process, such that proper positioning, from the decoding process point of view, is maintained. Following this, as new blocks are added to the front of the cache, the *block indicated* moves backwards in the cache. Additionally, the LC sets the indicator suppressing further presentation of data to the decoding process.

(‘195 Patent at 7:33-35, 8:4-6, 8:34-36 & 8:58-9:5.)

TiVo proposes that the current block indicator is a "playback pointer." The specification refers both to a "playback pointer" and to a "current block indicator." The discussion of the buffer controller recites a "current block pointer," which suggests that the term "playback pointer" is synonymous with "current block indicator." (*Id.* at 5:42.) Such a reading is particularly appropriate because after this reference to the "current block pointer," the specification switches from referring to a "playback pointer" to referring to a "current block indicator." On balance, however, the patentee's above-quoted lexicography should govern.

The Court accordingly hereby construes **"current block indicator"** to mean **"an indication of the next block to be presented to the decoding process."**

VI. CONCLUSION

The Court adopts the constructions set forth in this opinion for the disputed terms of the patents-in-suit. The parties are ordered that they may not refer, directly or indirectly, to each other's claim construction positions in the presence of the jury. Likewise, the parties are ordered to refrain from mentioning any portion of this opinion, other than the actual definitions adopted by the Court, in the presence of the jury. Any reference to claim construction proceedings is limited to informing the jury of the definitions adopted by the Court.

Within thirty (30) days of the issuance of this Memorandum Opinion and Order, the parties are hereby **ORDERED**, in good faith, to mediate this case with the mediator agreed upon by the parties. As a part of such mediation, each party shall appear by counsel and by at least one corporate officer possessing sufficient authority and control to unilaterally make binding decisions for the corporation adequate to address any good faith offer or counteroffer of settlement that might arise during such mediation. Failure to do so shall be deemed by the Court

as a failure to mediate in good faith and may subject that party to such sanctions as the Court deems appropriate.

So ORDERED and SIGNED this 5th day of December, 2012.

RODNEY GILSTRAP
UNITED STATES DISTRICT JUDGE