

device 105, and memory 104. Input streams are converted to an MPEG stream and sent to the Media Switch 102. The Media Switch 102 buffers the MPEG stream into memory. It then performs two operations if the user is watching real time TV: the stream is sent to the Output Section 103 and it is written simultaneously to the hard disk or storage device 105.

The Output Section 103 takes MPEG streams as input and produces an analog TV signal according to the NTSC, PAL, or other required TV standards. The Output Section 103 contains an MPEG decoder, On-Screen Display (OSD) generator, analog TV encoder and audio logic. The OSD generator allows the program logic to supply images which will be overlaid on top of the resulting analog TV signal. Additionally, the Output Section can modulate information supplied by the program logic onto the VBI of the output signal in a number of standard formats, including NABTS, CC and EDS.

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.

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.

The Media Switch enables the program logic to associate proper time sequence information with each segment, possibly embedding it directly into the stream. The time sequence information for each segment is called a time stamp. These time stamps are monotonically increasing and start at zero each time the system boots up. This allows the invention to find any particular spot in any particular video segment. For example, if the system needs to read five seconds into an incoming contiguous video stream that is being cached, the system simply has to start reading forward into the stream and look for the appropriate time stamp.

A binary search can be performed on a stored file to index into a stream. Each stream is stored as a sequence of fixed-size segments enabling fast binary searches because of the uniform time stamping. If the user wants to start in the middle of the program, the system performs a binary search of the stored segments until it finds the appropriate spot, obtaining the desired results with a minimal amount of information. If the signal were instead stored as an MPEG stream, it would be necessary to linearly parse the stream from the beginning to find the desired location.

With respect to FIG. 4, the Media Switch contains four input Direct Memory Access (DMA) engines 402, 403, 404, 405 each DMA engine has an associated buffer 410, 411, 412, 413. Conceptually, each DMA engine has a pointer 406, a limit for that pointer 407, a next pointer 408, and a limit for the next pointer 409. Each DMA engine is dedicated to a particular type of information, for example, video 402, audio 403, and parsed events 405. The buffers 410, 411, 412, 413 are circular and collect the specific information. The DMA engine increments the pointer 406 into the associated buffer until it reaches the limit 407 and then loads the next pointer 408 and limit 409. Setting the pointer 406 and next pointer 408 to the same value, along with the corresponding limit value creates a circular buffer. The next pointer 408 can be set to a different address to provide vector DMA.

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 engine 402. The parser 401 buffers up data and DMA's 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.

Referring to FIGS. 4 and 5, the event buffer 413 is filled by the parser 401 with events. Each event 501 in the event buffer has an offset 502, event type 503, and time stamp field 504. The parser 401 provides the type and offset of each event as it is placed into the buffer. For example, when an audio event occurs, the event type field is set to an audio event and the offset indicates the location in the audio buffer 411. The program logic knows where the audio buffer 411 starts and adds the offset to find the event in the stream. The address offset 502 tells the program logic where the next event occurred, but not where it ended. The previous event is cached so the end of the current event can be found as well as the length of the segment.

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 program logic converts the offset 502 into the actual address 610 of each segment, and records the event length 609 using the last cached event. If the stream was produced by encoding an analog signal, it will not contain Program Time Stamp (PTS) values, which are used by the decoders to properly present the resulting output. Thus, the program logic uses the generated time stamp 504 to calculate a simulated PTS for each segment and places that into the logical segment time stamp 607. In the case of a digital TV stream, PTS values are already encoded in the stream. The program logic extracts this information and places it in the logical segment time stamp 607.

The program logic continues collecting logical segments 603 until it reaches the fixed buffer size. When this occurs, the program logic generates a new buffer, called a Packetized Elementary Stream (PES) 605 buffer containing these logical segments 603 in order, plus ancillary control information. Each logical segment points 604 directly to the circular buffer, e.g., the video buffer 613, filled by the Media Switch 601. This new buffer is then passed to other logic components, which may further process the stream in some way, such as presenting it for decoding or writing it to the storage media. 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.

A unique feature of the MPEG stream transformation into PES buffers is that the data associated with logical segments need not be present in the buffer itself, as presented above. When a PES buffer is written to storage, these logical segments are written to the storage medium in the logical order in which they appear. This has the effect of gathering components of the stream, whether they be in the video, audio or private data circular buffers, into a single linear buffer of stream data on the storage medium. The buffer is read back from the storage medium with a single transfer from the storage media, and the logical segment information is updated to correspond with the actual locations in the buffer 606. Higher level program logic is unaware of this transformation, since it handles only the logical segments, thus stream data is easily managed without requiring that the data ever be copied between locations in DRAM by the CPU.

A unique aspect of the Media Switch is the ability to handle high data rates effectively and inexpensively. It performs the functions of taking video and audio data in, sending video and

audio data out, sending video and audio data to disk, and extracting video and audio data from the disk on a low cost platform. Generally, the Media Switch runs asynchronously and autonomously with the microprocessor CPU, using its DMA capabilities to move large quantities of information with minimal intervention by the CPU.

Referring to FIG. 7, the input side of the Media Switch 701 is connected to an MPEG encoder 703. There are also circuits specific to MPEG audio 704 and vertical blanking interval (VBI) data 702 feeding into the Media Switch 701. If a digital TV signal is being processed instead, the MPEG encoder 703 is replaced with an MPEG2 Transport Demultiplexor, and the MPEG audio encoder 704 and VBI decoder 702 are deleted. The demultiplexor multiplexes the extracted audio, video and private data channel streams through the video input Media Switch port.

The parser 705 parses the input data stream from the MPEG encoder 703, audio encoder 704 and VBI 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 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, 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 714.

The Media Switch 701 has a data bus 711 that connects to the CPU 713 and DRAM 714. An address bus 712 is also shared between the Media Switch 701, CPU 713, and DRAM 714. A hard disk or storage device 710 is connected to one of the ports of the Media Switch 701. The Media Switch 701 outputs streams to an MPEG video decoder 715 and a separate audio decoder 717. The audio decoder 717 signals contain audio cues generated by the system in response to the user's commands on a remote control or other internal events. The decoded audio output from the MPEG decoder is digitally mixed 718 with the separate audio signal. The resulting signals contain video, audio, and on-screen displays and are sent to the TV 716.

The Media Switch 701 takes in 8-bit data and sends it to the disk, while at the same time extracts another stream of data off of the disk and sends it to the MPEG decoder 715. All of the DMA engines described above can be working at the same time. The Media Switch 701 can be implemented in hardware using a Field Programmable Gate Array (FPGA), ASIC, or discrete logic.

Rather than having to parse through an immense data stream looking for the start of where each frame would be, the program logic only has to look at the circular event buffer in DRAM 714 and it can tell where the start of each frame is and the frame type. This approach saves a large amount of CPU power, keeping the real time requirements of the CPU 713 small. The CPU 713 does not have to be very fast at any point in time. The Media Switch 701 gives the CPU 713 as much time as possible to complete tasks. The parsing mechanism 705 and event queue 708 decouple the CPU 713 from parsing the audio, video, and buffers and the real time nature of the streams, which allows for lower costs. It also allows the use of a bus structure in a CPU environment that operates at a much lower clock rate with much cheaper memory than would be required otherwise.

The CPU 713 has the ability to queue up one DMA transfer and can set up the next DMA transfer at its leisure. This gives the CPU 713 large time intervals within which it can service the DMA controller 709. The CPU 713 may respond to a DMA interrupt within a larger time window because of the large latency allowed. MPEG streams, whether extracted from an MPEG2 Transport or encoded from an analog TV signal, are typically encoded using a technique called Variable Bit Rate encoding (VBR). This technique varies the amount of data required to represent a sequence of images by the amount of movement between those images. This technique can greatly reduce the required bandwidth for a signal, however sequences with rapid movement (such as a basketball game) may be encoded with much greater bandwidth requirements. For example, the Hughes DirecTV satellite system encodes signals with anywhere from 1 to 10 Mb/s of required bandwidth, varying from frame to frame. It would be difficult for any computer system to keep up with such rapidly varying data rates without this structure.

With respect to FIG. 8, the program logic within the CPU has three conceptual components: sources 801, transforms 802, and sinks 803. The sources 801 produce buffers of data. Transforms 802 process buffers of data and sinks 803 consume buffers of data. A transform is responsible for allocating and queuing the buffers of data on which it will operate. Buffers are allocated as if "empty" to sources of data, which give them back "full". The buffers are then queued and given to sinks as "full", and the sink will return the buffer "empty".

A source 801 accepts data from encoders, e.g., a digital satellite receiver. It acquires buffers for this data from the downstream transform, packages the data into a buffer, then pushes the buffer down the pipeline as described above. The source object 801 does not know anything about the rest of the system. The sink 803 consumes buffers, taking a buffer from the upstream transform, sending the data to the decoder, and then releasing the buffer for reuse.

There are two types of transforms 802 used: spatial and temporal. Spatial transforms are transforms that perform, for example, an image convolution or compression/decompression on the buffered data that is passing through. Temporal transforms are used when there is no time relation that is expressible between buffers going in and buffers coming out of a system. Such a transform writes the buffer to a file 804 on the storage medium. The buffer is pulled out at a later time, sent down the pipeline, and properly sequenced within the stream.

Referring to FIG. 9, a C++ class hierarchy derivation of the program logic is shown. The TiVo Media Kernel (Tmk) 904, 908, 913 mediates with the operating system kernel. The kernel provides operations such as: memory allocation, synchronization, and threading. The TmkCore 904, 908, 913 structures memory taken from the media kernel as an object. It provides operators, new and delete, for constructing and deconstructing the object. Each object (source 901, transform 902, and sink 903) is multi-threaded by definition and can run in parallel.

The TmkPipeline class 905, 909, 914 is responsible for flow control through the system. The pipelines point to the next pipeline in the flow from source 901 to sink 903. To pause the pipeline, for example, an event called "pause" is sent to the first object in the pipeline. The event is relayed on to the next object and so on down the pipeline. This all happens asynchronously to the data going through the pipeline. Thus, similar to applications such as telephony, control of the flow of MPEG streams is asynchronous and separate from the streams themselves. This allows for a simple logic design that is at the same time powerful enough to support the features described previously, including pause, rewind, fast forward and others. In addition, this structure allows fast and efficient switching between stream sources, since buffered data can be simply discarded and decoders reset using a single event, after which data from the new stream will pass down the pipeline. Such a capability is needed, for example, when switching the channel being captured by the input section, or

when switching between a live signal from the input section and a stored stream.

The source object 901 is a TmkSource 906 and the transform object 902 is a TmkXfrm 910. These are intermediate classes that define standard behaviors for the classes in the pipeline. Conceptually, they handshake buffers down the pipeline. The source object 901 takes data out of a physical data source, such as the Media Switch, and places it into a PES buffer. To obtain the buffer, the source object 901 asks the down stream object in his pipeline for a buffer (allocEmptyBuf). The source object 901 is blocked until there is sufficient memory. This means that the pipeline is self-regulating; it has automatic flow control. When the source object 901 has filled up the buffer, it hands it back to the transform 902 through the pushFullBuf function.

The sink 903 is flow controlled as well. It calls nextFullBuf which tells the transform 902 that it is ready for the next filled buffer. This operation can block the sink 903 until a buffer is ready. When the sink 903 is finished with a buffer (i.e., it has consumed the data in the buffer) it calls releaseEmptyBuf. ReleaseEmptyBuf gives the buffer back to the transform 902. The transform 902 can then hand that buffer, for example, back to the source object 901 to fill up again. In addition to the automatic flow-control benefit of this method, it also provides for limiting the amount of memory dedicated to buffers by allowing enforcement of a fixed allocation of buffers by a transform. This is an important feature in achieving a cost-effective limited DRAM environment.

The MediaSwitch class 909 calls the allocEmptyBuf method of the TmkClipCache 912 object and receives a PES buffer from it. It then goes out to the circular buffers in the Media Switch hardware and generates PES buffers. The MediaSwitch class 909 fills the buffer up and pushes it back to the TmkClipCache 912 object.

The TmkClipCache 912 maintains a cache file 918 on a storage medium. It also maintains two pointers into this cache: a push pointer 919 that shows where the next buffer coming from the source 901 is inserted; and a current pointer 920 which points to the current buffer used.

The buffer that is pointed to by the current pointer is handed to the Vela decoder class 916. The Vela decoder class 916 talks to the decoder 921 in the hardware. The decoder 921 produces a decoded TV signal that is subsequently encoded into an analog TV signal in NTSC, PAL or other analog format. When the Vela decoder class 916 is finished with the buffer it calls releaseEmptyBuf.

The structure of the classes makes the system easy to test and debug. Each level can be tested separately to make sure it performs in the appropriate manner, and the classes may be gradually aggregated to achieve the desired functionality while retaining the ability to effectively test each object.

The control object 917 accepts commands from the user and sends events into the pipeline to control what the pipeline is doing. For example, if the user has a remote control and is watching TV, the user presses pause and the control object 917 sends an event to the sink 903, that tells it pause. The sink 903 stops asking for new buffers. The current pointer 920 stays where it is at. The sink 903 starts taking buffers out again when it receives another event that tells it to play. The system is in perfect synchronization; it starts from the frame that it stopped at.

The remote control may also have a fast forward key. When the fast forward key is pressed, the control object 917 sends an event to the transform 902, that tells it to move forward two seconds. The transform 902 finds that the two second time span requires it to move forward three buffers. It then issues a reset event to the downstream pipeline, so that any queued data or state that may be present in the hardware decoders is flushed. This is a critical step,

since the structure of MPEG streams requires maintenance of state across multiple frames of data, and that state will be rendered invalid by repositioning the pointer. It then moves the current pointer 920 forward three buffers. The next time the sink 903 calls nextFullBuf it gets the new current buffer. The same method works for fast reverse in that the transform 902 moves the current pointer 920 backwards:

A system clock reference resides in the decoder. The system clock reference is sped up for fast play or slowed down for slow play. The sink simply asks for full buffers faster or slower, depending on the clock speed.

With respect to FIG. 10, two other objects derived from the TmkXfrm class are placed in the pipeline for disk access. One is called TmkClipReader 1003 and the other is called TmkClipWriter 1001. Buffers come into the TmkClipWriter 1001 and are pushed to a file on a storage medium 1004. TmkClipReader 1003 asks for buffers which are taken off of a file on a storage medium 1005. A TmkClipReader 1003 provides only the allocEmptyBuf and pushFullBuf methods, while a TmkClipWriter 1001 provides only the nextFullBuf and releaseEmptyBuf methods. A TmkClipReader 1003 therefore performs the same function as the input, or "push" side of a TmkClipCache 1002, while a TmkClipWriter 1001 therefore performs the same function as the output, or "pull" side of a TmkClipCache 1002.

Referring to FIG. 11, a preferred embodiment that accomplishes multiple functions is shown. A source 1101 has a TV signal input. The source sends data to a PushSwitch 1102 which is a transform derived from TmkXfrm. The PushSwitch 1102 has multiple outputs that can be switched by the control object 1114. This means that one part of the pipeline can be stopped and another can be started at the users whim. The user can switch to different storage devices. The PushSwitch 1102 could output to a TmkClipWriter 1106, which goes onto a storage device 1107 or write to the cache transform 1103.

An important feature of this apparatus is the ease with which it can selectively capture portions of an incoming signal under the control of program logic. Based on information such as the current time, or perhaps a specific time span, or perhaps via a remote control button press by the viewer, a TmkClipWriter 1106 may be switched on to record a portion of the signal, and switched off at some later time. This switching is typically caused by sending a "switch" event to the PushSwitch 1102 object.

An additional method for triggering selective capture is through information modulated into the VBI or placed into an MPEG private data channel. Data decoded from the VBI or private data channel is passed to the program logic. The program logic examines this data to determine if the data indicates that capture of the TV signal into which it was modulated should begin. Similarly, this information may also indicate when recording should end, or another data item may be modulated into the signal indicating when the capture should end. The starting and ending indicators may be explicitly modulated into the signal or other information that is placed into the signal in a standard fashion may be used to encode this information.

With respect to FIG. 12, an example is shown which demonstrates how the program logic scans the words contained within the closed caption (CC) fields to determine starting and ending times, using particular words or phrases to trigger the capture. A stream of NTSC or PAL fields 1201 is presented. CC bytes are extracted from each odd field 1202, and entered in a circular buffer 1203 for processing by the Word Parser 1204. The Word Parser 1204 collects characters until it encounters a word boundary, usually a space, period or other delineating character. Recall from above, that the MPEG audio and video segments are collected into a series of fixed-size PES buffers. A special segment is added to each PES buffer to hold the words extracted from the CC field 1205. Thus, the CC information is preserved in time synchronization with the audio and video, and can be correctly presented to the viewer when the stream is displayed. This also allows the stored stream to be

processed for CC information at the leisure of the program logic, which spreads out load, reducing cost and improving efficiency. In such a case, the words stored in the special segment are simply passed to the state table logic 1206.

During stream capture, each word is looked up in a table 1206 which indicates the action to take on recognizing that word. This action may simply change the state of the recognizer state machine 1207, or may cause the state machine 1207 to issue an action request, such as "start capture", "stop capture", "phrase seen", or other similar requests. Indeed, a recognized word or phrase may cause the pipeline to be switched; for example, to overlay a different audio track if undesirable language is used in the program.

Note that the parsing state table 1206 and recognizer state machine 1207 may be modified or changed at any time. For example, a different table and state machine may be provided for each input channel. Alternatively, these elements may be switched depending on the time of day, or because of other events.

Referring to FIG. 11, a PullSwitch is added 1104 which outputs to the sink 1105.

The sink 1105 calls nextFullBuf and releaseEmptyBuf to get or return buffers from the PullSwitch 1104. The PullSwitch 1104 can have any number of inputs. One input could be an ActionClip 1113. The remote control can switch between input sources. The control object 1114 sends an event to the PullSwitch 1104, telling it to switch. It will switch from the current input source to whatever input source the control object selects.

An ActionClip class provides for sequencing a number of different stored signals in a predictable and controllable manner, possibly with the added control of viewer selection via a remote control. Thus, it appears as a derivative of a TmkXfrm object that accepts a "switch" event for switching to the next stored signal.

This allows the program logic or user to create custom sequences of video output. Any number of video segments can be lined up and combined as if the program logic or user were using a broadcast studio video mixer. TmkClipReaders 1108, 1109, 1110 are allocated and each is hooked into the PullSwitch 1104. The PullSwitch 1104 switches between the TmkClipReaders 1108, 1109, 1110 to combine video and audio clips. Flow control is automatic because of the way the pipeline is constructed. The Push and Pull Switches are the same as video switches in a broadcast studio.

The derived class and resulting objects described here may be combined in an arbitrary way to create a number of different useful configurations for storing, retrieving, switching and viewing of TV streams. For example, if multiple input and output sections are available, one input is viewed while another is stored, and a picture-in-picture window generated by the second output is used to preview previously stored streams. Such configurations represent a unique and novel application of software transformations to achieve the functionality expected of expensive, sophisticated hardware solutions within a single cost-effective device.

With respect to FIG. 13, a high-level system view is shown which implements a VCR backup. The Output Module 1303 sends TV signals to the VCR 1307. This allows the user to record TV programs directly on to video tape. The invention allows the user to queue up programs from disk to be recorded on to video tape and to schedule the time that the programs are sent to the VCR 1307. Title pages (EPG data) can be sent to the VCR 1307 before a program is sent. Longer programs can be scaled to fit onto smaller video tapes by speeding up the play speed or dropping frames.

The VCR 1307 output can also be routed back into the Input Module 1301. In this configuration the VCR acts as a backup system for the Media Switch 1302. Any overflow storage or lower priority programming is sent to the VCR 1307 for later retrieval.

The Input Module 1301 can decode and pass to the remainder of the system information encoded on the Vertical Blanking Interval (VBI). The Output Module 1303 can encode into the output VBI data provided by the remainder of the system. The program logic may arrange to encode identifying information of various kinds into the output signal, which will be recorded onto tape using the VCR 1307. Playing this tape back into the input allows the program logic to read back this identifying information, such that the TV signal recorded on the tape is properly handled. For example, a particular program may be recorded to tape along with information about when it was recorded, the source network, etc. When this program is played back into the Input Module, this information can be used to control storage of the signal, presentation to the viewer, etc.

One skilled in the art will readily appreciate that such a mechanism may be used to introduce various data items to the program logic which are not properly conceived of as television signals. For instance, software updates or other data may be passed to the system. The program logic receiving this data from the television stream may impose controls on how the data is handled, such as requiring certain authentication sequences and/or decrypting the embedded information according to some previously acquired key. Such a method works for normal broadcast signals as well, leading to an efficient means of providing non-TV control information and data to the program logic.

Additionally, one skilled in the art will readily appreciate that although a VCR is specifically mentioned above, any multimedia recording device (e.g., a Digital Video Disk-Random Access Memory (DVD-RAM) recorder) is easily substituted in its place.

Although the invention is described herein with reference to the preferred embodiment, one skilled in the art will readily appreciate that other applications may be substituted for those set forth herein without departing from the spirit and scope of the present invention. For example, the invention can be used in the detection of gambling casino crime. The input section of the invention is connected to the casino's video surveillance system. Recorded video is cached and simultaneously output to external VCRs. The user can switch to any video feed and examine (i.e., rewind, play, slow play, fast forward, etc.) a specific segment of the recorded video while the external VCRs are being loaded with the real-time input video. Accordingly, the invention should only be limited by the claims included below.

ENGLISH-CLAIMS:

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What is claimed is:

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

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

tuning said TV signals to a specific program;

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

providing a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;

storing said video and audio components on a storage device;

providing at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;

wherein said Output Section assembles said video and audio components into an MPEG stream;

wherein said Output Section sends said MPEG stream to a decoder;

wherein said decoder converts said MPEG stream into TV output signals;

wherein said decoder delivers said TV output signals to a TV receiver; and

accepting control commands from a user, wherein said control commands are sent through the system and affect the flow of said MPEG stream.

2. The process of claim 1, wherein said Input Section directs said MPEG stream to the destination indicated by said control commands.

3. The process of claim 1, wherein said Output Section extracts said video and audio components from the storage device indicated by said control commands.

4. The process of claim 1, further comprising the step of:

creating custom video output sequences, wherein said sequences are specified by a user or program control.

5. The process of claim 1, wherein the storing and extracting of said video and audio components from said storage device are performed simultaneously.

6. The process of claim 1, wherein said Media Switch calculates and logically associates a time stamp to said video and audio components.

7. The process of claim 1, wherein said Media Switch extracts time stamp values from a digital TV stream and logically associates said time stamp values to said video and audio components.

8. The process of claim 1, further comprising the steps of:

placing said video component into a circular video buffer;

posting an event in a circular event buffer, wherein said event contains an indication that a video component was found and the location of said video component in said circular video buffer; and

sending notice of said event posting.

9. The process of claim 1, further comprising the steps of:

placing said audio component into a circular audio buffer;

posting an event in a circular event buffer, wherein said event contains an indication that an audio component was found and the location of said audio component in said circular audio buffer; and

sending notice of said event posting.

10. The process of claims 8 or 9, further comprising the steps of:

receiving said notice;

retrieving said event posting from said event buffer; and

indexing into the appropriate buffer indicated by the type and location information in said event buffer.

11. The process of claim 10, further comprising the steps of:

generating a buffer containing the logical audio or video segments in order, including ancillary information, wherein each of said logical segments points to the appropriate circular buffer location where corresponding audio or video components have been placed.

12. The process of claim 1, further comprising the step of:

increasing the decoder system clock rate for fast playback or fast reverse playback.

13. The process of claim 1, further comprising the step of:

decreasing the decoder system clock rate for slow playback or slow reverse playback.

14. The process of claim 1, further comprising the step of:

combining system audio cues and on-screen displays with said TV output signals.

15. The process of claim 1, further comprising the steps of:

decoding the Vertical Blanking Interval (VBI) data or private data channel information from said TV signal; and

examining said data to determine the starting or ending indicators of a specific program.

16. The process of claim 1, further comprising the step of:

scanning the words contained within the closed caption (CC) fields to determine program starting and ending times, wherein particular words or phrases are used to trigger the recording of a specific program and wherein the CC information is preserved in time synchronization with the audio and video, and can be correctly presented to the viewer when the stream is displayed.

17. The process of claim 16, further comprising the step of:

performing a specific action when a specific word is found in said CC information.

18. The process of claim 1, wherein said Media Switch has a data bus connecting it to a CPU and DRAM.

19. The process of claim 1, wherein said Media Switch shares an address bus with a CPU and DRAM.

20. The process of claim 1, wherein said Media Switch operates asynchronously and

autonomously with a CPU.

21. The process of claim 1, wherein said storage device is connected to said Media Switch.

22. The process of claim 1, wherein said Media Switch allows the CPU to queue up Direct Memory Access (DMA) transfers.

23. The process of claim 1, wherein said Media Switch is implemented in hardware.

24. The process of claim 1, further comprising the step of:

providing a multimedia recording device, including, but not limited to, a Video Cassette Recorder (VCR) or a Digital Video Disk-Random Access Memory (DVD-RAM) device, wherein said recording device is attached to the output side of said decoder, allowing said user to record said TV output signals.

25. The process of claim 24, wherein said user queues up programs from said storage device to be stored on said recording device.

26. The process of claim 24, wherein said user sets time schedules for said programs to be sent to said recording device.

27. The process of claim 24, wherein title pages may be sent to said recording device before sending a program to be stored on said recording device.

28. The process of claim 24, wherein a program that is longer in duration than a magnetic tape in said recording device allows, is sped up to fit within the desired time limit.

29. The process of claim 24, wherein a program that is longer in duration than a magnetic tape in said recording device allows, has frames dropped from it to fit within the desired time limit.

30. The process of claim 24, wherein the output of said recording device is routed to said Input Section, allowing said recording device to act as a storage back up system, said recording device accepts overflow storage, TV programs, software updates, or other data that are later retrieved and sent to said Input Section.

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.

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

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

a module for tuning said TV signals to a specific program;

at least one Input Section, wherein said Input Section converts said specific program to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation;

a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;

a module for storing said video and audio components on a storage device;

at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;

wherein said Output Section assembles said video and audio components into an MPEG stream;

wherein said Output Section sends said MPEG stream to a decoder;

wherein said decoder converts said MPEG stream into TV output signals;

wherein said decoder delivers said TV output signals to a TV receiver; and

accepting control commands from a user, wherein said control commands are sent through the system and affect the flow of said MPEG stream.

33. The apparatus of claim 32, wherein said Input Section directs said MPEG stream to the destination indicated by said control commands.

34. The apparatus of claim 32, wherein said Output Section extracts said video and audio components from the storage device indicated by said control commands.

35. The apparatus of claim 32, further comprising:

a module for creating custom video output sequences, wherein said sequences are specified by a user or program control.

36. The apparatus of claim 32, wherein the storing and extracting of said video and audio components from said storage device are performed simultaneously.

37. The apparatus of claim 32, wherein said Media Switch calculates and logically associates a time stamp to said video and audio components.

38. The apparatus of claim 32, wherein said Media Switch extracts time stamp values from a digital TV stream and logically associates said time stamp values to said video and audio components.

39. The apparatus of claim 32, further comprising:

a module for placing said video component into a circular video buffer;

a module for posting an event in a circular event buffer, wherein said event contains an indication that a video component was found and the location of said video component in said circular video buffer; and

a module for sending notice of said event posting.

40. The apparatus of claim 32, further comprising:

a module for placing said audio component into a circular audio buffer;

a module for posting an event in a circular event buffer, wherein said event contains an indication that an audio component was found and the location of said audio component in said circular audio buffer; and

a module for sending notice of said event posting.

41. The apparatus of claims 39 or 40, further comprising:

a module for receiving said notice;

a module for retrieving said event posting from said event buffer; and

a module for indexing into the appropriate buffer indicated by the type and location information in said event buffer.

42. The apparatus of claim 41, further comprising:

a module for generating a buffer containing the logical audio or video segments in order, including ancillary information, wherein each of said logical segments points to the appropriate circular buffer location where corresponding audio or video components have been placed.

43. The apparatus of claim 32, further comprising:

a module for increasing the decoder system clock rate for fast playback or fast reverse playback.

44. The apparatus of claim 32, further comprising:

a module for decreasing the decoder system clock rate for slow playback or slow reverse playback.

45. The apparatus of claim 32, further comprising:

a module for combining system audio cues and on-screen displays with said TV output signals.

46. The apparatus of claim 32, further comprising:

a module for decoding the Vertical Blanking Interval (VBI) data or private data channel information from said TV signal; and

a module for examining said data to determine the starting or ending indicators of a specific program.

47. The apparatus of claim 32, further comprising:

a module for scanning the words contained within the closed caption (CC) fields to determine program starting and ending times, wherein particular words or phrases are used to trigger the recording of a specific program and wherein the CC information is preserved in time synchronization with the audio and video, and can be correctly presented to the viewer when the stream is displayed.

48. The apparatus of claim 47, further comprising:

a module for performing a specific action when a specific word is found in said CC information.

49. The apparatus of claim 32, wherein said Media Switch has a data bus connecting it to a CPU and DRAM.

50. The apparatus of claim 32, wherein said Media Switch shares an address bus with a CPU and DRAM.

51. The apparatus of claim 32, wherein said Media Switch operates asynchronously and autonomously with a CPU.

52. The apparatus of claim 32, wherein said storage device is connected to said Media Switch.

53. The apparatus of claim 32, wherein said Media Switch allows the CPU to queue up Direct Memory Access (DMA) transfers.

54. The apparatus of claim 32, further comprising:

a multimedia recording device, including, but not limited to, a Video Cassette Recorder (VCR) or a Digital Video Disk-Random Access Memory (DVD-RAM) device, wherein said recording device is attached to the output side of said decoder, allowing said user to record said TV output signals.

55. The apparatus of claim 54, wherein said user queues up programs from said storage device to be stored on said recording device.

56. The apparatus of claim 54, wherein said user sets time schedules for said programs to be sent to said recording device.

57. The apparatus of claim 54, wherein title pages may be sent to said recording device before sending a program to be stored on said recording device.

58. The apparatus of claim 54, wherein a program that is longer in duration than a magnetic tape in said recording device allows, is sped up to fit within the desired time limit.

59. The apparatus of claim 54, wherein a program that is longer in duration than a magnetic tape in said recording device allows, has frames dropped from it to fit within the desired time limit.

60. The apparatus of claim 54, wherein the output of said recording device is routed to said Input Section, allowing said recording device to act as a storage back up system, said recording device accepts overflow storage, TV programs, software updates, or other data that are later retrieved and sent to said Input Section.

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.

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*448 F.3d 1294, *; 2006 U.S. App. LEXIS 11162, **;
78 U.S.P.Q.2D (BNA) 1676*

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IN RE ECHOSTAR COMMUNICATIONS CORPORATION, ECHOSTAR DBS CORPORATION,
ECHOSTAR TECHNOLOGIES CORPORATION, and ECHOSPHERE LIMITED LIABILITY COMPANY,
and MERCHANT & GOULD P.C., Petitioners.

MISCELLANEOUS DOCKET NOS. 803, 805

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

448 F.3d 1294; 2006 U.S. App. LEXIS 11162; 78 U.S.P.Q.2D (BNA) 1676

May 1, 2006, Decided

SUBSEQUENT HISTORY: Writ of mandamus granted *In re Knearl*, 184 Fed. Appx. 955,
2006 U.S. App. LEXIS 14772 (Fed. Cir., May 8, 2006)
Rehearing denied by, Rehearing, en banc, denied by *In re Echostar Communs. Corp.*, 2006
U.S. App. LEXIS 17511 (Fed. Cir., July 5, 2006)
US Supreme Court certiorari denied by *Tivo, Inc. v. Echostar Comm'n Corp.*, 127 S. Ct. 846,
166 L. Ed. 2d 665, 2006 U.S. LEXIS 9478 (U.S., Dec. 11, 2006)

PRIOR HISTORY: *TIVO Inc. v. EchoStar Comm. Corp.*, 2005 U.S. Dist. LEXIS 42481 (E.D.
Tex., Sept. 26, 2005)

DISPOSITION: The court granted the firm's motion for leave to intervene. It also granted
the petition for mandamus as to certain classifications of documents.

♦ [Case in Brief \(\\$ \)](#)

CASE SUMMARY

PROCEDURAL POSTURE: Petitioner communication companies sought a writ of
mandamus directing the United States District Court for the Eastern District of Texas to
vacate orders compelling production of documents created by specially-retained outside
counsel after they asserted an advice-of-counsel defense against a separate willful patent
infringement suit filed by a patentee. The law firm also moved to intervene in the
proceedings under the petition.


OVERVIEW: After production of all documents on a ruling that the assertion of the
advice-of-counsel defense constituted a full waiver of privileges, a writ of mandamus
seeking vacation of the orders was sought. The firm moved to intervene. The court
granted intervention and granted the petition to a limited extent. Noting that mandamus
was available to correct clear abuses of discretion and that it was required to apply
Federal Circuit law and not that of the regional circuit, it held that the broad scope used by
the district court in finding waivers of both the attorney-client privilege and work-product


doctrine was an abuse of discretion. It held that the attorney-client privilege and the work product doctrine were not interdependent, that neither was absolute, and that a waiver of one did not necessarily waive the other. Second, assertion of this defense did not give the patentee's counsel unfettered discretion to rummage through their files and their litigation strategies. Thus, while documents between the companies and counsel were properly disclosed, privilege as to documents created by counsel but not communicated to the companies was not waived and production thereof was not proper.


OUTCOME: The court granted the firm's motion for leave to intervene. It also granted the petition for mandamus as to certain classifications of documents.

CORE TERMS: work product, attorney-client, work-product, infringement, advice, communicated, infringer, in-house, subject matter, immunity, willful, waive, waived, advice-of-counsel, writ of mandamus, patent, disclosure, discovery, memorandum, advice of counsel, state of mind, conveyed, abuse of discretion, willfulness, preparation, impression, leave to intervene, shield, production of documents, legal advice

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HN1 ↓ The remedy of mandamus is available in extraordinary situations to correct a clear abuse of discretion or usurpation of judicial power. A party seeking a writ bears the burden of proving that it has no other means of obtaining the relief desired and that the right to issuance of the writ is clear and indisputable. A writ of mandamus may be sought when the challenged order turns on questions of privilege. [More Like This Headnote](#)

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HN2 ↓ The U.S. Court of Appeals for the Federal Circuit does not require, as a prerequisite to the filing of a writ of mandamus relating to a court order, that a party refuse to comply at all with that order, if it seeks to challenge only a part thereof. Such a rule would encourage parties not to comply with district court orders that, in large part, they do not challenge, so that they could preserve a challenge only to the portions that they believe are erroneous. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)

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HN3 ↓ In reviewing a petition for a writ of mandamus filed by a party to a patent infringement action, the U.S. Court of Appeals for the Federal Circuit applies its own law rather than the law of the regional circuit. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)

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HN4 ↓ The law of the U.S. Court of Appeals for the Federal Circuit applies when deciding whether particular written or other materials are discoverable in a patent case, if those materials relate to an issue of substantive patent law. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN5  A remedy for willful patent infringement is specifically provided for in the Patent Act, 35 U.S.C.S. §§ 284-285. Therefore, questions of privilege and the discoverability of documents that arise from assertion of the advice-of-counsel defense necessarily involve issues of substantive patent law. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN6  The attorney-client privilege protects disclosure of communications between a client and his attorney. [More Like This Headnote](#)


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HN7  Once a party announces that it will rely on advice of counsel in response to an assertion of willful infringement of a patent, the attorney-client privilege is waived. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN8  The widely applied standard for determining the scope of a waiver of attorney-client privilege is that the waiver applies to all other communications relating to the same subject matter. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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
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HN9  Whether legal counsel is employed by a client or hired under an outside contract, the advice or opinion that is offered is advice of counsel or an opinion of counsel for the purposes of the rule that reliance on the defense of advice of counsel in a patent infringement case waives the privilege. Use of in-house counsel may affect the strength of the defense, but it does not affect the legal nature of the advice. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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
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HN10  When a defendant which has been sued for willful infringement of a patent under 35 U.S.C.S. §§ 284-285 of the Patent Act chooses to rely on the advice of in-house counsel, it waives the attorney-client privilege with regard to any attorney-client communications relating to the same subject matter, including communications with counsel other than in-house counsel. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN11  The U.S. Court of Appeals for the Federal Circuit reviews a district court's


determination as to the scope of a waiver of the attorney client privilege in connection with a suit for intentional patent infringement for an abuse of discretion. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN12  The attorney-client privilege and the work-product doctrine, though related, are two distinct concepts, and waiver of one does not necessarily waive the other. In general, a party may obtain discovery of any matter that (1) is not privileged and (2) is relevant to the claim or defense of any party. [Fed. R. Civ. P. 26\(b\)\(1\)](#). Among other things, attorney-client communications are designated as "privileged." [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN13  Attorney-client communications are designated as privileged. The privilege protects the confidentiality of communications between attorney and client made for the purpose of obtaining legal advice. The purpose of the privilege is to promote full and frank communication between a client and his attorney so that the client can make well-informed legal decisions and conform his activities to the law. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN14  The invocation of the attorney-client privilege is at the discretion of the client. The client can waive the attorney-client privilege when, for instance, it uses the advice to establish a defense. However, selective waiver of the privilege may lead to the inequitable result that the waiving party could waive its privilege for favorable advice while asserting its privilege on unfavorable advice. In such a case, the party uses the attorney-client privilege as both a sword and a shield. To prevent such abuses, the rule is that when a party defends its actions by disclosing an attorney-client communication, it waives the attorney-client privilege as to all such communications regarding the same subject matter. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN15  In contrast to the attorney-client privilege, the work-product doctrine (or work-product immunity as it is also called) can protect "documents and tangible things" prepared in anticipation of litigation that are both non-privileged and relevant. [Fed. R. Civ. P. 26\(b\)\(3\)](#). Unlike the attorney-client privilege, which protects all communication whether written or oral, work-product immunity protects documents and tangible things, such as memorandums, letters, and e-mails. Courts recognize work-product immunity because it promotes a fair and efficient adversarial system by protecting the attorney's thought processes and legal recommendations from the prying eyes of his or her opponent. Proper preparation of a client's case demands that he assemble information, sift what he considers to be the relevant from the irrelevant facts, prepare his legal theories and plan his strategy without undue and needless interference. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN16  The work-product doctrine is not absolute. First, a party may discover certain types of work product if they have substantial need of the materials in the preparation of the party's case and that the party is unable without undue hardship to obtain the substantial equivalent by other means." [Fed. R. Civ. P. 26\(b\)\(3\)](#). This rule, however, only allows discovery of "factual" or "non-opinion" work product and requires a court to protect against the disclosure of the mental impressions, conclusions, opinions, or legal theories of an attorney or other representative. Second, a party may discover work product if the party waives its immunity. However, work product waiver is not a broad waiver of all work product related to the same subject matter like the attorney-client privilege. Instead, work-product waiver only extends to "factual" or "non-opinion" work product concerning the same subject matter as the disclosed work product. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN17  The U.S. Court of Appeals for the Federal Circuit recognizes that the line between "factual" work product and "opinion" work product is not always distinct, especially when an attorney's opinion may itself be "factual" work product. When faced with the distinction between where that line lies, however, a district court should balance the policies to prevent sword-and-shield litigation tactics with the policy to protect work product. That being said, the appeals court recognizes at least three categories of work product that are potentially relevant to the advice-of-counsel defense when asserted in a patent infringement case. They include: (1) documents that embody a communication between the attorney and client concerning the subject matter of the case, such as a traditional opinion letter; (2) documents analyzing the law, facts, trial strategy, and so forth that reflect the attorney's mental impressions but were not given to the client; and (3) documents that discuss a communication between attorney and client concerning the subject matter of the case but are not themselves communications to or from the client. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN18  There are at least three categories of work product. When a defendant relies on the advice-of-counsel as a defense to a claim of willful infringement, the party waives its attorney-client privilege for all communications between the attorney and client, including any documentary communications such as opinion letters and memoranda. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN19  Once a defendant to a willful patent infringement case asserts the defense of advice of counsel, this opens to inspection the legal advice received by that defendant during the entire course of the alleged infringement. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN20  By asserting a advice-of-counsel defense to a charge of willful infringement, an accused infringer and its counsel do not give an opponent unfettered discretion to rummage through all of their files and pillage all of their litigation strategies. Courts generally find a work-product waiver only if facts relevant to a particular, narrow subject matter are at issue and have been disclosed under circumstances where it would be unfair to deny the other party an opportunity to discover other facts relevant to that subject matter. Work-product waiver extends only so far as to inform the court of the infringer's state of mind. Counsel's opinion is not important for its legal correctness. It is important whether it is thorough enough, as combined with other factors, to instill a belief in the infringer that a court might reasonably hold the patent is invalid, not infringed, or unenforceable. It is what the alleged infringer knew or believed, and by contradistinction not what other items counsel may have prepared but did not communicate to the client, that informs the court of an infringer's willfulness. The overarching goal of waiver is to prevent a party from using the advice he received as both a sword, by waiving privilege to favorable advice, and a shield, by asserting privilege to unfavorable advice. To the extent the work-product immunity could have such an effect, it is waived. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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HN21  Work product that is never communicated to the client is not discoverable. Under Fed. R. Civ. P. 26(b)(3), this so-called "opinion" work product deserves the highest protection from disclosure. While an accused infringer may waive the immunity for work product that embodies an opinion in letters and memorandum communicated to the client, he does not waive the attorney's own analysis and debate over what advice will be given. Upon waiver of attorney-client privilege, communicative documents, such as opinion letters, become evidence of a non-privileged, relevant fact, namely what was communicated to the client. However, counsel's legal opinions and mental impressions that were not communicated do not acquire such factual characteristics and are, therefore, not within the scope of the waiver. Thus, if a legal opinion or mental impression was never communicated to the client, then it provides little if any assistance to the court in determining whether the accused knew it was infringing, and any relative value is outweighed by the policies supporting the work-product doctrine. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)


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[Patent Law](#) > [Infringement Actions](#) > [Defenses](#) > [General Overview](#) 

HN22  When an alleged infringer asserts its advice-of-counsel defense regarding willful infringement of a particular patent, it waives its immunity for any document or opinion that embodies or discusses a communication to or from it concerning whether that patent is valid, enforceable, and infringed by the accused. This waiver of both the attorney-client privilege and the work-product immunity includes not only any letters, memorandum, conversation, or the like between the attorney and his or her client, but also includes, when appropriate, any documents referencing a communication between attorney and client. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)

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[Patent Law](#) > [Infringement Actions](#) > [Defenses](#) > [General Overview](#) 

The assertion, by a defendant in a patent infringement case, of the advice-of-

^{HN23} counsel defense to willfulness requires the court to decide, inter alia, whether counsel's opinion was thorough enough to instill a belief in the infringer that a court might reasonably hold the patent is invalid, not infringed, or unenforceable. [More Like This Headnote](#) | [Shepardize: Restrict By Headnote](#)

Available Briefs and Other Documents Related to this Case:

- ◆ U.S. Circuit Court Motion(s)

JUDGES: **[**1]** Before SCHALL, GAJARSA, and PROST, Circuit Judges.

OPINION BY: Arthur Gajarsa

OPINION: **[*1296]** ON PETITION FOR WRIT OF MANDAMUS

ORDER

EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, and Echosphere Limited Liability Company (collectively "EchoStar") petition for a writ of mandamus, in Miscellaneous Docket No. 803, to direct the United States District Court for the Eastern District of Texas, in case 2: 04-CV-1, to vacate its September 26, 2005 and October 6, 2005 orders that compelled EchoStar to produce documents created by the law firm Merchant & Gould P.C. that EchoStar asserts are protected from discovery by the work-product doctrine. Merchant & Gould moves for leave to intervene in Miscellaneous Docket No. 803 and submits its own petition for a writ of mandamus, filed as Miscellaneous Docket No. 805. TiVo, Inc. opposes the petitions and responds to the motion for leave to intervene. EchoStar and Merchant & Gould reply. We grant Merchant & Gould's unopposed motion for leave to intervene **[*1297]** in Miscellaneous Docket No. 803. The motions for leave to file the replies are also granted. To the extent set forth below, we grant the petition for mandamus. **[**2]**

I

TiVo sued EchoStar for infringement of its U.S. Patent No. **6,233,389** ("the '389 patent"). In response to the allegation of willful infringement, EchoStar asserted the defense of reliance on advice of counsel. Prior to the filing of the action, EchoStar relied on advice of in-house counsel. After the action was filed, EchoStar obtained additional legal advice from Merchant & Gould but elected not to rely on it. Presumably to explore further EchoStar's state of mind in determining that it did not infringe the patent, TiVo sought production of documents in the possession of EchoStar and Merchant & Gould. The district court held that by relying on advice of in-house counsel EchoStar waived its attorney-client privilege and attorney work-product immunity relating to advice of any counsel regarding infringement, including Merchant & Gould. The district court indicated that the scope of the waiver included communications made either before or after the filing of the complaint and any work product, whether or not the product was communicated to EchoStar. The district court also held that EchoStar could redact information related only to trial preparation or information unrelated to infringement. **[**3]** EchoStar produced communications, including two infringement opinions from Merchant & Gould, but did not produce any work product related to the Merchant & Gould opinions. n1

----- Footnotes -----

n1 EchoStar also provided notes and communications relating to infringement prepared by

another firm.

----- End Footnotes-----

Thereafter, the parties sought clarification of the district court's order. TiVo argued that the district court should order EchoStar to produce all Merchant & Gould documents that relate to the advice-of-counsel defense, even if EchoStar was not in possession of the documents because they were never communicated to EchoStar. EchoStar argued that it should only be required to produce documents that were provided to it by Merchant & Gould.

On October 5, 2005, the district court issued an order that clarified its previous order and stated that the waiver of immunity extended to all work product of Merchant & Gould, whether or not communicated to EchoStar. The district court determined that the documents could be relevant or lead to the discovery of admissible evidence because they might contain information that was conveyed to EchoStar, even if the documents were not themselves conveyed to **[**4]** EchoStar. EchoStar petitions this court for a writ of mandamus with respect to the Merchant & Gould documents not provided to EchoStar, n2 challenging the district court's rulings. Merchant & Gould moves for leave to intervene in EchoStar's petition and submits its own petition for a writ of mandamus.

----- Footnotes-----

n2 No in-house counsel documents are at issue in the petition.

----- End Footnotes-----

II

HNI [†]The remedy of mandamus is available in extraordinary situations to correct a clear abuse of discretion or usurpation of judicial power. *In re Calmar, Inc.*, 854 F.2d 461, 464 (Fed. Cir. 1988). A party seeking a writ bears the burden of proving that it has no other means of obtaining the relief desired, *Mallard v. U.S. Dist. Court*, 490 U.S. 296, 309, 109 S. Ct. 1814, 104 L. Ed. 2d 318 (1989), and that the right to issuance of the writ is "clear and indisputable," *Allied Chem. Corp. v. Daiflon, Inc.*, 449 U.S. 33, 35, 101 S. Ct. 188, 66 L. Ed. 2d 193 (1980). A writ of mandamus may be **[*1298]** sought when the challenged order turns on questions of privilege. *In re Regents of Univ. of Cal.*, 101 F.3d 1386, 1387 (Fed. Cir. 1996); *In re Pioneer Hi-Bred Int'l, Inc.*, 238 F.3d 1370, 1374 (Fed. Cir. 2001). **[**5]**

EchoStar argues that a writ of mandamus should issue, among other reasons, because the district court erred in determining that (1) the attorney-client privilege had been waived and (2) the waiver of any privilege extended to work-product that was not communicated to EchoStar because, inter alia, the documents are not relevant to whether EchoStar had a good faith belief that it did not infringe. Merchant & Gould also argues that the district court erred in requiring the production of documents that Merchant & Gould did not provide to EchoStar because any such documents could not be relevant to whether EchoStar reasonably had a good faith belief that it did not infringe, based upon advice from counsel.

In response, TiVo argues, inter alia, that (1) EchoStar is not entitled to a writ of mandamus because it has complied, in large part, with the district court orders it now challenges, (2) the attorney-client privilege was waived when EchoStar asserted a defense of reliance on advice of in-house counsel, (3) the relevance of the Merchant & Gould documents can be determined when they are offered as evidence, and (4) even though the Merchant & Gould documents may not have been **[**6]** provided to EchoStar, they may contain information

that was otherwise conveyed to EchoStar.

Regarding TiVo's first argument, that EchoStar is not entitled to mandamus because it has complied in large part with the order, ^{HN2} we do not believe it is a requirement that a party refuse to comply at all with an order, if it seeks to challenge only a part of the order. Such a rule would encourage parties not to comply with district court orders that, in large part, they do not challenge, so that they could preserve a challenge only to the portions that they believe are erroneous. EchoStar cannot undo the disclosures it has made to TiVo, but it can challenge the portions of the order that require additional disclosures.

We now turn to the more substantive arguments underlying this petition.

III

^{HN3} In this petition, we apply our own law, rather than the law of the regional circuit. This case involves the extent to which a party waives its attorney-client privilege and work-product immunity when it asserts the advice-of-counsel defense in response to a charge of willful patent infringement. ^{HN4} "Federal Circuit law applies when deciding whether particular written or other materials are discoverable **[**7]** in a patent case, if those materials relate to an issue of substantive patent law." *Advanced Cardiovascular Sys. v. Medtronic, Inc.*, 265 F.3d 1294, 1307 (Fed. Cir. 2001). ^{HN5} A remedy for willful patent infringement is specifically provided for in the Patent Act, see 35 U.S.C. §§ 284-285; therefore, questions of privilege and discoverability that arise from assertion of the advice-of-counsel defense necessarily involve issues of substantive patent law, see *In re Spalding Sports Worldwide, Inc.*, 203 F.3d 800, 803-04 (Fed. Cir. 2000) (applying Federal Circuit law to question of attorney-client privilege between patent attorney and patentee).

A

EchoStar first challenges the district court's holding that EchoStar waived the attorney-client privilege when it asserted its defense in response to the charge of willful infringement. ^{HN6} The attorney-client privilege protects disclosure of communications between a client and his **[*1299]** attorney. *United States v. Zolin*, 491 U.S. 554, 562, 109 S. Ct. 2619, 105 L. Ed. 2d 469 (1989); *Upjohn Co. v. United States*, 449 U.S. 383, 389, 101 S. Ct. 677, 66 L. Ed. 2d 584 (1981). **[**8]**

^{HN7} Once a party announces that it will rely on advice of counsel, for example, in response to an assertion of willful infringement, the attorney-client privilege is waived. ^{HN8} "The widely applied standard for determining the scope of a waiver of attorney-client privilege is that the waiver applies to all other communications relating to the same subject matter." *Fort James Corp. v. Solo Cup Co.*, 412 F.3d 1340, 1349 (Fed. Cir. 2005).

EchoStar argues that it did not assert the advice-of-counsel defense because it intended to rely only on an "in-house investigation supervised by in-house counsel." The district court held that the opinion formed by in-house counsel and conveyed to EchoStar executives, although not a traditional opinion of counsel, constituted a legal opinion. We see no error in the district court's determination.

EchoStar summarily asserts that "an internal investigation involving in-house engineers and in-house counsel is simply a different subject matter from legal opinions commissioned at a later date from outside lawyers." This argument is without merit. ^{HN9} Whether counsel is employed by the client or hired by outside contract, the offered advice or opinion **[**9]** is advice of counsel or an opinion of counsel. Use of in-house counsel may affect the strength of the defense, but it does not affect the legal nature of the advice. See *Underwater Devices, Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380, 1390 (Fed. Cir. 1983) (overruled in part on

other grounds by *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, 383 F.3d 1337 (Fed. Cir. 2004) (en banc)).

Thus, ^{HN107}when EchoStar chose to rely on the advice of in-house counsel, it waived the attorney-client privilege with regard to any attorney-client communications relating to the same subject matter, including communications with counsel other than in-house counsel, which would include communications with Merchant & Gould. See *Akeva LLC v. Mizuno Corp.*, 243 F. Supp. 2d 418, 423 (M.D.N.C. 2003).

B

EchoStar next asserts that the district court's order cast too wide a net by including within the waiver's scope documents that were never communicated from Merchant & Gould (the attorney) to EchoStar (the client). The district court stated:

EchoStar had the benefit of choice, as explained by the Federal Circuit in *Knorr-Bremse Systeme [**10] Fuer Nutzfahrzeuge GmbH v. Dana Corp.*, of whether to introduce [in-house counsel's] opinion. But once EchoStar chose to introduce the opinion, it opened to inspection all related advice sought and developed regarding EchoStar's potential infringement of the '389 patent. Regardless of when the opinions or materials were transcribed or communicated to EchoStar, such information necessarily relates to the opinion being offered by [in-house counsel] and goes to show EchoStar's state of mind with respect to willful infringement. This is particularly true where, as is the case here, EchoStar's willfulness witness was privy to the substance of the willfulness opinions developed by outside counsel both pre-and post-filing. ...

TiVo, Inc. v. EchoStar Comm. Corp., 2005 U.S. Dist. LEXIS 42481, No. 2: 04-CV-1, at 13 (E. D. Tex. Sept. 26, 2005) ("September Order"). Noting that district courts had ruled differently on whether the waiver of work-product protection covered documents that were not disclosed to the client, the district court discussed the **[*1300]** reasons for requiring production of uncommunicated work product:

Still, other courts have mandated production of all material regardless of whether they **[**11]** were disclosed, maintaining that the discovery of such information is necessary to uncover what the client was actually told by opinion counsel. See *Aspex Eyewear Inc. v. E'Lite Optik Inc.*, 276 F. Supp. 2d 1084, 1092-93 (D. Nev. 2003); *Novartis Pharms. Corp. v. EON Labs Mfg., Inc.*, 206 F.R.D. 396 (D. Del. 2002). In *Novartis*, the court stated, "it is critical for the patentee to have a full opportunity to probe, not only the state of mind of the infringer, but also the mind of the infringer's lawyer upon which the infringer so firmly relied." *Id.* at 399. The rationale behind this approach is that, by imposing broad waiver, the advice of counsel defense will only be invoked by "infringers who prudently and sincerely sought competent advice from competent counsel ..." and "moreover, focusing on the infringer's waiver rather than state of mind may reduce the chances of legal gamesmanship creeping into the practice of rendering infringement and validity opinions." *Id.* "If negative information was important enough to reduce to a memorandum, there is a reasonable possibility that the

information was conveyed in some form or fashion **[**12]** to the client." Beneficial Franchise Co. Inc. v. Bank One N. A., 205 F.R.D. 212, 218 (N. D. Ill. 2001).

September Order at 11-12.

In a subsequent order, the district court further explained why the scope of the waiver should include work product that was not disclosed to EchoStar:

Were discovery of "uncommunicated" materials not allowed, accused infringers could easily shield themselves from disclosing any unfavorable analysis by simply requesting that their opinion counsel not send it. This would be unfair.

TiVo, Inc. v. EchoStar Comm. Corp., No. 2: 04-CV-1, at 3 (E. D. Tex. Oct. 6, 2005) ("October Order").

HN11 ¶ We review the district court's determination as to the scope of the waiver for an abuse of discretion. In re Pioneer, 238 F.3d at 1373 n. 2 ("It appears that virtually all the circuits review the decision of a district court [regarding waiver of privilege] underlying a petition for writ of mandamus for abuse of discretion."). EchoStar asserts that to apply the broad scope employed by the district court to the waiver of both attorney-client privilege and work-product doctrine was an abuse of discretion. We agree. **[**13]**

HN12 ¶ The attorney-client privilege and the work-product doctrine, though related, are two distinct concepts and waiver of one does not necessarily waive the other. See Carter v. Gibbs, 909 F.2d 1450, 1451 (Fed. Cir. 1990) (en banc), superseded in non-relevant part, Pub. L. No. 103-424, § 9(c), 108 Stat. 4361 (1994), as recognized in Mudge v. United States, 308 F.3d 1220, 1223 (Fed. Cir. 2002); see also United States v. Nobles, 422 U.S. 225, 238 n. 11, 95 S. Ct. 2160, 45 L. Ed. 2d 141 (1975). In general, a party may obtain discovery of any matter that (1) is "not privileged" and (2) "is relevant to the claim or defense of any party." Fed. R. Civ. P. 26(b)(1). Among other things, **HN13** ¶ attorney-client communications are designated as "privileged." See Upjohn, 449 U.S. at 389; Genentech, Inc. v. Int'l Trade Comm'n, 122 F.3d 1409, 1415 (Fed. Cir. 1997). "The attorney-client privilege protects the confidentiality of communications between attorney and client made for the purpose of obtaining legal advice." Id. We recognize the privilege in order to promote full and frank communication **[**14]** between a client and his attorney so that the client can make **[*1301]** well-informed legal decisions and conform his activities to the law. See Upjohn, 449 U.S. at 389; XYZ Corp. v. United States, 348 F.3d 16, 22 (1st Cir. 2003). **HN14** ¶ This privilege is at the discretion of the client. Knorr-Bremse, 383 F.3d at 1345; Carter, 909 F.2d at 1451. The client can waive the attorney-client privilege when, for instance, it uses the advice to establish a defense. See id. However, selective waiver of the privilege may lead to the inequitable result that the waiving party could waive its privilege for favorable advice while asserting its privilege on unfavorable advice. XYZ Corp., 348 F.3d at 24. In such a case, the party uses the attorney-client privilege as both a sword and a shield. Id.; Fort James Corp., 412 F.3d at 1349. To prevent such abuses, we recognize that when a party defends its actions by disclosing an attorney-client communication, it waives the attorney-client privilege as to all such communications regarding the same subject matter. Id.

HN15 ¶ In contrast to the attorney-client privilege, **[**15]** the work-product doctrine, or work-product immunity as it is also called, can protect "documents and tangible things" prepared in anticipation of litigation that are both non-privileged and relevant. Fed. R. Civ. P. 26(b)(3). Unlike the attorney-client privilege, which protects all communication whether written or oral, work-product immunity protects documents and tangible things, such as memorandums, letters, and e-mails. See generally Judicial Watch, Inc. v. Dep't of Justice, 369 U.S. App. D.C. 49, 432 F.3d 366 (D. C. Cir. 2005). We recognize work-product immunity because it promotes a fair and efficient adversarial system by protecting "the attorney's thought processes and legal recommendations" from the prying eyes of his or her opponent. Genentech, 122 F.3d at 1415 (citations omitted); accord Hickman v. Taylor, 329 U.S. 495, 511-14, 67 S. Ct. 385, 91 L. Ed. 451 (1947) ("Proper preparation of a client's case demands that he assemble information, sift what he considers to be the relevant from the irrelevant facts, prepare his legal theories and plan his strategy without undue and needless interference... Were such materials open **[**16]** to opposing counsel on mere demand, much of what is now put down in writing would remain unwritten... Inefficiency, unfairness and sharp practices would inevitably develop in the giving of legal advice and in the preparation of cases for trial. The effect on the legal profession would be demoralizing. And the interests of the clients and the cause of justice would be poorly served."); see also Nobles, 422 U.S. at 237; Coastal States Gas Corp. v. Dep't of Energy, 199 U.S. App. D.C. 272, 617 F.2d 854, 864 (D. C. Cir. 1980). Essentially, the work-product doctrine encourages attorneys to write down their thoughts and opinions with the knowledge that their opponents will not rob them of the fruits of their labor. Hickman, 329 U.S. at 511; Id. at 516 (Jackson, J. concurring) ("[A] common law trial is and always should be an adversary proceeding. Discovery was hardly intended to enable a learned profession to perform its functions either without wits or on wits borrowed from the adversary."); United States v. Adlman, 68 F.3d 1495, 1501 (2d Cir. 1995) ("The purpose of the doctrine is to establish **[**17]** a zone of privacy for strategic litigation planning and to prevent one party from piggybacking on the adversary's preparation."); Coastal States, 617 F.2d at 864 (noting that the effect of no immunity would mean "less work-product would be committed to paper, which might harm the quality of trial preparation").

Like the attorney-client privilege, however, **HN16** ¶ the work-product doctrine is not absolute. See In re Martin Marietta Corp., 856 F.2d 619, 626 (4th Cir. 1988). **[*1302]** First, a party may discover certain types of work product if they have "substantial need of the materials in the preparation of the party's case and that the party is unable without undue hardship to obtain the substantial equivalent ... by other means." Rule 26(b)(3). This rule, however, only allows discovery of "factual" or "non-opinion" work product and requires a court to "protect against the disclosure of the mental impressions, conclusions, opinions, or legal theories of an attorney or other representative." Id.; accord United States v. Adlman, 134 F.3d 1194, 1197 (2d Cir. 1998); Martin Marietta Corp., 856 F.2d at 626.

Second, a party may discover **[**18]** work product if the party waives its immunity. See id. at 622-23; Thorn EMI N. Am. v. Micron Tech., 837 F. Supp. 616, 621 (D. Del. 1993). However, work product waiver is not a broad waiver of all work product related to the same subject matter like the attorney-client privilege. Martin Marietta Corp., 856 F.2d at 626. Instead, work-product waiver only extends to "factual" or "non-opinion" work product concerning the same subject matter as the disclosed work product. See id. at 625 (noting that a party "impliedly waived the work-product privilege as to all non-opinion work-product on the same subject matter as that disclosed.") (citing Nobles, 422 U.S. at 239).

HN17 ¶ We recognize that the line between "factual" work product and "opinion" work product is not always distinct, especially when, as here, an attorney's opinion may itself be "factual" work product. When faced with the distinction between where that line lies, however, a district court should balance the policies to prevent sword-and-shield litigation tactics with the policy to protect work product.

That being said, we recognize at least three **[**19]** categories of work product that are potentially relevant to the advice-of-counsel defense here. They include: (1) documents that embody a communication between the attorney and client concerning the subject matter of the case, such as a traditional opinion letter; (2) documents analyzing the law, facts, trial strategy, and so forth that reflect the attorney's mental impressions but were not given to the client; and (3) documents that discuss a communication between attorney and client concerning the subject matter of the case but are not themselves communications to or from the client. See *Thorn EMI*, 837 F. Supp. at 622-623. ^{HN18}¶As to the first category, we already noted in section A that when a party relies on the advice-of-counsel as a defense to willful infringement the party waives its attorney-client privilege for all communications between the attorney and client, including any documentary communications such as opinion letters and memoranda. See also *Akeva LLC*, 243 F. Supp. 2d at 423. ⁿ⁴ As to the other two categories, scholars have noted that our prior opinions do not clearly define **[*1303]** the scope of the work-product waiver. ⁿ⁵ As a result, the district **[**20]** courts that have addressed this issue are split on just how far to extend that scope. Compare *Thorn EMI*, 837 F. Supp. at 621-623 and *Steelcase, Inc. v. Haworth, Inc.*, 954 F. Supp. 1195, 1198-99 (W. D. Mich. 1997) with *Mushroom Assoc. v. Monterey Mushrooms, Inc.*, 1992 U.S. Dist. LEXIS 19664, 24 U.S.P.Q. 2d 1767 (N. D. Cal. 1992); *FMT Corp. v. Nissei ASB Co.*, 1992 U.S. Dist. LEXIS 21500, 24 U.S.P.Q. 2d 1073 (N. D. Ga. 1992); and *Handguards, Inc. v. Johnson & Johnson*, 413 F. Supp. 926 (N. D. Cal. 1976). As we discuss in more detail below, we conclude that waiver extends to the third category but does not extend so far as the second.

----- Footnotes -----

^{N3} We by no means anticipate that all work product in every case will fit into one of these three categories.

ⁿ⁴ EchoStar contends that waiver of opinions does not extend to advice and work product given after litigation began. While this may be true when the work product is never communicated to the client, it is not the case when the advice is relevant to ongoing willful infringement, so long as that ongoing infringement is at issue in the litigation. See *Akeva LLC*, 243 F. Supp. 2d at 423 ^{HN19}¶("Once a party asserts the defense of advice of counsel, this opens to inspection the advice received during the entire course of the alleged infringement."); see also *Crystal Semiconductor Corp. v. Tritech Microelectronics Int'l, Inc.*, 246 F.3d 1336, 1351-1353 (Fed. Cir. 2001) (noting that an infringer may continue its infringement after notification of the patent by filing suit and that the infringer has a duty of due care to avoid infringement after such notification). **[**21]**

ⁿ⁵ See David O. Taylor, *Wasting Resources: Reinventing the Scope of Waiver Resulting from the Advice-of-Counsel Defense to a Charge of Willful Patent Infringement*, 12 *Tex. Intell. Prop. L.J.* 319, 320-21 (2004); William F. Lee & Lawrence P. Cogswell, III, *Understanding and Addressing the Unfair Dilemma Created by the Doctrine of Willful Patent Infringement*, 41 *Hous. L. Rev.* 393, 436-37 (2004).

----- End Footnotes -----

^{HN20}¶By asserting the advice-of-counsel defense to a charge of willful infringement, the accused infringer and his or her attorney do not give their opponent unfettered discretion to rummage through all of their files and pillage all of their litigation strategies. See *Thorn EMI*,

837 F. Supp. at 621-623 ("Courts generally find a [work-product] waiver only if facts relevant to a particular, narrow subject matter are at issue and have been disclosed under circumstances where it would be unfair to deny the other party an opportunity to discover other facts relevant to that subject matter."). Work-product waiver extends only so far as to inform the court of the infringer's state of mind. Counsel's opinion is not important for its **[**22]** legal correctness. It is important to the inquiry whether it is "thorough enough, as combined with other factors, to instill a belief in the infringer that a court might reasonably hold the patent is invalid, not infringed, or unenforceable." Ortho Pharm. Corp. v. Smith, 959 F.2d 936, 944 (Fed. Cir. 1992). It is what the alleged infringer knew or believed, and by contradistinction not what other items counsel may have prepared but did not communicate to the client, that informs the court of an infringer's willfulness.

The overarching goal of waiver in such a case is to prevent a party from using the advice he received as both a sword, by waiving privilege to favorable advice, and a shield, by asserting privilege to unfavorable advice. See Fort James Corp., 412 F.3d at 1349; Martin Marietta Corp., 856 F.2d at 626; In re Sealed Case, 219 U.S. App. D.C. 195, 676 F.2d 793, 818 (D. C. Cir. 1982) ("When a party seeks greater advantage from its control over work product than the law must provide to maintain a healthy adversary system[,], then the balance of interests recognized in Hickman ... shifts."). To the extent the **[**23]** work-product immunity could have such an effect, it is waived.

HN21 The second category of work product, which is never communicated to the client, is not discoverable. Under Rule 26(b)(3), this so-called "opinion" work product deserves the highest protection from disclosure. See Adlman, 134 F.3d at 1197. While an accused infringer may waive the immunity for work product that embodies an opinion in letters and memorandum communicated to the client, he does not waive the attorney's own analysis and debate over what advice will be given. See Ortho Pharm., 959 F.2d at 944. Upon waiver of attorney-client privilege, communicative documents, such as opinion letters, become evidence of a non-privileged, relevant fact, namely what was communicated to the client, see Nobles, 422 U.S. at 239 n. 14 ("Where ... counsel attempts to make a testimonial use of [work-product] materials the normal rules **[*1304]** of evidence come into play with respect to ... production of documents."); however, counsel's legal opinions and mental impressions that were not communicated do not acquire such factual characteristics and are, therefore, not within the scope of the waiver. **[**24]** As the Martin Marietta Corp. court noted,

There is relatively little danger that a litigant will attempt to use a pure mental impression or legal theory as a sword and as a shield in the trial of a case so as to distort the factfinding process. Thus, the protection of lawyers from the broad repercussions of subject matter waiver in this context strengthens the adversary process, and, unlike the selective disclosure of evidence, may ultimately and ideally further the search for the truth.

856 F.2d at 626. Thus, if a legal opinion or mental impression was never communicated to the client, then it provides little if any assistance to the court in determining whether the accused knew it was infringing, and any relative value is outweighed by the policies supporting the work-product doctrine.

The third category of work product material falls admittedly somewhere interstitially between the first and second. In some instances there may be documents in the attorney's file that reference and/or describe a communication between the attorney and client, but were not

themselves actually communicated to the client. For example, if an attorney writes a memorandum **[**25]** or an e-mail to his associate referencing a phone call with the client, in which he indicates that he discussed the client's potential infringement, then such a memorandum is discoverable. Unlike work product that was uncommunicated, this work product references a specific communication to the client. Though it is not a communication to the client directly nor does it contain a substantive reference to what was communicated, it will aid the parties in determining what communications were made to the client and protect against intentional or unintentional withholding of attorney-client communications from the court.

Still, we must emphasize that such communications may contain work product of the second kind--legal analysis that was not communicated. In those situations, the parties should take special care to redact such information, and if necessary the district court may review such material in camera. See Rule 26(b)(3); see also *id.* advisory committee's note (1970) ("The courts will sometimes find it necessary to order disclosure of a document but with portions deleted."); Martin Marietta Corp., 856 F.2d at 626.

Therefore, ^{HN22} when an alleged infringer asserts **[**26]** its advice-of-counsel defense regarding willful infringement of a particular patent, it waives its immunity for any document or opinion that embodies or discusses a communication to or from it concerning whether that patent is valid, enforceable, and infringed by the accused. This waiver of both the attorney-client privilege and the work-product immunity includes not only any letters, memorandum, conversation, or the like between the attorney and his or her client, but also includes, when appropriate, any documents referencing a communication between attorney and client. n6

----- Footnotes -----

n6 Merchant & Gould contends that it alone retains the right to deny a party access to work product not communicated to a client. While we do not answer this question directly; here, the client, EchoStar, holds the right to waive privilege for attorney-client communications, Carter, 909 F.2d at 1451, and therefore the right to waive privilege to evidence of those communications contained in Merchant & Gould's files. As we stated before, there may be a redaction of information which reflects legal opinions and mental impressions of Merchant & Gould attorneys that were not communicated to EchoStar. Rule 26(b)(3).

----- End Footnotes----- **[**27]**

[*1305] Here, Merchant & Gould work product that was not communicated to EchoStar or does not reflect a communication is not within the scope of EchoStar's waiver because it obviously played no part in EchoStar's belief as to infringement of the '389 patent. See Steelcase, 954 F. Supp. at 1198-99. It may very well be true, as TiVo suggests, that at times some parties would communicate draft opinion letters or the contents thereof to the client confidentially in order to avoid disclosing that communication during potential discovery if and when the attorney-client privilege is waived, but we cannot eviscerate the legitimate policies of the work-product doctrine and chill the principles of our adversary system as a whole on account of the possibility that, from time to time, there may be occurrences of ethical transgressions.

In sum, ^{HN23} the advice-of-counsel defense to willfulness requires the court to decide, *inter alia*, whether counsel's opinion was thorough enough to "instill a belief in the infringer that a court might reasonably hold the patent is invalid, not infringed, or unenforceable." Ortho Pharm., 959 F.2d at 944. If a Merchant & Gould document **[**28]** was not communicated to EchoStar or if a Merchant & Gould document does not reference a communication between Merchant & Gould and EchoStar, its relevant value is outweighed by the policies of the work-

product doctrine. Thus, it was an abuse of discretion for the district court to determine that the scope of the waiver of privilege extended to such documents.

Accordingly,

IT IS ORDERED THAT:

The petitions are granted. The district court is directed to vacate its orders, to the extent noted above. TiVo is entitled to discovery of Merchant & Gould documents consistent with, and in the manner set forth in, this opinion.

FOR THE COURT

5-1-06

Date

s/Arthur J. Gajarsa

Circuit Judge







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TiVo Statement on Decision by U.S. Court of Appeals to Stay Permanent Injunction Issued by District Court in Lawsuit Against EchoStar PR Newswire US October 3, 2006 Tuesday 8:52 PM GMT

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LENGTH: 535 words

HEADLINE: TiVo Statement on Decision by U.S. Court of Appeals to Stay Permanent Injunction Issued by District Court in Lawsuit Against EchoStar

DATELINE: ALVISO, Calif. Oct. 3

BODY:

ALVISO, Calif., Oct. 3 /PRNewswire-FirstCall/ -- TiVo Inc. (NASDAQ:TIVO), the creator of and leader in television services for digital video recorders (DVR), today announced that U.S. Court of Appeals for the Federal Circuit granted the request of EchoStar Communications Corp. ("ECC") to stay the permanent injunction imposed by the U.S. District Court to prevent ECC from making, using, offering for sale or selling in the United States the DVR products involved in the case (DP-501, DP-508, DP-510, DP-721, DP-921, DP-522, DP-625, DP-942, and all EchoStar DVRs that are not more than colorably different from any of these products) pending the outcome of ECC's appeal.

TiVo sued EchoStar in Federal District Court on January 5, 2004, alleging that ECC and certain subsidiaries are violating a key TiVo patent (U.S. Patent No. **6,233,389** issued to TiVo in May 2001, known as the "Time Warp" patent). The Time Warp patent discloses systems and methods for the simultaneous storage and playback of programs, supporting advanced capabilities such as pausing live television, fast-forwarding, rewinding, instant replays, and slow motion. On April 13, 2006, a Marshall, Texas jury concluded that EchoStar had willfully infringed TiVo's Time Warp patent.

"We are confident that the jury's decision in TiVo's favor will be upheld once the Federal Circuit has the opportunity to review the entire record in this case. It is important to note that most injunctions in patent cases are stayed pending appeal, and the appeal itself will be decided on a totally different standard of review," stated the company.

About TiVo

Founded in 1997, TiVo pioneered a brand new category of products with the development of the first commercially available digital video recorder (DVR). Sold through leading consumer electronic retailers, TiVo has developed a brand which resonates boldly with consumers as providing a superior television experience. Through agreements with leading satellite and cable providers, TiVo also integrates its full set of DVR service features into the set-top boxes of mass distributors. TiVo's DVR functionality and ease of use, with such features as Season

Pass(TM) recordings and WishList(R) searches, has elevated its popularity among consumers and has created a whole new way for viewers to watch television. With a continued investment in its patented technologies, TiVo is revolutionizing the way consumers watch and access home entertainment. Rapidly becoming the focal point of the digital living room, TiVo's DVR is at the center of experiencing new forms of content on the TV, such as broadband delivered video, music and photos. With innovative features such as, TiVoToGo (TM) and online scheduling, TiVo is expanding the notion of consumers experiencing "TiVo, TV your way." The TiVo(R) service is also at the forefront of providing innovative marketing solutions for the television industry, including a unique platform for advertisers and audience measurement research. The company is based in Alviso, Calif.


CONTACT: Media, Whit Clay, +1-212-446-1864, or wclay@sloanepr.com ; or Investors, Derrick Nueman, +1-408-519-9677, or dnueman@tivo.com

Web site: <http://www.tivo.com/>

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexam of U.S. Patent No.: 6,233,389	Confirmation No.: 4653
BARTON <i>et al.</i>	Art Unit: 3992
Reexam Control No.: 90/007,750	Examiner: David E. Harvey
Filed: October 17, 2005	Atty. Docket: 2513.001REX0
For: Multimedia Time Warping System	

Supplemental Information Disclosure Statement

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Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

Listed on accompanying IDS Form are documents that may be considered material to the examination of this application, in compliance with the duty of disclosure requirements of 37 C.F.R. §§ 1.555 and 1.98.

The Patent Owner has listed a publication date on the attached IDS Form based on information presently available to the undersigned. However, the listed publication date should not be construed as an admission that the information was actually published on the date indicated.

The Patent Owner reserves the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

This statement should not be construed as a representation that a search has been made, or that information more material to the examination of the present patent

BARTON *et al.*
Reexam of Patent No. 6,233,389
Reexam Control No. 90/007,750
Atty. Docket: 2513.001REX0

application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith.

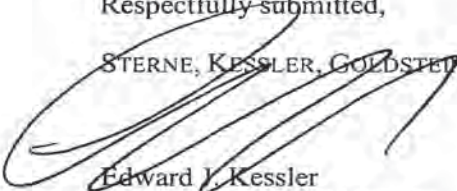
Documents NPL1-NPL4 were filed in the concurrent Appeal in the United States Court of Appeals for the Federal Circuit, *TiVo Inc. v. EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC*, No. 2006-1574.

It is respectfully requested that the Examiner initial and return a copy of the enclosed IDS Form, and indicate in the official file wrapper of this reexamination proceeding that the documents have been considered.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

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BARTON *et al.*
Reexam of Patent No. 6,233,389
Reexam Control No. 90/007,750
Atty. Docket: 2513.001REX0

Patent Under Reexamination: 6,233,389
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Examiner: Harvey, David E.
Art Unit: 3992

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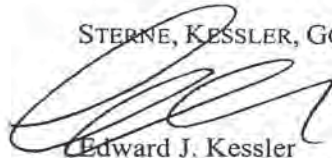
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PROCEEDINGS UNDER 37 C.F.R. §1.565**

In compliance with 37 C.F.R. § 1.550(f), the undersigned, on behalf of the patent owner, hereby certifies that a copy of this paper has been served on the third-party requester by first class mail on June 8, 2007. The name and address of the party served is as follows:

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				Examiner Name	Harvey, David E.
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	NPL1	Brief for EchoStar Communications Corporation, et al, <i>TiVo Inc. v. EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC</i> , United States Court of Appeals for the Federal Circuit, Nos. 2006-1574 and 2007-1022, April 17, 2007	
	NPL2	<i>TiVo v. Echostar</i> , Appeal No. 06-1574, Index to Appendix Materials - Brief for EchoStar Communications Corp., 6 pages.	
	NPL3	Brief for Appellee TiVo Inc., <i>TiVo Inc. v. EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC</i> , United States Court of Appeals for the Federal Circuit, No. 2006-1574, May 30, 2007.	
	NPL4	<i>TiVo v. Echostar</i> , No. 2006-1574, Index to Appendix Materials - Brief for Appellee TiVo, Inc., 3 pages.	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexam of U.S. Patent No.: 6,233,389	Confirmation No.: 4653
BARTON <i>et al.</i>	Art Unit: 3992
Reexam Control No.: 90/007,750	Examiner: David E. Harvey
Filed: October 17, 2005	Atty. Docket: 2513.001REX0
For: Multimedia Time Warping System	

Notification of Concurrent Proceedings Under 37 C.F.R. §1.565

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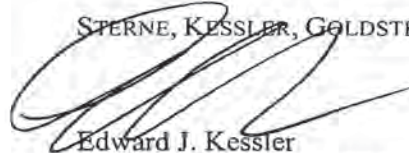
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PO Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the notification requirement of 37 C.F.R. §1.565, the claims of U.S. Patent No. 6,233,389 are the subject of a pending Appeal in the United States Court of Appeals for the Federal Circuit, *TiVo Inc. v. EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC*, No. 2006-1574.

Respectfully submitted,

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Date: 8 June 2007
1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
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2006-1574, 2007-1022

IN THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

TIVO, INC.,

Plaintiff-Cross Appellant,

v.

ECHOSTAR COMMUNICATIONS CORPORATION,
ECHOSTAR DBS CORPORATION,
ECHOSTAR TECHNOLOGIES CORPORATION,
ECHOSPHERE LIMITED LIABILITY COMPANY,
and ECHOSTAR SATELLITE LLC,

Defendants-Appellants.

**Appeals from the United States District Court for the
Eastern District of Texas in case no. 2:04-CV-01, Judge David Folsom.**

BRIEF FOR ECHOSTAR COMMUNICATIONS CORPORATION, ET AL.

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April 17, 2007

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*Attorneys for Defendants-Appellants
EchoStar Communications, et al.*

CERTIFICATE OF INTEREST

Counsel for defendants-appellants EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC certify the following:

1. The full name of every party or amicus represented by us is:

EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC.
2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by us is:

Not applicable.
3. All parent corporations and any publicly held companies that own 10% or more of the stock of any party represented by us are:

EchoStar Communications Corporation ("ECC"), a publicly traded company, is the parent corporation that holds, indirectly and through a series of wholly owned entities, 100% of the stock of defendants-appellants EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC.

Depending on the method used to calculate percentage of ownership, FMR Corporation, a publicly traded corporation, could be construed to own 10% or more of the stock of ECC. The determination depends on the method used to calculate percentage of ownership. Specifically, the stock of ECC is comprised of class A and class B stock. Each share of class A stock entitles its owner to one vote with respect to corporate governance; each share of class B stock entitles its owner to ten votes. If ownership of either class is sufficient, then FMR Corporation could meet the disclosure threshold of Federal Rule of Appellate Procedure 26.1.

4. The names of all law firms and the partners or associates that appeared for the parties now represented by us in the trial court or are expected to appear in this court are:

Harold J. McElhinny, Rachel Krevans, Karl J. Kramer,
Emily A. Evans, Alison M. Tucher, Marc J. Pernick,
Seth M. Galanter, Robert M. Harkins, Jason A. Crotty,
Paul A. Friedman, Scott f. Llewellyn, Peter P. Meringolo,
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Nancy S. Halpin
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Damon Young, John Pickett
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Donald R. Dunner, Don O. Burley, Erik R. Puknys,
Andrew J. Vance
FINNEGAN, HENDERSON, FARABOW,
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STATEMENT OF RELATED CASES

A petition for a writ of mandamus in this action was previously before this Court in *In re EchoStar Communications Corp.*, 448 F.3d 1294 (Fed. Cir. 2006). A related mandamus petition, involving an order of the United States District Court for the Northern District of Georgia enforcing a subpoena served by TiVo, Inc. (“TiVo”) in this action, was also before this Court in *In re Knearl*, 184 Fed. Appx. 955 (Fed. Cir. 2006). In each of these matters, EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC (collectively, “EchoStar”) and its outside opinion counsel asked for, and received, an order directing the district court below to vacate its order compelling EchoStar to produce outside counsel’s work product.

Following the decision in *In re Knearl*, proceedings are continuing in the Northern District of Georgia. Other than that action, EchoStar is unaware of any case pending in this or any other court that will directly affect or be directly affected by the decision in this appeal.

I. STATEMENT OF JURISDICTION

The district court had jurisdiction under 28 U.S.C. §§ 1331 and 1338(a). EchoStar's notice of appeal from the district court's final decision was timely filed under 28 U.S.C. § 2107(a) and Fed. R. App. P. 4(a). This Court has exclusive jurisdiction over this appeal under 28 U.S.C. § 1295(a)(1).

II. STATEMENT OF THE ISSUES

1. Whether the judgment of infringement should be reversed, and judgment of no infringement entered, where:

a. the "Hardware" claims (one of two sets of asserted claims) require a digital video recorder (DVR) to accept a "multitude of standards," including analog and digital television standards, and recite numerous processing steps that the patent describes as being performed solely on analog television, but the accused DVRs process only *one* kind of television standard, digital satellite TV;

b. the Hardware claims also require separating an MPEG data stream into its video and audio components, and then assembling them back into an MPEG stream, but it was undisputed that the "Broadcom" DVRs (one of two groups of accused DVRs) never separate video data from audio data and the "50X" DVRs (the other group of accused DVRs) never assemble the separated video and audio data back into an MPEG stream;

c. the infringement verdict on the “Software” claims (the other set of asserted claims) was based on the district court’s construction of “objects,” which relied not on the intrinsic evidence but on a dictionary definition that was the *tenth of twelve* definitions and also had nothing to do with the technology of the invention; and

d. the Software claims also require a “source object” that “extracts video and audio data from [a] physical data source,” but it was undisputed that the “source object” that TiVo identified in EchoStar’s DVRs does not extract data from the component TiVo identified as being the “physical data source” in those same DVRs.

2. Whether, in the alternative, a new trial should be ordered where:

a. the district court, after TiVo’s counsel falsely led the jury to believe that EchoStar “never got a written opinion” because no “independent lawyer” would have written an opinion of noninfringement, refused to allow EchoStar to correct the record, and enter into evidence two written noninfringement opinions, which the court had held were inadmissible because EchoStar did not comply with a discovery order that this Court subsequently reversed; and

b. the district court prohibited EchoStar's invalidity expert from testifying that the claims would be invalid if they were applied to the prior art in the same way TiVo applied them to the accused products.

III. STATEMENT OF THE CASE

A. Preliminary Statement

What makes this appeal so remarkable is not so much the number of errors the district court committed but how deliberately TiVo precipitated those errors and how aggressively it exploited them. For example, notwithstanding that more than ten years ago this Court confirmed in *Markman* that claim construction is the court's task, not the jury's, TiVo convinced the district court to leave some of the most contested claim limitations unconstrued, leaving that crucial task for the jury. This error left TiVo's expert free to tell the jury how these terms should be construed even though his claim-construction arguments were contradicted by the patent-in-suit.

TiVo also convinced the district court to sanction EchoStar because, despite its having produced its communications with outside opinion counsel, it refused to produce counsel's *uncommunicated* work product. Taking full—but completely unfair—advantage, TiVo's counsel falsely argued to the jury that EchoStar “*never got a written opinion*” because EchoStar knew that “independent lawyers” would have told EchoStar it infringed. The district court then refused to allow EchoStar

to correct the record with outside counsel's written opinions of noninfringement. This Court ultimately vindicated EchoStar's position in *In re EchoStar Communications Corp.*, 448 F.3d 1294 (Fed. Cir. 2006), but unfortunately not until after the jury had already rendered its verdict.

TiVo's counsel again misled the jury after the district court—also at TiVo's urging—prohibited EchoStar's invalidity expert from explaining that his positions were based on the way TiVo's infringement expert had applied the claims to EchoStar's accused products. Taking unfair advantage of the court's ruling, TiVo's counsel argued to the jury that EchoStar's invalidity expert *agreed* with the claim constructions and infringement positions of TiVo's expert, even though, in reality, the position of EchoStar's expert was only that the claims could not be both valid and infringed. Thus, TiVo intentionally gave the jury the false impression that EchoStar's own expert disagreed with EchoStar's noninfringement positions.

TiVo's misleading arguments clearly persuaded the jury to make its decisions based on passion and prejudice, not facts. For example, TiVo's evidence of infringement for several claim limitations consisted solely of its expert's one word "yes" answers to the leading questions of TiVo's counsel. That these conclusory, unexplained assertions were contradicted by EchoStar's documentation and the unchallenged testimony of numerous witnesses seemed to

have no effect on the jury. TiVo had falsely painted EchoStar as the villain and no amount of uncontested exculpatory evidence would have changed the outcome.

In short, the jury's liability verdicts cannot stand. The undisputed evidence shows that when the claims are construed correctly, EchoStar was entitled, as a matter of law, to a judgment of noninfringement.

B. The Parties

TiVo, founded in 1997, is a California company that manufactures, sells, and provides services relating to DVRs. (A1082:17-1084:13; A1218:20-24.) EchoStar, based in Colorado, operates a satellite-television service named "Dish Network" through which it provides DVRs to some of its customers. (A128; A3140:20-24.)

C. Course of Proceedings and Disposition Below

TiVo sued EchoStar in the Eastern District of Texas in January 2004, alleging that certain EchoStar DVRs infringed U.S. Pat. No. 6,233,389 ("the '389 patent"). (A128.) In August 2005, the district court issued an order construing some—but not all—of the disputed claim terms. (A127-155.)

After a 2½-week trial, the jury found that EchoStar willfully infringed the asserted claims (claims 1, 5, 21, 23, 31-32, 36, 52, and 61) and that EchoStar had not proven those claims to be invalid. (A231-38.) The jury awarded lost profits totaling \$32,663,906 and reasonable royalties totaling \$41,328,058. (*Id.*) The

court then entered final judgment and an injunction against EchoStar. (A1; A8-10; A18-31.) The court declined to award enhanced damages or attorneys' fees, finding that EchoStar's outside-counsel opinions—which were not before the jury—“illustrate a detailed, thorough analysis” and could have demonstrated EchoStar's lack of willfulness. (A190.) The court further noted the lack of any evidence of copying or bad faith on EchoStar's part. (A190-93.)

EchoStar immediately filed a notice of appeal and an emergency motion asking this Court to stay the injunction pending appeal. In its motion, EchoStar summarized some of the district court's more egregious errors and showed how the injunction would irreparably harm EchoStar. (A8409-33.) This Court stayed the injunction, finding that “EchoStar ha[d] met its burden of showing that there is a substantial case on the merits and that the harm factors militate in its favor.” (A8435.)

IV. STATEMENT OF FACTS

A. The Patented Technology

The '389 patent relates to “time shifting” television broadcast signals. (A375[col.1:6-7].) “Time shifting” refers to the ability to record a television program as it is being watched so that a viewer can pause, rewind, or fast forward live television. (A375[col.1:5-9, col.2:33-37].)

Computers had previously been used for that purpose, and the '389 patent did not purport to disclose the first DVR. (*Id.*[col.1:53-67].) The patent did, however, claim to disclose a DVR that needed a less powerful (and therefore less expensive) microprocessor (or "CPU") than earlier DVRs. (*Id.*)

1. Analog Television Systems "Tune" to a Frequency Range Containing a Specific Program, but Digital Television Systems "Tune" to a Frequency Range Containing Numerous Programs

Generally, television programs are broadcast in one of three ways: (1) "over the air" and received by an ordinary TV antenna; (2) through a cable; or (3) by satellite. (A7129-30.) Over-the-air and cable are used to broadcast either analog or digital television, while most satellite services broadcast digital television only. (A7130.)

In the United States, the most commonly used standard for analog television (so named because the signals are "analogous" to the original television program) (A7128) is "NTSC" (National Television Standards Committee). (A7047.) The corresponding European standard is "PAL" (Phase Alternating Line). (*Id.*) Digital television standards, which use binary data (i.e., 1's and 0's) to represent the television program, include "DSS" (Digital Satellite System), "DBS" (Digital Broadcast Services), and "ATSC" (Advanced Television Standards Committee). (A7128-30.)

Both analog and digital television signals are broadcast using an analog “carrier” wave capable of traveling long distances. (A7129; A7044-45.) In the United States, the Federal Communications Commission (“FCC”) has divided the “RF spectrum” into discrete frequency bands (or ranges) of 6 MHz each.¹ (*Id.*) For analog television, each 6 MHz band is assigned to one broadcast channel and thus carries only a single program at any given time. (*Id.*) For example, the FCC has set the frequency range for Channel 2 as 54 MHz to 60 MHz and those frequencies are used for nothing else. (A7045.)

In digital television, however, a digital data-compression technique called MPEG (Moving Pictures Experts Group) allows numerous programs to be carried in the 6 MHz bands that carry only one program in an analog system. (A7129-30; A376[col.3:44-45].) Accordingly, digital television receivers do not “tune” to a specific program. Instead, as explained both by TiVo’s expert, Dr. Gibson, and in the ’389 patent, to display a specific program, a digital receiver “tunes” to the range of frequencies carrying that program *and others*, and the specific program is then extracted (or demultiplexed) from among the several programs in that frequency band. (A7129; A376[col.3:43-49].)

¹ MHz (“MegaHertz”) is a measure of frequency based on a million wave cycles per second. “RF” frequencies are very-high frequency (“VHF”) (54-216 MHz) or ultra-high frequency (“UHF”) (470-884 MHz). (A7044-45.)

2. The '389 Patent Describes Both Non-MPEG Television Programs Being *Converted* Into an MPEG-Formatted Stream and Pre-Formatted MPEG Data Streams Being *Extracted* from a Digital Television Signal

One advantage of the DVR described in the '389 patent is its capability to time shift television from any source. Thus, the '389 patent explains, “[a] preferred embodiment of the invention accepts television (TV) input streams in a multitude of forms,” including analog (NTSC or PAL) and digital (DSS, DBS, or ATSC) forms. (A375[col.2:4-10].)

Although the patent describes this as a “preferred embodiment,” two of its four independent claims require a DVR that “accept[s] . . . TV signals [that] are based on a multitude of standards, including, but not limited to, National Television Standards Committee (NTSC) broadcast, PAL broadcast, satellite transmission, DSS, DBS, or ATSC.” (A380[col.12:35-67]; A382[col.15:17-49].) It appears, moreover, that TiVo deliberately drafted these claims to protect its commercial products. For example, a “very early” description of the invention specifies an “Input Section” that accepts both analog (“NTSC/PAL”) and digital (“DSS/DBS/ATSC”) television for processing (A8482; A8484; A1469:12-18), and TiVo’s SEC filings confirm that its “standalone” DVR (i.e., a DVR sold directly to customers rather than through a television provider such as DirecTV) “works with all television signals: cable, satellite, and antenna.” (A8098; A7825).

Since television programs (in whatever form they are transmitted) require great amounts of data, the invention stores television data in the same data-compression format (MPEG) that is used for digital transmission. (A7130-31; A1517:7-1519:21.) Thus, the patent's "Summary of the Invention" explains that analog television programs are *converted* to an MPEG format, while "pre-formatted MPEG streams," which are found in digital television programs, are *extracted* from the broadcast signal:

Analog TV streams are converted to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation, while pre-formatted MPEG streams are extracted from the digital TV signal and presented in a similar format to encoded analog streams.

(A375[col.2:10-14].)

As one would expect, the components that "convert" a non-MPEG analog program to an MPEG stream are different from those that "extract" a pre-existing MPEG stream from a digital signal. Thus, different types of "Input Sections (tuners)" are required if a multitude of television signals are to be accepted. (A376[col.4:14-16].) "MPEG encoders" are required for converting analog programs into MPEG, and a demultiplexer is necessary for extracting already-existing MPEG data from a digital signal. (A377[col.6:26-35]; *see also* A376[col.3:49-52]; A365; A368.)

3. TiVo's Invention Separates the Incoming MPEG Stream Into Its Video and Audio Component Parts

Once the MPEG stream is obtained (whether by converting an analog program to an MPEG stream or by extracting a pre-formatted MPEG stream from a digital signal), the DVR stores the stream for playback. In the '389 patent, this is accomplished by a "Media Switch" that includes a "parser" for separating the MPEG stream into its video and audio components so that video and audio data can be separately stored in temporary buffers (memory) and processed before being reassembled for delivery to the viewer's television. As the "Summary of the Invention" explains:

The invention parses the resulting MPEG stream and separates it into its video and audio components. It then stores the components into temporary buffers.

(A375[col.2:15-25]; *id.*[col.2:54-56].)

Figure 4 shows how the Media Switch's parser (401) analyzes, separates, and stores the component parts of the incoming MPEG stream:

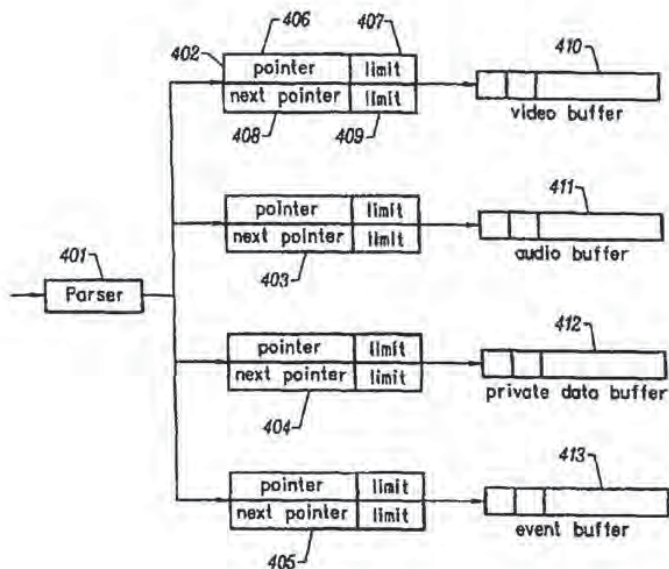


FIG. 4

(A366; A375[col.2:54-56].) The parser analyzes the MPEG stream for three types of data—video, audio, and “private”²—and then creates what the patent calls “event” data (described *infra*). (A377[col.5:3-6].) As each component is identified, it is separated and sent to a buffer dedicated to that specific data type, i.e., a video buffer (410), audio buffer (411), or private-data buffer (412). (A366; A376[col.4:55-63].)

Similarly, Figure 3 illustrates the separation of the video and audio components in the MPEG stream:

² “Private” data is non-television data such as the time or “V-chip” information relating to a program’s age-appropriateness. (A376[col.3:52-61]; A373.)

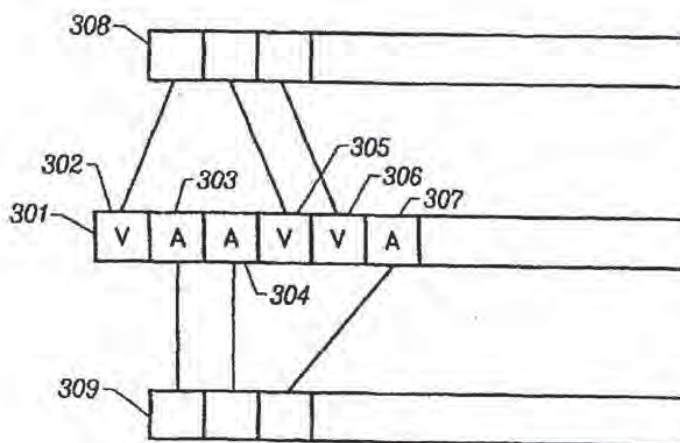


FIG. 3

(A365; A375[col.2:50-52].) An MPEG stream (301) is comprised of video components (302, 305, 306) and audio components (303, 304, 307). (A375[col.2:50-52]; A376[col.4:24-26].) As the MPEG stream enters the Media Switch, its video and audio components are separated into video (308) and audio (309) streams, which are stored in different buffers dedicated to either video or audio data. (A376[col.4:23-33].)

The patent emphasizes the importance of separating the MPEG stream into its video and audio components and then recombining them, stating that this “must” occur and is “necessary”:

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.

(A376[col.4:23-33] (emphasis added).)

During the development phase of the invention, as well as during its commercialization, TiVo emphasized the importance of separating the audio data from the video data. For example, in an early description of the invention (A3443:2-16), co-inventor Barton specified that MPEG video and audio data were to be stored in “separate locations in main memory.” (A3445:4-3446:9; A7740-41.) Further, after TiVo began commercial development, it insisted—despite Broadcom’s protestations—that Broadcom supply it with a chip that, unlike the chip Broadcom was already supplying to EchoStar for its DVRs, separated the incoming video and audio data. (A2506:4-2509:5.)

4. The Invention Uses “Event Data” to Create an Index of “Logical Segments” That Is Used to Locate Audio and Video Data

The patent recognizes that since the MPEG stream has been divided into separate video and audio streams, additional steps are necessary “for accurate playback of the signal.” (A376[col.4:30-34].) Thus, the patent describes an indexing operation that tracks where in the program the individual audio and video components belong and where each component is stored (so that the audio and video components will eventually “match up” during playback). (*Id.*[col.4:34-54].)

Figure 6 shows how the Media Switch creates this index:

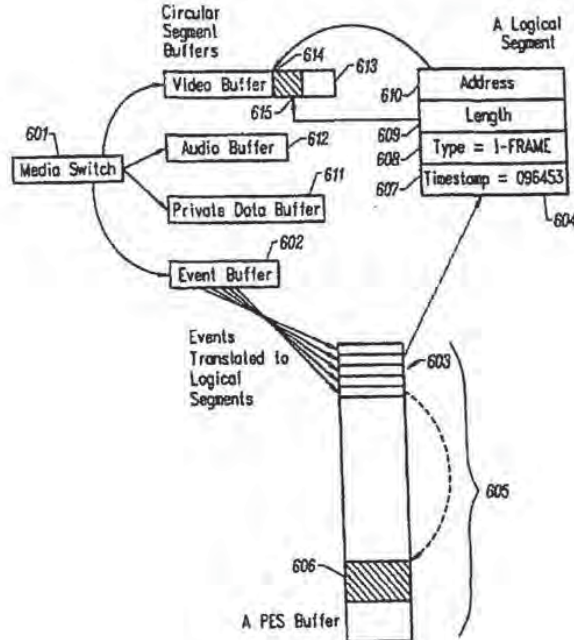


FIG. 6

(A367.)

As the parser in the Media Switch (601) separates the video, audio, and private data packets and stores them in their respective buffers (video, 613; audio, 612; and private, 611), the parser generates “event” data that tracks the storage location of the individual data packets. The event data is also stored separately from other kinds of data in an “event” buffer (602). (A366; A377[col.5:3-20].)

The event data is then used to generate “logical segments.” (A377[col.5:36-38]; A367 (“[e]vents translated to logical segments”).) The upper right-hand

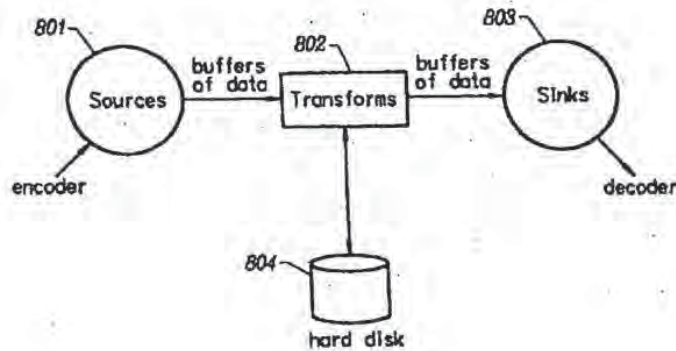
corner of Fig. 6 shows that each logical segment (604) corresponds to a video, audio, or private data packet and contains (1) information about the data type (608), (2) the packet's address, i.e., storage location (610), (3) its length (609), and (4) a time stamp indicating where in the program the packet belongs (607). (*Id.*[col.5:36-50].) The logical segments—which are not the data itself but instead a means of locating the data—are stored together in another buffer, called a “PES” buffer (605). (*Id.*[col.5:51-col.6:15].)

Further, while the patent provides that the video and audio components of the MPEG stream (which comprise the actual data for the television program) must be *separated* from each other, it teaches that the video and audio *logical segments* are stored together in the same PES buffer “in the logical order in which they appear.” (A377[col.6:2-4].) This arrangement is particularly useful for finding specific scenes within a program efficiently (A376[col.4:34-54]), since only the logical segments and not the actual video and audio data need to be handled by the CPU, thus “sav[ing] a large amount of CPU power” and allowing lower-cost components to be used. (A378[col.7:12-26]; A377[col.6:4-15].)

5. The Software Used in the Invention

Figure 8 of the '389 patent illustrates the “three conceptual components” of the software used in the invention: (1) “sources,” which relate to acquiring the television data coming into the DVR; (2) “transforms,” which relate to storing that

data onto, for example, a disk drive; and (3) “sinks,” which relate to outputting data from the DVR to the television (A378[col.7:48-col.8:8]):



(A369.)

The patent describes how these “three conceptual components” work in the context of software written in an “object-oriented” programming language called C++. (A378[col.8:9]-379[col.9:51].) Object-oriented programming employs an “object-based approach” that collects together logical operations and software elements that perform those operations. (A1369:2-1370:2; A1420:22-1424:19; A2881:24-2882:19.)

Thus, the patent describes a “source object,” a “transform object,” and a “sink object.” (A378[col.8:39-59].) The source object is responsible for extracting data out of a “physical data source” (which the specification does not describe except to suggest it is a generic term for the Media Switch (A378[col.8:43-45])) and then passing the data downstream to the transform object. (*Id.*[col.8:43-51].) The transform object is responsible for “flow control,” controlling when the source

object extracts data out of the physical data source. (*Id.*[col.8:45-51].) The transform object also “flow controls” the sink object by controlling when the sink object receives the data. (*Id.*[col.8:52-55].) Once the sink object receives the data, it sends the data to a “decoder” that converts the data from its MPEG format into analog television signals, which the DVR then sends to the television for viewing. (*Id.*[col.7:63-65]; A379[col.9:12-15]; A375[col.2:30-32].) The patent explains that this “flow control” “is an important feature” because it “provides for limiting the amount of memory” required in the DVR. (A378[col.8:60-65].)

The “source object,” the “transform object,” and the “sink object” are under the control of a “control object,” which receives commands from the viewer (e.g., fast-forward, pause, rewind). (A379[col.9:22-46].)

B. The Asserted Claims

The '389 patent claims fall into two categories: (1) claims directed to a DVR and methods of using a DVR (“Hardware claims”); and (2) claims directed principally to the software used in a DVR (“Software claims”).

1. The Hardware Claims

The asserted Hardware claims include only two independent claims—claims 1 and 32. These two claims are virtually identical except that claim 1 is directed to a method of using a DVR while claim 32 is directed to the DVR itself. Like the “preferred embodiment” described in the patent’s “Summary of the Invention”

section, the Hardware claims require a DVR that accepts “a multitude of standards,” including both analog and digital television signals. (*Compare* A375[col.2:4-10] *with* A380[col.12:37-41].) The claims also recite the step of “convert[ing]” the incoming signal to MPEG format, a step that the patent repeatedly and exclusively associates with analog signals (and that obviously does not occur where the signal is already in MPEG format). (*Compare* A375[col.2:10-12] *with* A380[col.12:44-47].) Similarly, the claims require that the DVR be tuned to “a specific program” (A380[col.12:43]), which again describes a step that occurs only in analog television (since digital systems tune to a frequency band containing not just one but numerous programs). *See supra* page 8. The Hardware claims also provide (consistent with the specification) both that the incoming MPEG data stream must be separated into its audio and video components, and also that those components must be later assembled back into an MPEG stream.

Claim 1 reads as follows (the disputed terms are emphasized, and paragraph lettering has been added to be consistent with the exhibits prepared by the parties’ experts, *see* A8386):

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

[B] accepting television (TV) broadcast signals, wherein said TV signals are based on *a multitude of standards*, including, but not limited to, National Television Standards Committee (NTSC) broadcast, PAL broadcast, satellite transmission, DSS, DBS, or ATSC;

- [C] *tuning said TV signals to a specific program;*
- [D] *providing at least one Input Section, wherein said Input Section converts said specific program to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation;*
- [E] *providing a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;*
- [F] storing said video and audio components on a storage device;
- [G] providing at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;
- [H] *wherein said Output Section assembles said video and audio components into an MPEG stream;*
- [I] wherein said Output Section sends said MPEG stream to a decoder;
- [J] wherein said decoder converts said MPEG stream into TV output signals;
- [K] wherein said decoder delivers said TV output signals to a TV receiver; and
- [L] accepting control commands from a user, wherein said control commands are sent through the system and affect the flow of said MPEG stream.

(A380[col.12:35-67]; A382[col.15:17-49] (claim 32).)

a. TiVo's Allegations That EchoStar Infringes the Hardware Claims

TiVo accused eight different EchoStar DVRs of infringement: models DP501, DP508, DP510, DP522, DP625, DP721, DP921, and DP942. (A1529:6-9;

A8571.) In his infringement analysis, TiVo's expert, Dr. Gibson, divided the accused DVRs into three categories. Specifically, he grouped models DP501, DP508, and DP510 together under the name the "50X" DVRs because they were all "similar implementations." (*Id.*) Likewise, he grouped the DP721 together with the DP921, and the DP522 together with the DP625 and DP 942. (*Id.*) The parties typically referred to the latter two categories as the "Broadcom" DVRs because they all used integrated-circuit chips manufactured by Broadcom. (A3705:1-3; A232-33.)

**(1) TiVo Argued Infringement
Notwithstanding That No EchoStar
DVR "Tun[es]" to or "Converts"
Analog Television Programs**

It is undisputed that EchoStar's DVRs accept for processing only one digital satellite television broadcasting standard ("DVB-S") and not analog television. (A1723:7-22; A2654:7-20.) Thus, EchoStar's DVRs do not "tun[e] ... to a specific program," as the claims (A380[col.12:43]) provide. Rather, as Dr. Gibson explained, EchoStar's DVRs tune to a frequency band that includes numerous programs and then perform additional processing steps to obtain a specific program *after* tuning. (A1542:16-22; A1767:11-19; A7129[¶17].)

It is also undisputed that EchoStar's DVRs are incapable of converting an analog program or any other non-MPEG data to an MPEG format. (A1739:6-1740:7; A2311:5-9; A2632:6-2633:12; A2503:8-11.) Instead, EchoStar converts

analog programs to an MPEG formatted stream at its broadcasting (or “uplink”) facility in Wyoming. (A2301:12-2302:22.) There are numerous advantages to performing the MPEG conversion at the uplink facility rather than in the DVR. That allows EchoStar, for example, to broadcast 10-14 different programs with equipment that “used to only be able to carry one analog program,” which gives EchoStar the ability to carry literally thousands of channels of programming. (A2304:10-2306:21). Also, converting the analog programs at the uplink center improves the quality of the broadcast since digital signals are less prone to distortion. (A2307:3-2308:22.) Finally, by centralizing the MPEG-conversion process at its uplink facility, EchoStar can afford very expensive MPEG encoders (costing “about \$57,000 apiece” (A2307:3-7)) that improve the quality of the broadcast signal while decreasing the amount of data being transmitted, thereby allowing EchoStar’s DVRs to store more programming than if the conversion were performed by the DVR itself. (A2312:2-21.)

Nevertheless, TiVo argued, and the jury found, that EchoStar’s DVRs infringed the Hardware claims. This was possible primarily because of two claim-construction decisions of the district court.

First, the court construed “tuning said TV signals to a specific program” to mean “tuning said TV signals to a specified frequency range.” (A140.) Accordingly, while TiVo’s expert could not show that EchoStar’s DVRs tune to a

specific program, he did not need to. Under the district court's construction, the DVR was required only to "tune to a specified frequency range," and EchoStar's DVRs do that, even though each "specified frequency range" they tune to contains numerous programs. (A1539:14-1542:22; A1767:11-19; A7129.)

Second, the court rejected EchoStar's position that both the plain meaning of "converts said specific program to an [MPEG] formatted stream" and its use in the specification require this element to be construed as "changes the format of the TV program data from non-MPEG to MPEG." (A141.) Instead, the court agreed with TiVo that "[t]he claim term 'converts' needs no further construction." (*Id.*)

Because the court decided not to construe "converts," its meaning became a subject of conflicting expert testimony—and a matter ultimately resolved by the jury. For example, it was undisputed that EchoStar's DVRs cannot convert an analog program or any other non-MPEG data to MPEG. *See supra* pages 21-22. Accordingly, EchoStar's expert concluded that there was no infringement because "converts" as used in the '389 patent requires changing a program that is not in MPEG format into an MPEG-formatted stream. (A2635:14-2642:25.)

TiVo's Dr. Gibson conceded both that EchoStar's DVRs cannot convert an analog program to MPEG (A1739:6-1740:7) and also that the word "convert(s)" is never used in the patent in the context of digital television (A1726:9-1729:15). Nevertheless, Dr. Gibson testified that the "converts" limitation is satisfied even

though the signal supposedly being “converted” is *already* in MPEG format. (A1765:15-1769:13.) Specifically, Dr. Gibson argued that “converts” covers functions that are or may be performed by EchoStar’s DVRs, such as (1) extracting the MPEG data from the analog carrier wave on which the digital signal was transmitted by the satellite (*see supra* page 10), (2) descrambling the digital signal (which may have been scrambled to prevent piracy), and (3) filtering and correcting errors in the digital signal. (A1542:13-1547:11; A1766:20-1769:13; A2644:12-2650:10.)

Finally, TiVo’s evidence for this limitation was directed solely towards literal infringement. TiVo never disputed EchoStar’s explanation for why a DVR that does not convert non-MPEG signals to an MPEG format because the signals were already converted before being broadcast is significantly different from a DVR that must perform the conversion itself. (A2652:10-2655:13; *see also supra* pages 21-22.)

(2) TiVo Argued That “Indexing” “Logical Segments” Is the Same As “Separating” the Video and Audio Components of an MPEG Stream

Unlike the invention described in the '389 patent, the accused Broadcom DVRs do not separate the MPEG stream into its video and audio components. (A2360:19-2362:4; A2464:25-2665:3; A2504:25-2505:16; A2665:13-2666:8.) Rather, the Broadcom DVRs keep the MPEG stream’s video and audio

components together. (*Id.*) There are significant reasons why EchoStar designed its Broadcom DVRs this way. For example, keeping the video and audio components together is a significantly simpler and more efficient way to ensure that a television program's picture and sound match up. (A2344:19-2345:17; A2346:7-2348:15.) Also, keeping the video and audio components together allows EchoStar to keep its "pay-per-view" programming encrypted on the DVR's disk drive, thus preventing unauthorized distribution of programs. (A2345:18-2346:6.)

TiVo did not dispute that the MPEG stream's video and audio components were kept together in the Broadcom DVRs but nevertheless contended that they met the "separated" limitation based on a theory of "logical separation." (A1554:2-19.) TiVo's Dr. Gibson testified that the Broadcom DVRs "logically separate" video from audio data by creating a "frame index table" that keeps track of where certain video components are stored on the DVR's disk drive. (*Id.* ("[Y]ou just logically need to know where everything is. So it's separated in that form."))

Notwithstanding Dr. Gibson's testimony equating the "separating" step with the step of creating an index, the patent explicitly describes the two as distinct steps. *See supra* pages 14-16. In fact, the patent includes the steps in different claims. While claim 1 requires the MPEG stream to be "separated into its video and audio components," claim 10 (which depends from claim 1) "further

comprises” the additional step of “indexing.” (*Compare* A380[col.12:49-50] (claim 1) *with* A381[col.13:35-40] (claim 10).)

In sum, whether the Broadcom DVRs met the claim requirement that the MPEG stream be “separated into its video and audio components” became a question of how “separated” is construed. As with the “converts” limitation, though, the court refused to resolve the dispute by defining the claim term “separate.” (A144.) Accordingly, here too the construction of a claim term became a subject of expert testimony and a matter ultimately resolved by the jury. And, as with the “converts” limitation, the jury accepted Dr. Gibson’s claim construction and found infringement even though the Broadcom DVRs never actually separate the MPEG stream’s video and audio components.

**(3) TiVo’s Assertion That the 50X DVRs
“Assemble[] . . . Video and Audio
Components into an MPEG Stream”**

Instead of using a Broadcom chip like the Broadcom DVRs, the 50X DVRs use a chip manufactured by ST Microelectronics that does not allow the MPEG stream’s video and audio components to be stored together. (A2356:23-2357:17.) Accordingly, unlike the Broadcom DVRs, the 50X DVRs *do* separate the MPEG stream’s video and audio components. However, as explained by EchoStar’s Vice President of Engineering and Systems, Dave Kummer, once the video and audio

components are separated, the 50X DVRs never assembles them back into an MPEG stream:

Q: After the 501, after the video and audio is stored in these separate files on the hard drive, are they ever put back together?

A: Now, in that product basically what we do then is, on the playback process, we read the video file, and we, again, put it into RAM, and we read the audio file and put it into another separate area of RAM. And then it's moved from there into its separate MPEG video decoder and separate MPEG audio decoder. *So they never really get put back together.*

(A2358:24-2359:8 (emphasis added).) Further, EchoStar's Vice President for Software Engineering, Dan Minnick, confirmed the point (A2465:23-2466:5), as did EchoStar's expert, Dr. Rhyne (A2672:20-2673:2). (See also A2674:22-2675:14; A2677:6-2679:1; A8388.)

TiVo never disputed any of this testimony, either on cross-examination or through its own expert. In fact, in his infringement analysis for the "assembles" limitation, Dr. Gibson, who acknowledged that this limitation requires an "output section" that receives *both* "the video and audio components from the hard disk drive and then assembles them to be played back" (A1560:22-1561:4), never separately addressed the 50X DVRs. Instead, he attempted to support his conclusion *only* by reference to a single *Broadcom* DVR (the DP522,

A1561:19-21). (A1564:19-1565:22; A8387.) Dr. Gibson's analysis of EchoStar's *other* DVRs, including its 50X DVRs, consisted of three words:

Q: Do all of the—all of the EchoStar products have an output section that extracts and assembles as required by elements 1G and 1H?

A: Yes, they do.

(A1565:23-1566:1.)

In sum, three EchoStar witnesses testified that the 50X DVRs never assemble video and audio components into an MPEG stream, and TiVo's Dr. Gibson provided no factual basis for concluding otherwise. Nonetheless, the jury apparently credited Dr. Gibson's unsupported conclusion and found that the 50X DVRs met the "assembles" limitation.

2. The Software Claims

Both asserted Software claims, claims 31 and 61, are independent claims. Like the Hardware claims, the Software claims use language associated with a preferred embodiment. Specifically, the "three conceptual components" underlying the software used in the invention are broadly described as "sources," "transforms," and "sinks." *See supra* pages 16-17. But in describing the preferred "object-oriented programming" embodiment, the specification refers to the particular implementations of these "conceptual components" using specific terms: "source object," "transform object," and "sink object." (*Id.*) The Software claims use the same terms.

Claim 31 is reproduced below (the disputed terms are emphasized):

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.

(A381-82[col.14:51-col.15:16]; A383[col.18:3-30].)

a. The District Court's Construction and TiVo's Infringement Analysis for the "Object" Limitation

One claim-construction dispute regarding the Software claims centered on whether, as EchoStar asserted, the claims are restricted to software written using object-oriented programming language. (A150-52.) In supporting its position, EchoStar explained that its construction of "object" was consistent both with the ordinary meaning of the term in the computer art and with numerous dictionaries establishing that, in the computer field, the term "object" is typically associated with object-oriented programming. (A7027.) Moreover, the patent uses the term "object" solely in the context of an object-oriented programming language, and repeatedly uses terms characteristic of object-oriented programming, including "class," "class hierarchy," and "object." (A378[col.8:9-19]; A1420:18-1424:19; A7027-28.) EchoStar thus argued that "object" should be construed to mean "an item written in an object-oriented computer programming language (for example, C++) that is an instance of a class from which it inherits properties, and that includes both data and all procedures that operate on the data." (A7027.)

TiVo argued instead for a much broader construction in which "object" means "a collection of data or operations," which TiVo restated as "portions of a computer program." (A150-51.) TiVo's construction was not based on the intrinsic evidence but was "based directly" on the *tenth of twelve* definitions of

“object” from the Authoritative Dictionary of IEEE Standard Terms (A8521; A8535), even though that definition concerned a technical category unrelated to the '389 patent—“instrumentation and measurement”—and TiVo’s restatement of it (i.e., that it simply means “portions of a computer program”) was inconsistent with other definitions in the same dictionary that related to software and computers (A7118; A8533-35). For example, the IEEE dictionary’s first entry relating to “software engineering” (“SE”), like EchoStar’s proposed construction, defines “object” in the context of object-oriented programming principles, stating, for example, that an “object” is “an instance of a class.” (A8535(4).) Similarly, its first “computer” (“C”) related definition confirms the relationship between “object” and “object-oriented design.” (A8535(1).)

Further, the IEEE dictionary defines an “object-oriented design” as “[a] software development technique in which a system or component is expressed in terms of objects and connections between those objects” (A8535), which is precisely the way the components of the Software claims are expressed. For example, both Software claims describe systems in which a “source object obtains a buffer from” or “is automatically flow controlled by” the “transform object” and a “control object sends flow command events to said source, transform, and sink objects.” (A381[col.14:65]-382[col.15:16]; A383[col.18:14-30].)

Nevertheless, the district court rejected EchoStar's position. Despite the patent's use of "object" in the context of object-oriented programming, the court found that the intrinsic evidence did not provide a meaning. Accordingly, adopting TiVo's dictionary definition, the court construed "object" to mean "a collection of data and operations." (A151-52.)

But TiVo presented no evidence that EchoStar's software satisfied even this construction by having a "*collection* of data and operations" corresponding to each claimed object. In performing his infringement analysis, for example, Dr. Gibson gave no consideration to how EchoStar's programmers structured their software or whether the instructions for performing certain functions were collected together. (A1692:13-1693:24.) Indeed, Dr. Gibson admitted that in performing his infringement analysis, rather than looking for the claimed "objects," he instead looked only for the functions those objects were supposed to perform. (*See, e.g.*, A1694:8-9 ("Well, I didn't go looking for a transform object. I went looking for the functions."); *see also* A1691:2-1694:7.) Accordingly, the instructions Dr. Gibson identified were not part of "a collection," but were instead individual lines of code, scattered throughout the software, that he said performed the recited functions. (A1688:2-15; A1691:11-1692:12.)

Moreover, the record is inconsistent with any argument TiVo might make that the requirement that the data and operations be a "collection," i.e., grouped

together, should be ignored. For one thing, “collection” is part of the definition TiVo advocated. Additionally, while Dr. Gibson rejected the idea that the term “object” requires object-oriented *programming*, he acknowledged that the term nevertheless invokes “object-oriented techniques” (A7137), and the evidence showed that collecting the data and instructions together is one of those techniques. Co-inventor Barton stated, for example, that one of the basic techniques of object-oriented programming is “encapsulation,” which he defined as “the *collection* of data or instructions *together as a unit*.” (A8548 (emphasis added).) *See also* A1369:10-1370:2 (Barton’s testimony that “[o]bject-oriented programming” and “languages” use the same technique, namely, they “group the operations together for the programmer so that they can be manipulated simply and efficiently”). EchoStar’s software expert, Dr. Johnson, concurred, testifying that “what makes software an object” is that “it’s a collection of data and operations. And a programmer must create that collection. A programmer will organize and structure the code such that that collection is clear.” (A2732:21-25.)

With regard to the doctrine of equivalents, Dr. Gibson testified that even if EchoStar was correct in saying that the “data and operations” he identified had to be collected together to literally be “objects,” EchoStar’s DVRs would infringe under the doctrine of equivalents. That testimony, however, was devoid of any explanation or technical details, and consisted solely of his conclusions:

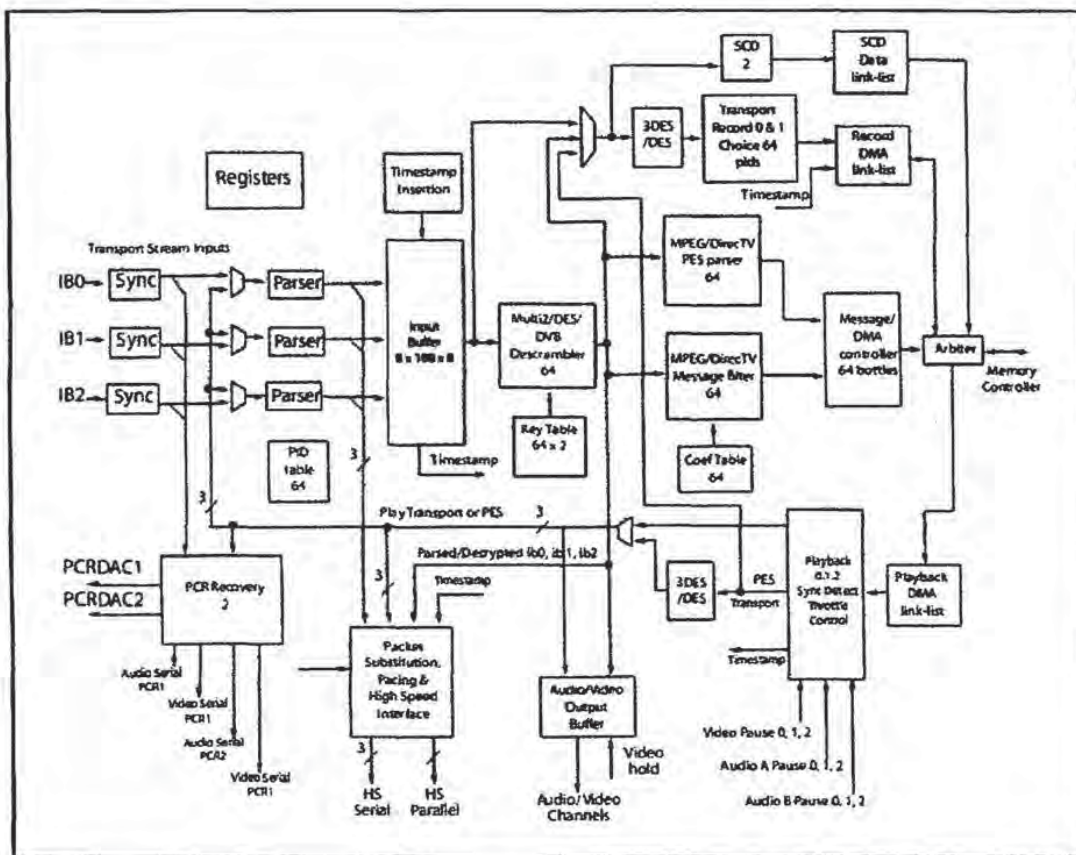
- A. Well, they can perform the same function in essentially the same way with the same result.
- Q. And in terms of the transform object, for example, can you explain why?
- A. The transform object requires storing and retrieving, and so when the function is storing and retrieving the video and audio data, it's a collection of data and operations that do that. And there's no requirement that this information be encapsulated, but the same—the same—essentially the same way would achieve the same result. And that is, the data would be—for example, for TrickPlay, the data would be transformed.
- Q. Is—so even under their—under EchoStar's assumption of the claim, does EchoStar still meet the claim element 1(d), for example, for transform object under Doctor [sic] of Equivalents?
- A. Yes.
- Q. How about the other objects? Would we expect the source object and sink object under the Doctrine of Equivalents?
- A. Yes, we would.
- Q. Is it for the same reason?
- A. Yes.

(A1639:13-1640:11.)

b. TiVo's Attempt to Show That the EchoStar DVRs Contain a "Source Object"

The Software claims require a "source object" that "extracts video and audio data from [a] physical data source." (A381[col.14:59-61]; A383[col.18:9-10].) TiVo and EchoStar agreed that the "source object" had to be software (A1666:13-1668:23; A2697:22-25; A7136[¶44]-7137[¶45]), and their respective experts were in basic agreement that the Broadcom DVRs' "physical data source" was hardware on the Broadcom integrated circuit chip (A1628:21-22; A2699:16-2701:16).

For the Broadcom DVRs, TiVo's Dr. Gibson testified that the following pieces of hardware found on the Broadcom chip constituted the physical data source in the Broadcom DVRs: (1) "Input Buffer 8 X 188 x 8"; (2) "SCD ["Start Code Detection"] 2"; (3) "SCD Data link-list"; (4) "Transport Record 0 & 1 Choice 64 pids"; and (5) "Record DMA link-list," (A1627:13-1629:15; *see also* A7175; A7177):



(A7201 (highlighting added to show the particular hardware Dr. Gibson identified as constituting the “physical data source”).)

Jason Demas, an engineer from Broadcom, which counts both EchoStar and TiVo as customers (A2496:2-2497:3), explained the operation of the hardware constituting Dr. Gibson’s “physical data source.” The incoming MPEG stream is received by the “Input Buffer,” and then directed to the two “SCD” blocks and also to the “Transport Record” and “Record DMA” blocks. (A2511:7-2512:2.) The “SCD” blocks create the “frame index table” (*see supra* page 25), while the

“Transport Record” and “Record DMA” blocks “push” the MPEG stream (which, again, contains both video and audio components) off of the Broadcom chip and into a memory chip that is next to—but separate from—the Broadcom chip. (A2511:7-2514:9.)

That is, although TiVo’s Dr. Gibson agreed that the Software claims require *software* to *extract* data from the physical data source, Mr. Demas testified, without contradiction, that *no software at all* is involved in “extracting” data from the “physical data source” that Dr. Gibson identified. Instead, *hardware* (the “Transport Record” and “Record DMA” blocks) “pushes” the video and audio data out of the “physical data source.” (A2510:19-2512:24.)

EchoStar’s experts, Drs. Rhyne and Johnson, confirmed Mr. Demas’s testimony, explaining (also without contradiction) that a “hardware push”—not a software extraction—is responsible for moving data out of the blocks Dr. Gibson called the “physical data source” in all the Broadcom DVRs. (A2701:20-2703:8; A2752:6-2753:24.) Further, Drs. Rhyne and Johnson also testified (again, without contradiction) that the corresponding components in the 50X DVRs similarly use a “hardware-only push” to move data out of the “physical data source.” (A2703:11-24; A2753:25-2754:23.)

Although Dr. Gibson purported to identify the software command (“Ioctl”) used in one Broadcom DVR (the DP721) that “extracts audio and video data from

the physical data source” (A1630:10-22; A7176), that command does not move data from anything Dr. Gibson identified as being part of the “physical data source.” Instead, the “Ioctl” command performs a “direct memory access” (“DMA”) that moves data from the memory chip (“SDRAM”) that sits next to (but is separate from) the Broadcom chip, and into host memory. (A8045-46; A2752:6-2754:22; A2511:7-2512:24.)

Moreover, notwithstanding that TiVo accused every EchoStar DVR of infringement, Dr. Gibson’s testimony concerned only one model of one type of Broadcom DVR. Dr. Gibson never identified any software command in any of the other accused DVRs that allegedly corresponded to the “source object.” (A1630:10-1633:4.) Instead, his infringement analysis for the other accused DVRs consisted of the following:

Q: And do, likewise, all of the EchoStar products meet claim elements 31(c) [the “extracts” element] and 31(e)?

A: Yes, they do.

(A1633:2-4.)

In sum, while the Software claims explicitly require a “source object” that “extracts video and audio data from said physical data source,” TiVo identified no software in any EchoStar DVR that does that. Instead, TiVo’s evidence concerned only a single command from one of the eight accused DVRs, but it was undisputed

that that command, the “Ioctl” command, moves data from a memory chip that is completely separate from the “physical data source” TiVo identified.

Further, TiVo provided no evidence (through Dr. Gibson or anyone else) that moving data between a memory chip and host memory (which is what the “Ioctl” command accomplishes) was equivalent to “extract[ing] video and audio data from said physical data source.” Nor did TiVo provide any evidence that the “hardware push” utilized in EchoStar’s DVRs is equivalent to software “extracting” data from the physical data source. In fact, the entirety of TiVo’s evidence concerning equivalents for the “source object” was Dr. Gibson’s answering “yes” to two questions of TiVo’s counsel:

Q. Would we expect the source object and sink object under the Doctrine of Equivalents?

A. Yes, we would.

Q. Is it for the same reason?

A. Yes.

(A1640:6-11.)

C. Trial Issues

1. EchoStar’s Assertion That TiVo Took Unfair Advantage of the District Court’s Order Excluding the Merchant & Gould Opinions and Made Grossly Misleading (If Not False) Statements to the Jury

TiVo’s counsel made certain arguments to the jury regarding EchoStar’s efforts in determining whether it infringed the ’389 patent, and while EchoStar

objected to the arguments as false, the court allowed them to remain uncorrected. So that the situation can be understood, however, it is necessary first to recount EchoStar's efforts in determining whether it infringed.

a. EchoStar Conducted an Internal Investigation and Also Contacted Two Law Firms (One Pretrial and One After Suit Was Filed)

After learning of the '389 patent from a TiVo press release announcing the patent's issuance, EchoStar immediately obtained a copy of the patent and began an internal investigation to determine whether it related to EchoStar's DVRs. (A2149:25-2154:20; A2447:8-2448:9; A2452:4-15.) As part of this investigation, Mr. Miller (an EchoStar in-house patent lawyer) obtained the patent's file history and studied EchoStar's DVRs with help from EchoStar's engineers. (A2454:6-25.)

Shortly after EchoStar began its internal investigation, it contacted an outside firm, Bozicevic, Field & Francis, to conduct a similar investigation and prepare a formal opinion of counsel. (A2099:8-2100:12; A2154:23-25.) EchoStar provided the Bozicevic lawyers with the '389 patent, its file history, a memorandum prepared by an engineer in EchoStar's in-house legal department explaining why EchoStar did not infringe, descriptions of the DVRs, and an actual DVR. (*Id.*; A2163:18-2166:9; A2210:18-2212:17.) After receiving this information, the Bozicevic lawyers indicated that they could prepare a written opinion of noninfringement based on many of the same arguments raised in this

appeal, including those concerning the “converts,” “separated,” and “assembles” limitations. (A2166:2-9; A2202:17-2205:23; A2211:6-2213:9.) And, in fact, the Bozicevic lawyers began drafting a noninfringement opinion and asked for some additional technical details from EchoStar so they could finalize it. (A2206:6-2207:14.)

In the interim, however, EchoStar’s internal investigation had concluded (also based on many of the same arguments now being made in this appeal) that EchoStar did not infringe, either literally or under the doctrine of equivalents. (A2462:16-2471:24; A2166:11-2180:19; A2196:25-2199:10; A2454:6-2461:6.) EchoStar’s investigation concluded, for example, that its DVRs lacked the “converts” element of the Hardware claims and the “object[s]” elements of the Software claims (A2454:6-25; A2463:12-23; A2466:11-2467:7); that its DVRs neither “accept[] . . . TV signals [that] are based on a multitude of standards” nor “tun[e] . . . to a specific program” (A2462:16-2463:23); and also that its Broadcom DVRs lack the “separated” limitation and its 50X DVRs lack the “assembles” limitation (A2464:25-2466:5).

By this time, moreover, TiVo and EchoStar were negotiating a business deal relating to DVRs. (A2374:4-2375:7; A2450:2-9.) And during those negotiations, TiVo never alleged that EchoStar was infringing the ’389 patent. (*Id.*; A2185:16-2186:19.) The matter of the ’389 patent thus receded to the background, and

EchoStar never followed up with the Bozicevic lawyers to obtain a written opinion. (*Id.*; A2206:18-2207:6.)

Immediately after TiVo sued, however, EchoStar retained a second firm, Merchant & Gould, to study the '389 patent, and it provided two formal opinions of noninfringement. *In re EchoStar*, 448 F.3d at 1297. Indeed, the district court complimented these opinions post-trial, saying that they showed “a detailed, thorough analysis on which a fact finder might have determined [EchoStar] reasonably relied,” and concluded that “[t]hese opinions, combined with the evidence of [EchoStar’s] other actions, could demonstrate a lack of willfulness on [EchoStar’s] part.” (A190.)

b. EchoStar Decided At Trial to Rely on Its Internal Investigation

During its preparations for trial, EchoStar decided (and informed TiVo) that it would rebut TiVo’s willfulness allegations by relying on the results of its internal investigation rather than its outside counsels’ opinions. *In re EchoStar*, 448 F.3d at 1297. Nevertheless, TiVo sought discovery of all the opinions EchoStar received concerning the '389 patent, including those prepared by outside counsel, as well as all associated work product, whether communicated or not. *Id.* EchoStar initially resisted, but ultimately produced the Merchant & Gould opinions and related attorney-client communications, but not Merchant & Gould’s uncommunicated work product. *Id.* Not satisfied, TiVo obtained an order from

the district court compelling EchoStar to produce the uncommunicated work product. *Id.*

Although the district court stayed its production order so EchoStar could pursue relief in this Court, trial preparations proceeded. Before trial, TiVo indicated that it would rely on the Bozicevic firm's draft written opinion (which EchoStar produced) to show that EchoStar willfully infringed. (A8574-76.) EchoStar, concerned that TiVo would use the Bozicevic opinion to paint a misleading picture, took the precaution of designating the Merchant & Gould opinions as trial exhibits, even though EchoStar continued to maintain that none of its outside counsels' opinions were relevant. *Id.* The district court, at TiVo's urging, precluded EchoStar from relying on the Merchant & Gould opinions at trial solely because EchoStar chose to appeal the court's order requiring EchoStar to produce Merchant & Gould's uncommunicated work product rather than turn that work product over to TiVo. (A99-100; A2183:2-25).

Ultimately, this Court held that the district court abused its discretion when it ordered EchoStar to produce uncommunicated work product. *In re EchoStar*, 448 F.3d at 1305. Unfortunately, however, this Court's mandamus order did not issue until after the trial below was over.

c. TiVo's Counsel Told the Jury That EchoStar Never Obtained a Written Opinion of Counsel Because It Would Have Concluded That EchoStar Infringed

At trial, TiVo's counsel took full advantage of the district court's order barring EchoStar from introducing the Merchant & Gould opinions. In particular, TiVo's counsel relied extensively on the draft Bozicevic opinion and suggested that EchoStar had not given the Bozicevic lawyers the technical information they requested because EchoStar knew the information would show infringement (A2291:15-2292:11), notwithstanding that EchoStar had reached a noninfringement conclusion internally that was orally confirmed by the Bozicevic lawyers (*see supra* pages 40-41) and had obtained written opinions from Merchant & Gould reaching the same result.

In an interim statement to the jury at the close of its case, for example, TiVo's counsel discussed the situation surrounding the Bozicevic opinion, saying that EchoStar "*never* got a written opinion." (A2291:15 (emphasis added).) Then TiVo's counsel told the jury that the reason EchoStar had not sought a written outside opinion was that any "independent" lawyer would have said there *was* infringement:

[T]hey [EchoStar] knew if they gave the lawyers, the independent lawyers, the technical information, the written opinion that they would write would say that there is infringement.

(A2292:8-11.)

EchoStar immediately objected. Pointing out that TiVo's counsel had just told the jury that EchoStar never got a written opinion because "the written opinion would say there was infringement," and that this was "contrary to the actual opinions that we [EchoStar] did get" (A2292:20-25), EchoStar made two requests. First, EchoStar asked the court to provide a corrective instruction to the jury, and second, EchoStar asked the court to permit it to introduce the Merchant & Gould opinions to show that independent lawyers had, in fact, provided EchoStar with written noninfringement opinions. (A2292:20-2293:5.) The court denied both requests. In explanation, the court stated that it had previously told the jury "numerous times that statements of attorneys are not evidence and not to be considered either on the facts or the law." (A2293:19-23.)

In closing argument, moreover, TiVo's counsel returned to the same story. After mentioning the situation surrounding the Bozicevic opinion, TiVo's counsel broadly argued that that EchoStar had concluded that it should not seek "a third-party opinion," that it was "not going to ask somebody that's independent," and that it would instead "just go ahead and decide that ourselves." (A3721:9-12.) TiVo's counsel then hammered home the point:

And that's why they didn't get an opinion, and that's why they wouldn't send the technology to those outside lawyers, because they didn't want that opinion in front of you. They didn't want an independent person, like

Dr. Gibson, to look at it and say, huh-uh, can't do that, got to go do something else.

(A3721:9-18.)

The district court's rulings ensured that the jury was kept completely unaware that EchoStar had asked the "independent," "outside" lawyers at Merchant & Gould to prepare "third-party opinion[s]" of noninfringement. Thus, the court allowed TiVo's counsel to leave the jury with the unrebutted impression that EchoStar *knew* it could *never* obtain an independent noninfringement opinion, even though, to use the court's own words, Merchant & Gould had prepared *two* "detailed, thorough" written opinions of noninfringement that "could demonstrate a lack of willfulness on [EchoStar's] part." (A190.)

2. The District Court's Refusal to Allow EchoStar to Show That the Claims Would Be Invalid If TiVo's Infringement Theories Were Correct

EchoStar's invalidity expert, Dr. Polish, explained in both his expert report and his deposition that the '389 patent claims would be invalid if they were applied to the prior art in same manner that TiVo and Dr. Gibson applied them to EchoStar's DVRs. (A7789; A8438:8-22.) Further, TiVo's validity expert, Dr. Storer, understood that Dr. Polish's invalidity opinions were based on Dr. Gibson's infringement positions. (A8442:21-8443:3.)

As Dr. Polish's testimony commenced, however, TiVo's counsel objected, saying (for the first time) that Dr. Polish should be precluded from testifying about

his opinions. (A2963:3-2968:9.) Specifically, notwithstanding that the court refused to construe the “converts” and “separated” limitations, and allowed Dr. Gibson to testify freely about what he thought these (and other) limitations meant, TiVo argued that Dr. Polish’s testimony should be limited to “the Court’s construction as applied to the prior art” and that he should be barred from testifying “on how Dr. Gibson was interpreting the Court’s claim construction.” (A2964.)

EchoStar’s counsel and Dr. Polish explained that he would merely testify that if the claims were infringed in the manner Dr. Gibson was asserting, the claims would be invalid. (A2965:10-20; A2967:10-2968:6; A2972:18-25; A2975:22-2979:16.) The court, however, sustained TiVo’s objection, ruling that “Dr. Polish’s testimony should be limited to the Court’s claim construction and the prior art, not the criticism of Dr. Gibson’s report or previous testimony.” (A2965:22-25; A2977:19-2979:9.) Thereafter, the court blocked every effort by EchoStar to establish that if Dr. Gibson’s infringement analysis was correct, the claims would be invalid, at one point threatening EchoStar with sanctions. (A2992:24-2993:10; A3045:8-23; A3400:14-3402:24).

At the close of Dr. Polish’s testimony, EchoStar moved for a mistrial on the grounds that court’s ruling deprived EchoStar of a fair trial. (A3105:4-18.) EchoStar argued, in particular, that because the court precluded EchoStar from

laying the foundation for Dr. Polish's opinions, the jury had an incorrect understanding of them. (*Id.*)

In fact, TiVo's counsel recognized the same thing and used the court's rulings to prop up TiVo's infringement case, which was based in large part on Dr. Gibson's claim constructions. Notwithstanding that Dr. Polish had simply taken Dr. Gibson's views of the claims and applied those views to the prior art, TiVo's counsel argued during closing argument that Dr. Polish actually *agreed* with Dr. Gibson's view of the claims and disagreed with EchoStar's noninfringement experts on key claim terms, especially on the crucial "converts" and "separated" limitations. (A3614:22-3615:3 ("converting"); A3617:3-20 ("separated"); A3618:2-14 ("assembles"); A3621:20-3622:21 ("object").)

D. The Jury Verdict

Against the backdrop of what EchoStar believed was a grossly misleading (at best) presentation of the facts, which the district court refused to correct, the jury found that EchoStar willfully infringed the '389 patent. (A231-34.) Specifically, the jury found that all of the accused DVRs literally infringed the Hardware claims, that the 50X DVRs literally infringed the Software claims, and that the Broadcom DVRs infringed the Software claims under the doctrine of equivalents. (*Id.*) The jury awarded lost profits totaling \$32,663,906, and it awarded a reasonable royalty totaling \$41,328,058. (A238.)

V. SUMMARY OF ARGUMENT

The infringement verdicts cannot stand. While it was the district court's obligation to construe contested claim terms, the district court abdicated its responsibility regarding two of the most contested claim limitations—"separated" and "converts"—leaving the jury to decide what the terms meant based on the testimony of the parties' experts. And, performing a task that should have been performed by the court, the jury unquestionably got it wrong, since it could not have found infringement under the correct constructions.

Specifically, the court should have construed "separated" to require separation of the incoming MPEG stream into two different streams, a video-data stream and an audio-data stream. There is no question that the Broadcom DVRs do not "separate" the MPEG stream but instead keep it intact. Similarly, the court should have construed "converts" to require the conversion of a non-MPEG television program (i.e., analog television) to an MPEG-formatted stream. The accused DVRs, in contrast, are incapable of doing that and instead simply take the pre-formatted MPEG stream from the satellite television signal in a step that the patent repeatedly refers to as "extract[ing]" the MPEG data.

Even when the district court did construe the claim terms, it violated some of this Court's basic principles of claim construction. For example, it effectively eliminated the phrase "specific program" from the Hardware claims, and it used an

inapt dictionary definition to construe the “objects” of the Software claims in a manner wholly at odds with both its ordinary meaning and the way it is used in the specification.

The district court also allowed the infringement verdict to stand even though TiVo’s expert provided no evidence whatsoever either that the 50X DVRs “assemble” video and audio components into an MPEG stream or that any EchoStar DVR has a “source object” that extracts video and audio data from a “physical data source.”

Finally, because the district court allowed TiVo’s counsel to prejudice the jury against EchoStar through misleading (if not false) argument, EchoStar is entitled (at a minimum) to a new trial. First, the district court permitted TiVo’s counsel to tell the jury, wrongly, both that EchoStar never received any written noninfringement opinions and that no independent lawyer would have told EchoStar it did not infringe. These statements should never have been made, but once they were, the court should not have allowed them to remain uncorrected. Second, the court allowed TiVo’s counsel to tell the jury, also wrongly, that EchoStar’s invalidity expert, Dr. Polish, disagreed with EchoStar’s noninfringement positions. With the exception of the people who mattered most—the jury—everyone in the courtroom understood that Dr. Polish had accepted TiVo’s infringement positions as correct only for the purpose of his invalidity

analysis. Accordingly, the court should have allowed Dr. Polish to explain this to the jury.

VI. ARGUMENT

A. Standards of Review

A district court's denial of JMOL on infringement must be reversed "if the jury's factual findings are not supported by substantial evidence or if the legal conclusions implied from the jury's verdict cannot in law be supported by those findings." *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). Further, to the extent infringement depends on the correctness of claim constructions, the constructions are reviewed *de novo*. *Id.* at 1456. This is also true where the trial court left a disputed claim term to be construed by the jury. *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997) (reviewing jury's infringement finding *de novo* where district court allowed jury to construe claims).

This Court applies the law of the district court's regional circuit to the denial of a motion for a new trial. *WMS Gaming Inc. v. International Game Tech.*, 184 F.3d 1339, 1361 (Fed. Cir. 1999). The Eastern District of Texas sits in the Fifth Circuit, which reviews decisions granting or denying motions for a new trial for "an abuse of discretion or a misapprehension of the law." *Prytania Park Hotel, Ltd. v. General Star Indem. Co.*, 179 F.3d 169, 173 (5th Cir. 1999). However,

when the reviewing court “is left with the perception that the verdict resulted from prejudicial error, deference must be abandoned.” *Westbrook v. General Tire & Rubber Co.*, 754 F.2d 1233, 1241 (5th Cir. 1985).

B. The Claims Are Not Infringed As a Matter of Law

1. The Hardware Claims

a. No EchoStar DVR Time Shifts Analog Television Signals

The district court erred in failing to construe the Hardware claims to require the time shifting of analog programs, and thus in failing to grant EchoStar’s JMOL motions because no EchoStar DVR does that. Because this issue involves a question of claim construction, it is reviewed without deference. *Laitram Corp. v. NEC Corp.*, 62 F.3d 1388, 1392 (Fed. Cir. 1995).

The claims are unquestionably directed to a DVR that time shifts both analog and digital television signals. For example, the first limitation requires the DVR to accept “TV signals [that] are based on a multitude of standards, including, but not limited to” numerous analog (NTSC, PAL) and digital television (DSS, DBS, ATSC) signal types. There was no dispute, however, that the EchoStar DVRs are incapable of processing analog television and can process only one kind of *digital* television. *See supra* page 21.

Moreover, while the claims require “tuning . . . to a *specific* program,” the district court essentially read this language out of the claim when it required only

that the DVR be tuned to “a range of frequencies.” *See supra* pages 22-23. This was error. *See Texas Instr., Inc. v. ITC*, 988 F.2d 1165, 1171 (Fed. Cir. 1993) (rejecting a construction that “would read an express limitation out of the claims”). Moreover, there can be no infringement under the proper construction since EchoStar DVRs tune to a range of frequencies containing numerous programs and then, after tuning, “extract” the specific program chosen by the viewer from among the many programs carried within that range. *See supra* pages 21-24.

Finally, in refusing to construe the term “converts,” and leaving it to be construed by the jury based on expert testimony (*see supra* page 23), the district court also erred. *See, e.g., CytoLogix Corp. v. Ventana Med. Sys., Inc.*, 424 F.3d 1168, 1172 (Fed. Cir. 2005) (“[T]he district court should have refused to allow” the parties to “present[] expert witnesses who testified before the jury regarding claim construction, and counsel [to] argue[] conflicting claim constructions to the jury.”); *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1305 n.8 (Fed. Cir. 2005).

The parties’ dispute over the “converts” limitation did not involve a *factual* disagreement over how EchoStar’s DVRs processed incoming television signals. *See supra* pages 21-24. Rather, the only dispute concerned claim construction, which the jury erroneously resolved in TiVo’s favor. *Id.* As a result, this aspect of the jury’s verdict is reviewed without deference. *See supra* page 51.

There is no question that the EchoStar DVRs do not infringe under the proper construction of “converts.” The patent uses the term “converts” only to mean changing non-MPEG analog signals into an MPEG stream. Indeed, the patent specifically contrasts “convert[ing]” an analog signal to an MPEG stream with “extract[ing]” pre-existing MPEG streams from a digital signal. *See supra* page 10. Accordingly, the term “converts,” as used in the claims, should have been given the same meaning and construed to require changing a non-MPEG signal to an MPEG-formatted signal. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005) (en banc) (explaining that the specification “is the single best guide to the meaning of a disputed term”).

All the witnesses agreed that when the television program reaches EchoStar’s DVRs, it is already an MPEG stream and thus is never converted into an MPEG format. *See supra* pages 21-24. Accordingly, there can be no literal infringement.

Nor can there be infringement under the doctrine of equivalents. TiVo never provided any evidence that a device that does not convert to MPEG is equivalent to one that does. Thus, Dr. Rhyne’s testimony that the EchoStar DVR’s extraction of a preformatted MPEG stream is not equivalent to the claimed conversion to an MPEG formatted stream was unrebutted. *See supra* page 24. The district court should have granted EchoStar’s JMOL motion.

In its opposition to EchoStar's JMOL motion, TiVo asserted that EchoStar's position "reads out of the patent all embodiments involving satellite transmission, even though these embodiments are expressly in claims 1 and 32 and in several places in the specification." (A8453.) But this is wrong. EchoStar has never argued that the claims *exclude* DVRs that time shift digital television, nor does its position require that result. Instead, EchoStar's position is that because the claims include requirements that apply only to analog programs, a DVR that time shifts *only* digital signals language would not be covered. For example, while claim 32 describes a DVR that must be capable of "tuning . . . to a specific program" and "convert[ing] [it] to an [MPEG] formatted stream" (steps that can be performed only on a non-MPEG analog program), the claim uses the transition term "comprising." Accordingly, a DVR having additional functionality, such as the capability of tuning to digital satellite television signals and extracting MPEG data from them, would still be covered. *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1344-45 (Fed. Cir. 2003) ("Comprising is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim."). Similarly, claim 1, which is a method claim directed to time shifting analog television, would not exclude a DVR that *also* time shifted digital satellite television. The claims are thus consistent with Barton's original invention, the

patent's preferred embodiment, and the standalone DVRs TiVo sells. *See supra* page 9.

Moreover, even if the '389 patent disclosed an embodiment that processes only digital signals rather than both digital and analog signals (and it is not clear that it does), that would not change the fact that, *in the claims*, TiVo included processing steps that are performed *only* on non-MPEG analog television. *See Oak Tech., Inc. v. ITC*, 248 F.3d 1316, 1329 (Fed. Cir. 2001) (explaining that disclosed embodiments are not covered by the claim if they are “not covered by the language selected by the claim drafter”); *see also Boehringer Ingelheim Vetmedia, Inc. v. Schering-Plough Corp.*, 320 F.3d 1339, 1348 (Fed. Cir. 2003) (limiting the claim to its literal coverage even though the specification also described the invention by its “more general functional and structural properties”).

b. The Broadcom DVRs Never Separate the MPEG Stream's Video Data from Its Audio Data

The parties' dispute over the “separated” limitation also did not involve a factual disagreement and was instead a matter of resolving conflicting expert testimony regarding the meaning of “separate.” *See supra* pages 24-26. Specifically, in finding infringement, the jury necessarily adopted the meaning of “separate” proposed by TiVo and Dr. Gibson. *Id.* Accordingly, the question of

whether this limitation was satisfied is also reviewed without deference. *See supra* page 51.

The relevant facts were not disputed. Unlike the patented invention, the accused Broadcom DVRs never separate an MPEG stream into its video and audio components. *See supra* pages 24-25. Rather, the Broadcom DVRs keep the MPEG stream's video and audio components together. *Id.* Nonetheless, TiVo's expert testified that the Broadcom DVRs satisfy the "separated" limitation through a process of "logical separation" in which they create a "frame index table" that tracks where certain video packets are stored on the DVRs disk drive. (*Id.*)

TiVo's position that "logical separation," i.e., "indexing," satisfies the claim limitation is contradicted by the specification. As described in the "Summary of the Invention" section of the patent, and as shown in at least three different figures (Figs. 3, 4, and 6), the incoming MPEG stream is divided into two (or more) separate streams, each consisting entirely of all video or all audio or all "private" data. (A375[col.2:15-16]; A365-67.) Further, the patent unequivocally states that the MPEG stream "must be separated" to "create separate video 308 and audio 309 streams" and that this is a "necessary" step. (A376[col.4:26-30].) Indeed, the patent never suggests that separation is optional or, to use Dr. Gibson's characterization of the patent, that "you just logically need to know where everything is." *See supra* pages 25-26.

To the contrary, the '389 specification describes the need to separate video from audio data as distinct from the need to know where each kind of data is stored. The patent teaches that *after* the video and audio data streams have been separated, the Media Switch's parser generates an index of "logical segments" to track the data's location. *See supra* pages 13-16. Further, indexing is separately recited in claim 10 as a step that is performed *in addition to* the separating step of claim 1. *See supra* pages 25-26.

These inconsistencies between Dr. Gibson's claim interpretation and the '389 patent's specification and claims show not only that Dr. Gibson cannot be correct, but also why this Court insists that the experts not argue opposing claim constructions to the jury. *See supra* page 53. Given the '389 patent's requirement that the video and audio data (and not simply their "logical segment" counterparts) be separated from each other, the jury's finding of literal infringement cannot stand.

Nor can there can be infringement under the doctrine of equivalents. TiVo stressed the importance of separation in the patent, saying that this "necessary" step "must" occur. *See supra* pages 13-14. As a matter of law, therefore, DVRs that do not perform this "necessary" step cannot be equivalent. *See, e.g., SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1347 (Fed. Cir. 2001) ("[I]f a patent states that the claimed device must be 'non-metallic,' the

patentee cannot assert the patent against a metallic device on the ground that a metallic device is equivalent”). Moreover, since the Broadcom DVRs perform no function that is even arguably equivalent to the step required by the “separated” limitation, finding infringement under the doctrine of equivalents would improperly “vitiate” this limitation. *See, e.g., Asyst Techs., Inc. v. Emtrak, Inc.*, 402 F.3d 1188, 1195 (Fed. Cir. 2005).

c. The 50X DVRs Never Assemble Video Data and Audio Data Into an MPEG Stream

Unlike the Broadcom DVRs, the 50X DVRs separate the incoming MPEG stream into its video and audio components. As explained by numerous witnesses, however, once the 50X DVRs have separated the video and audio packets, they are *never* assembled back into an MPEG stream. *See supra* pages 26-27.

TiVo countered this testimony only with the conclusory, factually unsupported testimony of its expert, Dr. Gibson, who never even mentioned the 50X DVRs. *See supra* pages 27-28. That testimony is insufficient as a matter of law to support either the jury’s verdict of literal infringement or a verdict of infringement under the doctrine of equivalents. *See Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 242 (1993) (“When an expert opinion is not supported by sufficient facts to validate it in the eyes of the law, or when indisputable record facts contradict or otherwise render the opinion unreasonable, it cannot support a jury’s verdict.”); *see also Kim v. ConAgra Foods, Inc.*, 465 F.3d

1312, 1319-20 (Fed. Cir. 2006) (holding that district court properly granted JMOL of noninfringement where patentee's expert provided only "conclusory testimony" of infringement unsupported by "any examinations or tests of the actual accused products").

2. The Software Claims

a. The District Court Erred in Construing the Term "Object"

The district court also erred in failing to construe the term "object" to require object-oriented software. While the court concluded that the intrinsic evidence shed no light on the proper construction of this term, the specification uses "object" exclusively to describe software written in C++, an object-oriented language. *See supra* pages 16-17. Moreover, the patent repeatedly uses terms and concepts (e.g., "class," "hierarchy class," and "objects") characteristic of object-oriented programming. *See id.*

In *Phillips*, this Court rejected the approach of defining a claim term by relying on a dictionary definition rather than the specification. 415 F.3d at 1322. Further, the Court's cautionary note on technical dictionaries is particularly apt here since the definition the district court relied on was the *tenth of twelve* definitions and concerned a field (instrumentation and testing) different from the field of the invention (computer software). *See supra* pages 30-31.

Further, it was undisputed that the accused DVRs do not use object-oriented software, and TiVo never even attempted to show that the software used in EchoStar's DVRs is equivalent to object-oriented software. *See supra* pages 32-34. Accordingly, if properly construed to require object-oriented software, the claims are not infringed—either literally, as the jury found for the 50X DVRs, or under the doctrine of equivalents, as the jury found for the Broadcom DVRs.

b. There Is No Infringement Even Under the District Court's Construction of "Object"

Even under the district court's construction, TiVo failed to prove that EchoStar's software includes the required "objects." Specifically, while the court construed "object" to mean a "*collection* of data and operations," TiVo's expert admitted that the instructions in EchoStar's code that purportedly perform the "functions" corresponding to each object do not appear as a "collection" in the software, but rather are scattered throughout. *See supra* page 32. In other words, all TiVo even arguably showed is that in various places within the DVRs' source code there are "data and operations" that perform the functions required of each "object."

Again, the factual issue with regard to this limitation—how the software in the accused DVRs is organized—is not disputed. The jury's verdict was necessarily based on its agreement with TiVo and Dr. Gibson that the instructions that allegedly make up each "object" need not be collected together.

The district court's own construction, however, required that these "data and operations" be a "collection," i.e., grouped together, and Dr. Gibson admitted he could not show that. *See supra* page 32-33. Thus, even assuming that the court's construction was correct, it required the data and operations to be grouped together and thus was not met here in any event.

Nor could TiVo argue that the jury's verdict that the Broadcom DVRs infringe under the doctrine of equivalents is supported by substantial evidence. The only evidence on the issue was Dr. Gibson's testimony, which was clearly insufficient. *See supra* pages 33-34. Not only was it entirely conclusory, but it also lacked any semblance of the "particularized testimony and linking argument" this Court requires. *See, e.g., Texas Instr. Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1567 (Fed. Cir. 1996).

c. There Is No "Source Object" in the Accused DVRs that "Extracts Video and Audio Data from [a] Physical Data Source"

The Software claims also require a "source object" that "extracts video and audio data from said physical data source." For the Broadcom DVRs, TiVo's expert identified hardware on the Broadcom chip as the "physical data source." *See supra* pages 35-36. Thus, to practice this limitation, the "source object" must be software that extracts video and audio data from that hardware.

TiVo's evidence failed on this point. Regarding the DP721, TiVo offered only Dr. Gibson's conclusory statement that the "Ioctl" command extracts the video and audio data from the physical data source. *See supra* pages 37-38. EchoStar indisputably showed, however, that the "Ioctl" command does not extract data from any circuitry on the Broadcom chip, but instead moves data between two other components that are separate from the Broadcom chip. *Id.*

As to the other Broadcom DVRs and the 50X DVRs, TiVo failed to identify any "source object" that allegedly extracts data from a physical data source. *See supra* page 38. This failure of proof is in itself fatal to TiVo's infringement allegations for the Software claims. But beyond that, EchoStar affirmatively proved—through numerous witnesses who provided detailed, uncontradicted evidence—that every accused DVR lacks a "source object." Specifically, these witnesses testified that *no* software extracts video and audio data from the Broadcom chip in the Broadcom DVRs (or its counterpart in the 50X DVRs) because the data is instead "pushed" out of those components to external memory *by hardware*. *See supra* pages 36-37.

In sum, Dr. Gibson's conclusory opinion for this limitation is insufficient to show infringement, whether literal or under the doctrine of equivalents, since it "is not supported by sufficient facts to validate it in the eyes of the law" and "indisputable record facts contradict or otherwise render [his] opinion

unreasonable.” *Brooke Group*, 509 U.S. at 242. Accordingly, the jury’s verdict must be reversed.

C. EchoStar Is Entitled, Based on TiVo’s Grossly Misleading (If Not False) Statements to the Jury, to a New Trial on Infringement, Willfulness, and Damages

Although TiVo knew that EchoStar had obtained written opinions from Merchant & Gould concluding that EchoStar did not infringe the ’389 patent, TiVo’s counsel told the jury that EchoStar *never* sought a written opinion, and that the reason it did not was that any independent lawyer “would say that there is infringement.” *See supra* pages 44-46. These statements were grossly misleading, if not false, and never should have been made. *See Novo Nordisk A/S v. Becton Dickenson & Co.*, 304 F.3d 1216, 1220 (Fed. Cir. 2002) (“Inflammatory insinuations and incorrect statements are improper, and their presentation to prejudice the jury is not condoned.”).

TiVo has previously sought to defend its statements by saying that they were made only about the Bozicevic opinion, and thus said nothing about whether EchoStar may have obtained an opinion from *other* outside lawyers. (A8286.) But that position cannot withstand scrutiny. TiVo’s counsel spoke *generally* and did not restrict his statements to the Bozicevic firm. Moreover, the jury would have been unable to distinguish between the Bozicevic lawyers and other outside

lawyers in any event, since the only “independent” lawyers the jury heard testimony about were the Bozicevic lawyers.

In short, when TiVo’s counsel told the jury that EchoStar had decided not to seek “a third-party opinion,” or contact an “independent” lawyer—because EchoStar did not want a written opinion “in front of you” (*see supra* pages 45-46)—the jury received an unambiguous message. The jury heard that EchoStar had never received a written opinion from *any* outside lawyer because EchoStar knew it infringed and *no* outside lawyer would ever say otherwise. But that was false.

Moreover, it would be naïve to think that the judge’s general instruction to the jury that “statements of attorneys are not evidence and not to be considered either on the facts or the law” (*see supra* page 45) was sufficient to correct the problem. This instruction is intended to ensure that the jury understands, for example, that it is its role (and not counsel’s) to decide the facts and apply the law. It is not intended to give counsel license to mislead the jury on a matter the jury has no knowledge of and thus no ability to decide on its own. And here, of course, the jury had no idea that EchoStar had in fact received written noninfringement opinions from outside counsel since that was not in evidence.

The district court thus had a duty to deal with the situation created by TiVo’s counsel’s misleading statements, either by providing a *meaningful* curative

instruction or by allowing EchoStar to introduce the Merchant & Gould opinions. *Westbrook*, 754 F.2d at 1238 (“When a closing argument is challenged for impropriety or error, the entire argument should be reviewed within the context of the court’s ruling on objections, the jury charge, and any corrective measures applied by the trial court.”). Doing neither, however, left the jury not just with the erroneous impression that EchoStar had acted willfully, but also with the impression that the noninfringement positions EchoStar advanced at trial were baseless and EchoStar knew it.

While the district court’s failure to act would have been error under any circumstances, the court’s error is even more apparent (and unfair) here. The court’s order requiring EchoStar to produce uncommunicated work product to TiVo—which formed the basis of its decision to refuse to admit the Merchant & Gould opinions at trial—was reversed by this Court. *See supra* page 43.

But even if the district court’s preclusion order had been correct, its decision to treat the Merchant & Gould opinions as if they did not exist would still have been wrong. The court precluded EchoStar from correcting opposing counsel’s misstatements on a central issue, poisoning EchoStar’s entire case. EchoStar is therefore entitled to a new trial on infringement and willfulness, as well as on damages. *See, e.g., Henderson v. George Washington Univ.*, 449 F.3d 127, 141 (D.C. Cir. 2006) (granting new trial because district court refused to admit curative

evidence when opposing party “used the excluded evidence as a shield to enhance its case and effectively destroy the other side’s claim”).

D. EchoStar Is Also Entitled to a New Trial on Validity and Infringement Because of the District Court’s Erroneous Refusal to Allow Dr. Polish to Show That the Claims Could Not Be Both Infringed and Valid

The district court also abused its discretion in refusing to allow EchoStar’s invalidity expert, Dr. Polish, to testify concerning the bases for his opinion. EchoStar’s prior-art defenses were based upon Dr. Polish’s conclusion that the claims of the ’389 patent would be invalid if applied to the prior art in the same way TiVo applied them to EchoStar’s DVRs. *See supra* pages 46-48. This is not an unusual position for an alleged infringer to take, since it is well settled that claims must be construed the same way for both infringement and validity. *See, e.g., Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001).

The basis for Dr. Polish’s opinion was especially relevant here, because the district court’s abdication of its responsibility required the jury to construe critical claim terms and the jury obviously did that based on Dr. Gibson’s infringement analysis. EchoStar therefore should have been allowed to explain to the jury that the necessary consequence of Dr. Gibson’s infringement analysis was that the claims would be invalid.

The district court's rulings were extraordinarily prejudicial to EchoStar and tainted not only the validity verdict but also the infringement and willfulness verdicts. Significantly, the court prevented Dr. Polish from explaining that his invalidity analysis was based on the *assumption* that Dr. Gibson's application of the claims to EchoStar's DVRs—in which, in particular, he testified freely regarding the meaning of “converts” and “separate,” which the court refused to construe (*see supra* pages 23-25)—was correct. *See supra* pages 46-48. TiVo's counsel then took advantage of the court's ruling to argue to the jury that Dr. Polish, *EchoStar's own expert*, disagreed with EchoStar and its infringement experts on crucial aspects of the case, with the predictable result being that the credibility of EchoStar and its other experts was tarnished in the jury's eyes.

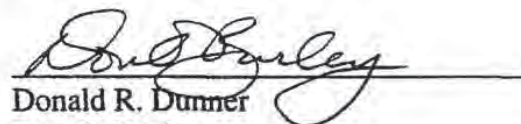
In sum, therefore, the district court erred both by preventing Dr. Polish from fully explaining the bases of his opinions, and by failing to grant EchoStar's motion for a new trial on validity and infringement on that basis.

VII. CONCLUSION

For the forgoing reasons, the judgment below must be reversed and a judgment of no liability be entered in EchoStar's favor. In the alternative, a new trial must be ordered on the issues of validity, infringement, willfulness, and damages.

Dated: April 17, 2007

Respectfully submitted,



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CERTIFICATE OF COMPLIANCE

I certify that the foregoing BRIEF FOR ECHOSTAR COMMUNICATIONS CORPORATION, ECHOSTAR DBS CORPORATION, ECHOSTAR TECHNOLOGIES CORPORATION, ECHOSPHERE LIMITED LIABILITY COMPANY, and ECHOSTAR SATELLITE LLC contains 13,947 words as measured by the word processing software used to prepare this brief.

Dated: April 17, 2007

Respectfully submitted,

A handwritten signature in cursive script, reading "Don O'Barley", is written over a horizontal line.

CERTIFICATE OF SERVICE

I hereby certify that on this 17th day of April 2007, two true and correct copies of the foregoing BRIEF FOR ECHOSTAR COMMUNICATIONS CORPORATION, ECHOSTAR DBS CORPORATION, ECHOSTAR TECHNOLOGIES CORPORATION, ECHOSPHERE LIMITED LIABILITY COMPANY, and ECHOSTAR SATELLITE LLC were served by Federal Express on the following counsel:

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TiVo v. EchoStar
Appeal No. 06-1574
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No. 2006-1574

**IN THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

TIVO INC.,

Plaintiff-Appellee,

v.

EHOSTAR COMMUNICATIONS CORPORATION,
EHOSTAR DBS CORPORATION,
EHOSTAR TECHNOLOGIES CORPORATION,
ECHOSPHERE LIMITED LIABILITY COMPANY,
and EHOSTAR SATELLITE LLC,

Defendants-Appellants.

On Appeal from the United States District Court for the
Eastern District of Texas, No. 2:04-cv-1 (Folsom, J.)

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CERTIFICATE OF INTEREST

Counsel for Plaintiff-Appellee TiVo Inc. certifies the following:

1. The full name of every party or amicus represented by us is:

TiVo Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by us is:

Not applicable

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by us are:

None

4. There is no such corporation as listed in paragraph 3.

5. The names of all law firms and the partners or associates who appeared for the party or amicus now represented by us in the trial court or agency or are expected to appear in this Court are:

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Dated: May 30, 2007

s/ Daniel S. Volchok

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¹ Brian Jones and Michelle Armond are no longer with the firm.

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STATEMENT OF RELATED CASES

This case consolidates EchoStar's originally separate appeals from the permanent injunction and final judgment entered below. On May 30, 2007, this Court granted TiVo's unopposed motion to dismiss its cross-appeal, docketed as No. 2007-1022.

Apart from the discovery-enforcement proceedings and mandamus petitions identified in EchoStar's brief (at ix), TiVo is unaware of any pending case that will directly affect or be directly affected by the decision in this appeal, or of any prior appeal to this Court from the proceedings below.

STATEMENT OF THE ISSUES

1. Whether substantial evidence supports the jury's infringement findings, where:
 - a. the evidence established that every accused EchoStar DVR accepts television broadcast signals based on a multitude of standards; tunes those signals to a specific program; and converts the resulting input to an MPEG-formatted stream suitable for the internal transfer and manipulation that ultimately produces the DVR functionality desired by EchoStar's customers;
 - b. the evidence established that all of EchoStar's products both
 - (i) analyze an MPEG input stream, which is separated into video and audio

components, and (ii) assemble stored components into MPEG output streams in exactly the resource-efficient manner disclosed and claimed by TiVo's patent;

c. the district court correctly construed the term "object" to require a collection of data and operations that performs the functions specified in those claims, and the evidence established that all of EchoStar's products have such a collection; and

d. the evidence established that in all of EchoStar's products, an identified software command extracts video and audio data from a physical data source.

2. Whether EchoStar is entitled to a new trial because in jury argument counsel for TiVo fairly commented on evidence concerning a particular opinion of outside counsel requested but never received by EchoStar.

3. Whether EchoStar is entitled to a new trial because the district court refused to allow EchoStar's invalidity expert to suggest to the jury that TiVo's infringement expert had construed the claims in a manner inconsistent with the court's claim construction.

STATEMENT OF THE CASE

TiVo obviously disagrees with the offensive "Preliminary Statement" with which EchoStar begins its "Statement of the Case." *Compare* ES Br. 3-5 with Fed. R. App. P. 28(a)(6). TiVo declines to respond in kind.

EchoStar's recitation of the course of proceedings (Br. 5-6) is accurate in its essentials, subject to three qualifications.

First, the district court's claim construction order (A127-A155), which was based on full briefing and argument, addressed every construction proposed by EchoStar. Where the court declined to elaborate on a term or phrase in the claims, it did so because no further construction was needed for the jury to understand and apply a claim as it was written (albeit not necessarily as EchoStar would have preferred it to read). *See, e.g.*, A141 ("converts"). The final jury instructions incorporated the court's constructions. A206-A207.

Second, EchoStar fails to note that on June 26-28, 2006, the district court held a bench trial on EchoStar's defenses of inequitable conduct, laches, and equitable estoppel, and heard oral argument on TiVo's motion for a permanent injunction. On August 17 the court issued orders, including detailed findings of fact, rejecting EchoStar's defenses (A32-A42) and concluding that it should enter a permanent injunction against EchoStar's ongoing infringement (A18-A31). EchoStar challenges none of the district court's findings with respect to irreparable harm and the need for an injunction.

Third, when this Court decided to stay the district court's injunction during this appeal, it gave no indication that it perceived "egregious errors" (ES Br. 6) in the decision below. The motions panel concluded only that EchoStar's appeal was

facially “substantial” and that the equitable “harm factors” then alleged favored maintaining the status quo pending full consideration of the appeal. A8435.

STATEMENT OF FACTS

EchoStar’s “statement of facts” (Br. 6-48), while lengthy, is incomplete and misleading in its discussion of TiVo’s patent. By focusing on particular examples, figures, or phrases, often out of context, EchoStar attempts to import into the broad claims of the patent additional limitations that do not appear in the claim language, are not required by the specification or the prosecution history, make no sense in the context of computer-based technology, and bear no relation to the central insights and characteristics of the invention. A patent can be properly construed and applied only “with a full understanding of what the inventors actually invented and intended to envelop with the claim.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc). Accordingly, before responding to EchoStar’s specific arguments for reversal of the jury’s well-supported infringement findings (Br. 52-64), TiVo offers a short account of the important advance in functional, consumer-accessible DVR technology disclosed in its patent, so as to put the asserted claims back in proper perspective.

A. TiVo

Founded in 1997, TiVo is widely recognized for its development and marketing of the first functional consumer DVR. Its product revolutionized home

television, empowering consumers to watch what they want when and how they want, despite the many other, often uncontrollable, demands on their time. *E.g.*, A1147-A1148; A1416-A1418. It earned TiVo not only satisfied customers and business partners but the praise of industry peers and commentators, from an Emmy for Outstanding Achievement in Engineering Development to recognition by the editors of *PC World* as the third-greatest “gadget” of the last fifty years and by CNet as the second top product of the last ten years. A1825; www.pcworld.com/article/id,123950-page,2/article.html; www.cnet.com/4520-11136_1-6312246-1.html (both last visited May 30, 2007).

In other words, TiVo created technology that, as EchoStar itself recognizes, TV viewers now overwhelmingly demand. A8430. The only question is whether TiVo will reap the benefits of its innovation. EchoStar would say no, based on hypertechnical semantic arguments through which it seeks to strip the value from TiVo’s patent.

B. The Invention

In the 1970s, the VCR revolutionized home television by giving consumers the ability to record programs and watch them later, with the additional advantage of being able to rewind and replay, or fast-forward through, portions of a pre-recorded program. A375[1:10-21]. By the 1990s, advances in computer technology and digital media raised the prospect of replacing racks of VCR tapes

with a hard disk and expanding playback options—allowing a user, for example, to skip instantly to the middle or end of a program, or back to the beginning.

Moreover, a computer-based system might be able to record and replay at the same time, so that a user could not only play back one program while recording another, but also play back or manipulate portions of a “live” TV program *during the real-time broadcast*—pausing to take a phone call, for example, and returning later without missing any of the show; or replaying a scene to catch a missed line or review a great moment in slow-motion and then fast-forwarding to catch back up to the real-time broadcast. Such functions were impossible to achieve with a tape-based VCR. A375[1:21-40].

Developing this vision into a functional consumer product was a daunting challenge. The Moving Pictures Experts Group (MPEG) had defined a widely-accepted set of standards for the digital coding, compression, and transmission of the data necessary to reproduce a television program. Even compressed, however, the data stream for a one-hour television program includes as much as 36 billion bits of information, broadcast at variable rates typically ranging from six to ten million bits per second. A1517-A1519. To process television signals in a consumer’s home, a device would have to analyze, store, and display massive amounts of data in real time. Moreover, to achieve the desired DVR functionality

the device would often need to process two sets of program data—one being recorded, one replayed—at the same time. *See, e.g.*, A375[1:64-2:3].

As the '389 patent disclosure relates, these requirements made earlier proposed methods for creating a digital recording and playback device “difficult to implement” because they required an “extremely fast” microprocessor and were thus “expensive and problematic.” A375[1:46-51]. When the goal was only to display a television program in real time, an MPEG stream could simply be fed through video and audio decoder circuits that sort and translate the data packets into synchronized video and audio output signals. Where, however, the goal was not only to display the program but also to store it and allow instantaneous manipulation, dealing with voluminous MPEG data in real time required an amount of computing power that made the implementation cost-prohibitive for a consumer product. *Id.*; *see also, e.g.*, A1294-A1296; A1301-A1303.

Jim Barton, TiVo’s co-founder and Chief Technology Officer, approached this problem with an understanding of computer technology based on his background, including a master’s degree in computer science and more than 20 years’ experience in the industry. A1285-A1290. Computers process data using now-familiar hardware and software elements. Hardware typically includes a central processing unit (CPU), short-term memory buffers for storing data temporarily during processing, and long-term storage devices, such as a hard disk,

for storing data not in active use. Software frequently uses logical referencing, in which data or program routines are stored in one place and then accessed for various purposes by the use of short-hand references or pointers, to avoid making and storing multiple copies of the same data or routines. *E.g.*, A1554; A2834. These common elements can, however, be deployed in many ways—some effective, others not.

As described by the '389 patent, Barton and others at TiVo solved the problem of creating a practical, affordable DVR by matching the efficiency of special-purpose hardware and software to the key characteristics of MPEG data. An MPEG data stream is comprised of a series of individual data packets or frames. Each such component contains 1's and 0's formatted according to MPEG standards for encoding, transporting, and decoding video, audio, and other data. A video component might, for example, contain all the information necessary to reproduce a full picture on the TV screen (an "independent frame" or "I-frame"). In simple outline, the inventors recognized that a practical DVR must be built around the efficient analysis and manipulation of MPEG data at this component level.

A central feature of the invention thus became the Media Switch, which parses an incoming MPEG stream—identifying its separate data components—and helps build, in effect, a compact table or index of key information showing, for

example, the nature of particular components, where they fit in the original stream, and where they are stored, either in short-term memory buffers or in a long-term storage device such as a hard disk. This process identifies and organizes “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.” A377[6:41-44]; *see also* A377[6:46-57]; A1346-A1350.

With this assistance from the Media Switch, the CPU and higher-level program logic can operate on the basis of summary information about key data components. This frees them from repeatedly moving full-form MPEG stream data into and out of memory and storage and sequentially parsing it in order to identify and manipulate particular portions of the television program in response to user commands. If, for example, a user wants to “rewind” the program being watched, the system must search the stored MPEG components, find those associated with certain video frames (say, every third frame in reverse order), and send them to the user’s screen. The Media Switch has already automatically parsed the MPEG stream on input, and the system has built a table of key information—referred to as an “event buffer” or “event queue” in descriptions of one embodiment. Thus:

Rather than having to parse through an immense data stream looking for the start of where each frame would be, the program logic only has to look at the circular event buffer in DRAM 714 and it can tell where the start of each frame is and the frame type. This approach saves a

large amount of CPU power, keeping the real time requirements of the CPU 713 small ..., which allows for lower costs.

A378[7:12-23]; *see also* A377[5:66-6:15].

This use of a Media Switch to help analyze and catalogue summary information about the separate components of an overall TV data stream, permitting the efficient processing of the high volume of data in real-time MPEG streams, is a central innovation of the Barton invention. *See* A375[1:56-57, 2:22-24]; A378[7:20-23]; A1344-A1345; A1521-A1526; A3314-A3315. By focusing on this efficient form of component-level analysis and manipulation of TV data streams, and with the related innovations disclosed and claimed in the patent, the TiVo inventors substituted elegant design for raw computing power and thus enabled, for the first time, the successful construction of easily operable, inexpensive consumer DVRs.

C. The Barton Patent

The TiVo inventors filed their patent application in 1998. A361. After a single rejection based largely on a lack of uniform capitalization (A4030-A4031, A4130-A4136), the claims were allowed as filed and issued as U.S. Patent 6,233,389 (A361-A383). EchoStar does not contend that the scope of the claims was narrowed during prosecution, or that the patent is invalid.

The patent's disclosure focuses on the central insight described above: a system with a Media Switch that assists the CPU and higher program logic by

automatically parsing the incoming MPEG stream, analyzing its video and audio components; building a table of logical “[e]vents” cataloging particular components separately by, for example, type, sequence, and location; and thus avoiding the need to process and manipulate full data streams. A361[Abstract]; *see also, e.g.*, A1521-A1522; A3314-A3315. Other elements are added to present a complete DVR system. Figure 1 (A361, A363) gives a schematic representation:

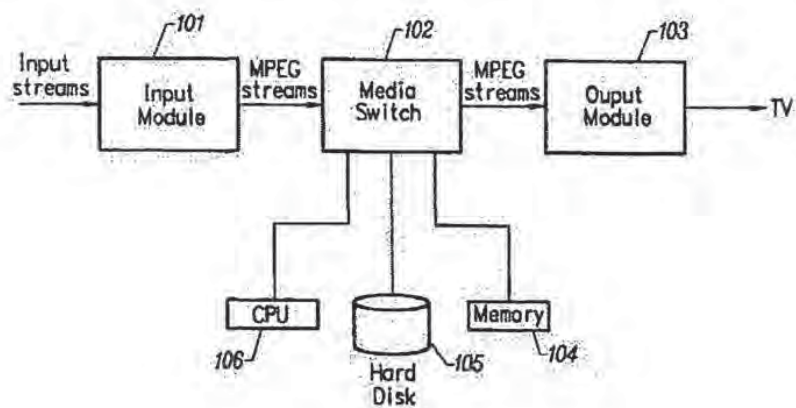


FIG. 1

The steps from incoming signals to user display are reflected in the elements of independent process Claim 1. (Claim 32 claims a corresponding apparatus.)

The process begins with “accepting television (TV) broadcast signals.”

A380[12:37]. Those signals are “based on a multitude of standards”—expressly including standards used for “satellite transmissions.” A380[12:38, 41]. The DVR “tun[es] said TV signals to a specific program.” A380[12:43]. Through an Input

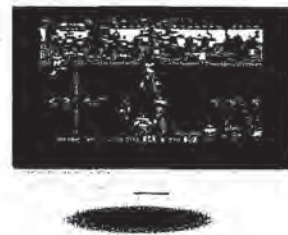
Section the invention “converts” the program signal to an MPEG format that is suitable “for internal transfer and manipulation” by the DVR. A380[12:44-47]. At the heart of the device, a Media Switch “parses said MPEG stream,” which “is separated into its video and audio components.” A380[12:48-50]. The parsed components are stored on a hard disk or other storage device—notably without any restriction as to how, or in what physical relationship to each other. A380[12:51-52].² For playback, an Output Section “extracts” needed components from storage as required and “assembles” them into one or more MPEG streams. A380[12:53-57]. The stream or streams must produce the particular effect commanded by the user, from straight reproduction of the original program to a variety of special effects. *See* A380[12:65-67]. Assembled streams are sent to one or more decoders for conversion into TV output signals, which are delivered to the user’s TV receiver. A380[12:58-63]. A trial demonstrative (A6849) reproduced on the following page illustrates the production of one effect—fast-forwarding.

² EchoStar says “the DVR stores *the stream* for playback.” Br. 11 (emphasis added). The claim refers to storing “components.” A380[12:51-52]. It is typically most efficient to store the data in fixed-size segments. A376[4:45-54].

Frame Index Enables Trickplay - Fast Forward Example

Address	23376	23785	24002	24923	23066	27702	24154	25817	26424	23198	24396	27001	26370
Video Frame	1	2	3	4	5	6	7	8	9	10	11	12	13
Timestamp	00:00:33	00:00:36	00:00:39	00:00:42	00:00:45	00:00:48	00:00:51	00:00:54	00:00:57	00:00:60	00:00:63	00:00:66	00:00:69

Hard Disk



Source: Gibson Graphic 61

DD169

Figure 7 illustrates a preferred embodiment in further detail:

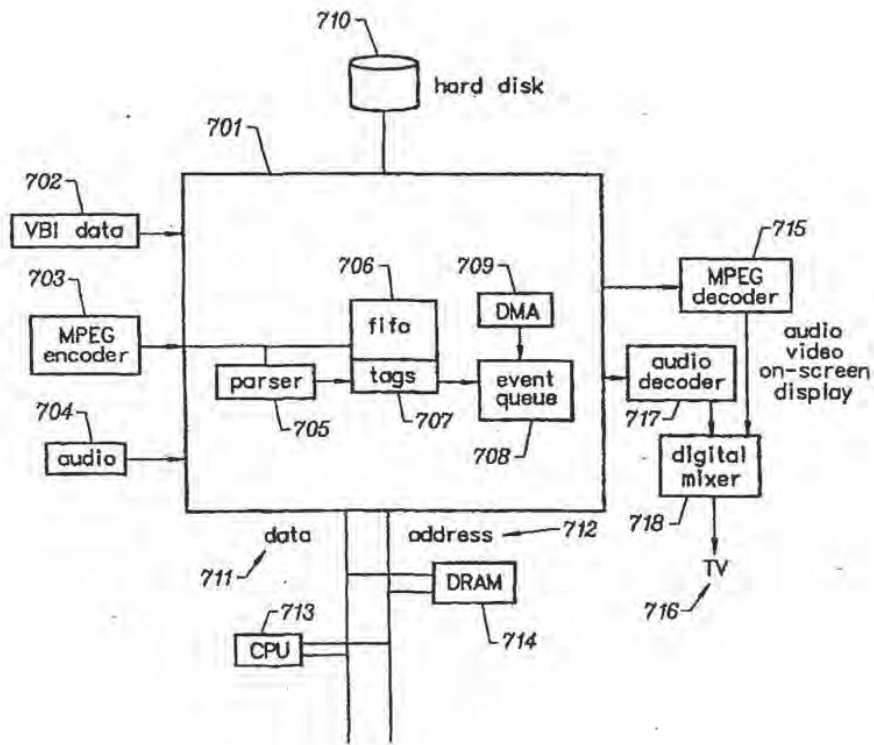


FIG. 7

A368. The accompanying text also discloses the changes necessary for an all-digital (*e.g.*, satellite) implementation, in which the MPEG encoder 703 is replaced with an MPEG2 transport demultiplexer, and the MPEG audio encoder 704 and VBI decoder 702 are deleted. A377[6:30-33]. Those changes would produce the modified figure below:

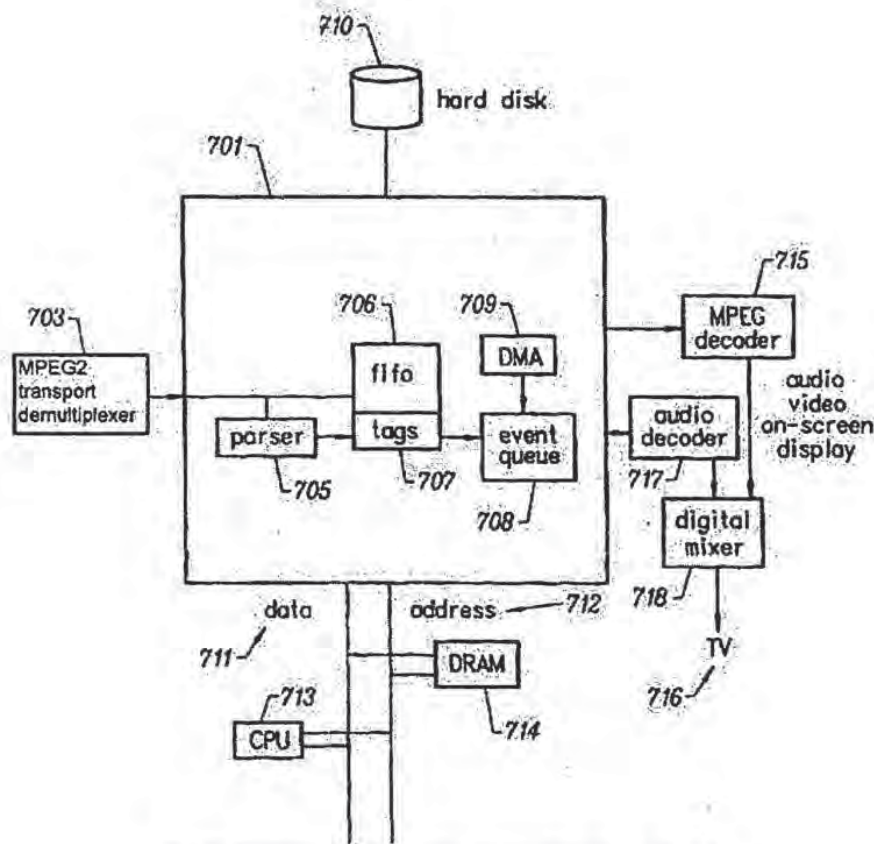


Figure 7 of Barton patent, modified pursuant to Col. 6:30-33.

Thus, for digital signals, one stream of data containing both video and audio information enters the Media Switch 701. *Id.* Both video and audio data go to a single parser 705 and a single first-in, first-out (FIFO) buffer 706. The output of the parser, indicated by the arrow, is the result of its analysis, *i.e.*, tags that ultimately go into the event queue 708. The tags and events contain information about the separate MPEG data components. A377[6:47-56]. The text does not describe separate delivery of a video-only stream and an audio-only stream to

system memory (DRAM) 714, nor separate storage on the hard disk 710. To accommodate simultaneous recording and playback, the Media Switch “takes in 8-bit data and sends it to the disk, while at the same time extracts another stream of data off of the disk and sends it to the MPEG decoder 715.” A378[7:5-7].

The other two independent claims asserted, Claims 31 and 61, include elements, typically implemented in software, that efficiently process buffers of MPEG data previously parsed by the Media Switch.³ As the specification discusses, in a preferred embodiment the program logic for performing these functions has three “conceptual components”—sources, transforms, and sinks. A378[7:47-49]. Figure 8 presents a schematic representation:

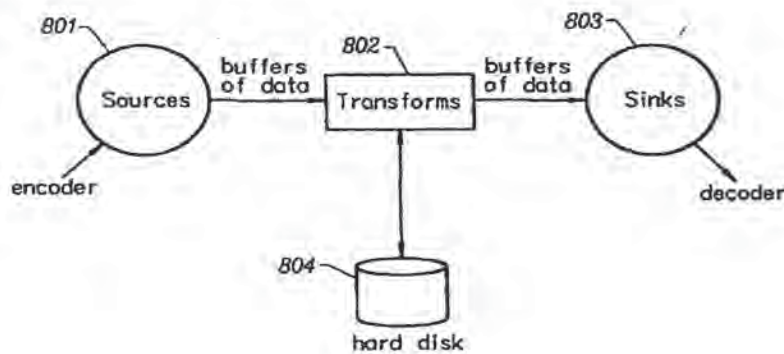


FIG. 8

³ While it is sometimes convenient to refer to Claims 1 and 32 as “hardware” claims and to Claims 31 and 61 as “software” claims, as EchoStar does (e.g., Br. 18), that is only shorthand. The claims can be implemented in various ways, and are limited only by their terms.

A369. As the disclosure explains, “[a] source **801** accepts data from encoders, e.g., a digital satellite receiver,” A378[7:58-59], and “produce[s] buffers of data,” A378[7:50]. “Transforms **802** process buffers of data,” A378[7:51], either acting on the data, storing it, or retrieving it from storage, A378[7:66-8:8]. “The sink **803** consumes buffers, taking a buffer from the upstream transform, sending the data to the decoder, and then releasing the buffer for reuse.” A378[7:63-65].

Correspondingly, the claims require providing, among other elements, a “physical data source” that “parses video and audio data” and “temporarily stores” it, A381[14:55-58]; a “source object” that “extracts video and audio data from said physical data source,” A381[14:59-61]; a “transform object” that “stores and retrieves data streams,” A381[14:62-64]; and a “sink object” that “obtains data stream buffers from said transform object and outputs said streams to a video and audio decoder,” A382[15:3-5].

Other figures and text naturally go into greater detail about particular aspects or possible embodiments of the invention. TiVo discusses those elaborations in the Argument where relevant to EchoStar’s contentions on appeal.

D. Claim Construction

Before trial EchoStar asked the district court to adopt constructions designed to narrow the broad language of the asserted claims. It proposed, for example, that the hardware “tuning” limitation required “using a tuner to select a radio frequency

bandwidth that carries exactly one television program at a time.” A140. It urged that the “converts” limitation be read to require “chang[ing] the format of the TV program data signal from non-MPEG format to MPEG” format. A141. It offered no specific construction for the term “separated,” but argued that the overall Media Switch limitation should be construed to require that “the Media Switch must analyze the content of an MPEG Systems stream carrying one television program and from it output two distinct streams: one video MPEG stream and one audio MPEG stream.” A143. And it argued that the one word “object” in the software claims should be read to require “an item written in an object-oriented programming language (for example, C++) that is an instance of a class from which it inherits properties, and that includes both data and all procedures that operate on the data.” A7027.

The district court rejected EchoStar’s proposed constructions when they were unnecessary or would have imported limitations into the claim language. A137-A155. The court’s constructions provided the framework for the presentation of evidence at trial. It used the same constructions in instructing the jury, A206-A207, having received from EchoStar neither modified proposals nor any argument that the court had erred by failing or refusing to construe disputed terms.

SUMMARY OF ARGUMENT

TiVo *created* the consumer DVR. Founded on an idea in 1997, TiVo invested heavily in research and development. In 1998 it applied for the '389 patent, and in 1999 it delivered to market the first commercially-viable DVR. Its product rapidly became so popular that last year EchoStar, whose 12 million subscribers represent over 10 percent of all television households in the United States, told this Court that half its new subscribers demand DVRs. A8430; *see* A4355-A4356. The question here is who is entitled to satisfy that demand.

As innovator and patentee, TiVo earned the right to develop the market for its own invention. EchoStar, a multi-billion-dollar conglomerate, had the chance to become a TiVo partner. *See* A28. Instead, EchoStar forced TiVo to bear the heavy burden of litigation to enforce its rights. After the jury found infringement, the district court correctly held that TiVo was entitled to an injunction to protect its ability to benefit from its invention at this “critical time in the market’s development.” A27; *see* A28 (“As a relatively new and small company, every day of [EchoStar’s] infringement affects [TiVo’s] business.”). While this Court chose to stay that injunction pending appeal, full consideration will confirm that there is no basis for overturning the judgment below.

In its appeal EchoStar often argues in terms of claim construction, seeking a more favorable standard of review. Its first refrain is that the district court left the

construction of contested claim terms for the jury. That is not correct. The court addressed every claim element for which EchoStar requested construction, and made very clear that its constructions governed the presentation of evidence and the jury's deliberations. What the court properly refused to do was accept constructions proposed by EchoStar that would have needlessly complicated or improperly limited the broad language of the claims.

EchoStar's second theme is that its satellite-only DVRs fall outside the scope of the "accepting ... broadcast signals," "tuning," and "converts" limitations of Claims 1 and 32. To the extent EchoStar contends those claims read only on DVRs that process analog signals, its position cannot be reconciled with the claim language, the specification, or common sense. As a matter of proof, the evidence clearly showed (as one would expect) that EchoStar's DVRs accept signals based on numerous digital transport, video, audio, and encryption standards; tune those signals to specific programs the user wants to watch or record; and convert the incoming signals to a form suitable for internal transfer and manipulation. The jury's infringement verdict is amply supported.

EchoStar next repeats its arguments that its Broadcom DVRs do not infringe because they do not separate incoming MPEG data into a video-only stream and an audio-only stream, while its 50X products do not infringe because they do produce separate streams, but then never reassemble them into a single stream. The first

argument rests on EchoStar's central misreading of Claims 1 and 32. The "is separated" limitation does not require the creation of physically separate video and audio data streams. Limiting the claim in that way would make no sense in the context of a computer-based invention. The claims describe a component-level analysis, with data separately accounted for to permit efficient logical processing.

Similarly, the assembly required at the output stage is not assembly of separate video and audio streams into one interleaved stream, but assembly of appropriate MPEG data components into video or audio data streams that, when decoded, produce the effects the DVR user wants to see and hear (straight playback, reverse, fast-forward, slow-motion). There is more than sufficient evidence to support the jury's findings that EchoStar's DVRs practice both separation and assembly.

As to Claims 31 and 61, there is no basis for EchoStar's argument that the claim term "object" makes infringement depend on whether EchoStar's DVR software was written in a particular type of programming language using two particular programming techniques. No person of ordinary skill in computer-related arts would read (or write) the claims as EchoStar suggests, and the evidence plainly supports the infringement findings.

Finally, to whatever extent they are preserved, EchoStar's trial-error arguments lack merit. Comments on the evidence by TiVo's counsel were perfectly proper, and the district court's rulings reflect no abuse of discretion.

EchoStar's arguments fail to undermine the jury's verdict on any point. Yet, EchoStar would have to prevail as to *every claim* to escape damages and the district court's injunction—neither of which EchoStar challenges as remedies. This Court should affirm the judgment below, dissolve its stay of the district court's injunction, and remand the case for computation of additional damages caused by EchoStar's continuing infringement during this appeal.

ARGUMENT

I. Standard Of Review

A jury's finding of infringement will be sustained so long as it is supported by substantial evidence. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc); *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1423 (Fed. Cir. 1997).⁴

⁴ Contrary to EchoStar's characterization (Br. 51), *B. Braun* did not review infringement *de novo* because the district court allowed the jury to construe claims. It reviewed the jury's infringement finding under the usual substantial-evidence standard. See 124 F.3d at 1423-1424. In any event, the district court here did not allow the jury to construe claims. See Part II, *infra*.

Where properly challenged, claim construction is reviewed *de novo* under current precedent. *Cybor Corp.*, 138 F.3d at 1456.⁵ But “a party may not introduce new claim construction arguments on appeal or alter the scope of the claim construction positions it took below.” *Conoco, Inc. v. Energy & Env’tl. Int’l, L.C.*, 460 F.3d 1349, 1358-1359 (Fed. Cir. 2006); *see also NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1296 (Fed. Cir. 2005) (limitation argument not raised below was waived); *SuperGuide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 889 (Fed. Cir. 2004) (“Because we conclude that SuperGuide is now proffering a broader definition of ‘meet’ than it advocated before the district court, we decline on appeal to address SuperGuide’s new construction.”).

The district court’s denial of EchoStar’s new-trial motion and its underlying trial rulings are reviewed using the Fifth Circuit’s “demanding abuse-of-discretion standard,” under which an appellate court will not reverse unless “no reasonable person could take the trial court’s adopted position.” *United States v. Akpan*, 407 F.3d 360, 369 (5th Cir. 2005); *see also Streber v. Hunter*, 221 F.3d 701, 736 (5th Cir. 2000).

⁵ Whether a district court’s constructions should receive some deference has generated considerable discussion on this Court. *E.g., Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 469 F.3d 1039 (Fed. Cir. 2006). While TiVo should prevail under any standard, deferential review would be particularly appropriate in a case such as this one, where there were substantial construction proceedings, including expert declarations, before trial, and the district court then had the opportunity to hear extensive expert testimony concerning claim application before finalizing its constructions and instructing the jury.

II. The District Court Did Not “Abdicate” Its Claim-Construction Role

EchoStar’s central theme (*e.g.*, Br. 3, 49, 53, 56-57) is that the district court improperly failed to construe certain claim terms, leaving that task to the jury. That is not correct.

The court construed every claim element for which EchoStar requested a construction. It did conclude that the jury needed no help in understanding certain common words, including “convert” and “separated,” and that conclusion was correct. *See Mentor H/S, Inc. v. Med. Device Alliance, Inc.*, 244 F.3d 1365, 1380 (Fed. Cir. 2001) (court did not err in relying on ordinary meanings of “irrigation” and “frictional heat”).⁶ It also properly declined to substitute long recitations of particular features for broad claim terms. *See, e.g.*, A142-A143 (EchoStar’s 82-word proposed definition of “Media Switch”); A151 (35-word, 3-part proposed definition of “object”). Contrary to EchoStar’s apparent view, the fact that “[c]laims are often drafted using terminology that is not as precise or specific as it might be” does not mean that a district court must (or even may) supply, “under the rubric of claim construction, . . . whatever additional precision or specificity” an anxious infringement defendant might prefer. *PPG Indus. v. Guardian Indus.*

⁶ EchoStar never asked for any specific construction of the term “separated.” It proposed a restrictive rewriting of the entire Media Switch limitation, which the district court properly rejected. *See* A142-A144. At the final instruction phase, EchoStar simply renewed its request for “the claim interpretations that we presented in our *Markman* briefing.” A3538-A3539.

Corp., 156 F.3d 1351, 1355 (Fed. Cir. 1998).⁷ The court’s task is instead to construe the claim “with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction.” *Id.* Thereafter, “the task of determining whether the construed claim reads on the accused product is for the finder of fact.” *Id.*; *see also Lava Trading, Inc. v. Sonic Trading Mgmt., LLC*, 445 F.3d 1348, 1350 (Fed. Cir. 2006) (“[A] trial court should certainly not prejudge the ultimate infringement analysis by construing claims with an aim to include or exclude an accused product or process[.]”).

Relatedly, the district court properly rejected EchoStar’s various attempts to import purported limitations from the specification into the claims. The patent expressly invokes the bedrock principle that such importation is improper. *See* A375[2:38-41] (description and drawings illustrate principles of invention “by way of example”); A380[12:32-33] (“[T]he invention should only be limited by the claims included below.”); *see generally, e.g., Conoco*, 460 F.3d at 1357 (“[A]n inventor may use the specification to intentionally disclaim or disavow [a claim’s] broad scope However, this intention must be clear[.]”); *Sandisk Corp. v. Memorex Prods., Inc.*, 415 F.3d 1278, 1286 (Fed. Cir. 2005) (“References to a preferred embodiment, such as those often present in a specification, are not claim

⁷ Indeed, this Court has repeatedly rejected efforts to impose specificity on broadly worded claims. *E.g., Johnson Worldwide Assocs., Inc. v. Zebco Corp.*, 175 F.3d 985, 992 (Fed. Cir. 1999); *Va. Panel Corp. v. MAC Panel Co.*, 133 F.3d 860, 865-866 (Fed. Cir. 1997).

limitations.” (quoting *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 865 (Fed. Cir. 1988)).

If the district court erred, it was in not stating expressly that EchoStar’s proposed constructions were wrong as a matter of law. EchoStar exploited this by asking the jury, in effect, to adopt its proposals when addressing infringement. *See, e.g.*, A3667 (EchoStar closing) (“You can’t convert something to MPEG, if it’s already MPEG. And that’s why we don’t do it.”). But any error in that regard favored EchoStar, and provides no basis for reversal now.

In any event, the district court did not, as in the cases EchoStar cites (Br. 53), refuse to address construction or permit experts to advocate different constructions before the jury. No witness testified that he or she was addressing issues of claim construction or departing from the constructions the court had issued. To the contrary, the district court insisted that the experts apply its constructions. *E.g.*, A2612 (“Well, obviously, Dr. Rhyne has got to apply the claim construction that the Court applied.”). Both sides’ experts were held to that standard, *see, e.g.*, A1535, A1552, A1626, A1638 (Gibson); A2696, A2699, A2704-A2705 (Rhyne); A3008-A3009 (Polish), and were required to limit their testimony to explaining whether or not the accused products met the claim limitations as the court had construed them or as they appeared on the face of the claims—*i.e.*, to the factual question of infringement.

The court's constructions guided the presentation of the evidence and formed the basis for the jury instructions. Those instructions, far from leaving construction to the jury, expressly stated that the court had construed the patent terms and that the jury was obligated to apply those constructions. A206 ("It is my duty under the law to interpret what the words used in the patent claims mean. ... You must apply that meaning I give the patent claims to your decisions[.]"). Applying those instructions the jury found, based on the expert testimony and other evidence introduced by TiVo, that all the accused EchoStar DVRs meet each limitation of the asserted claims.

III. The Jury Properly Found That EchoStar's DVRs Meet The "Accepting ... Broadcast Signals," "Tuning," And "Converts" Limitations

EchoStar weaves arguments about three specific limitations, addressed individually below, into a broader assertion that the hardware claims of the '389 patent are directed only to DVRs that process "both analog and digital television signals" (ES Br. 55)—thus excluding any satellite-only product. That position is implausible.

As EchoStar concedes (Br. 55-56), both the specification and the claims specifically address the use of satellite TV signals. *See, e.g.*, A375[2:4-14]; A376[3:35-37]; A377[6:30-35]; A380[12:41]; A382[15:23]. Claims 1 and 32 refer to accepting signals based on DSS, a proprietary satellite-transmission standard used by EchoStar's principal competitor, DirecTV, a long-time TiVo licensee

whose DVRs do not process non-satellite signals.⁸ The list of broadcast formats in the claim, including the general term “satellite transmission,” is disjunctive (“or ATSC”), not conjunctive. A380[12:41]. Indeed, the specification discloses at least one satellite-only embodiment. A377[6:30-35] (“If a digital TV signal is being processed instead, the MPEG encoder 703 is replaced with an MPEG2 Transport Demultiplexor, and the MPEG audio encoder 704 and VBI decoder 702 are deleted.”); *see* pp. 13-14, *supra*. EchoStar’s own expert testified (A2983) that the ’389 patent read on the alleged prior art “MediaStream,” which received DVB signals and was a satellite device. While EchoStar argues that its reading would not *exclude* a DVR that processed analog *and* digital signals (Br. 55-56), no person of ordinary skill in the art would read the ’389 patent to take the irrational approach of disclosing use of the invention with satellite signals but then drawing the claims to exclude any satellite-only embodiment. Where a proposed construction conflicts both with the intrinsic evidence and with common sense, courts should not adopt it.

A. Accepting TV Signals Based On A Multitude Of Standards

EchoStar argues that its DVRs do not “accept[] television (TV) broadcast signals, wherein said TV signals are based on a multitude of standards, including,

⁸ As the jury heard, TiVo’s co-founders met with senior DirecTV executives about possible collaboration even before the ’389 patent application was filed. A3420-A3421.

but not limited to, National Television Standards Committee (NTSC) broadcast, PAL broadcast, satellite transmission, DSS, DBS, or ATSC,” A380[12:38-41], because they “are incapable of processing analog television and can process only one kind of *digital* television,” ES Br. 52. That is a non-sequitur.

EchoStar argues that its products “accept for processing” only one “standard” (Br. 21), but that does not address the claim language. The claim requires “accepting ... TV signals” that are, in turn, “based on” a “multitude of standards.” TiVo’s expert Dr. Gibson listed for the jury numerous standards on which signals accepted by EchoStar’s DVRs are based—even limiting the list, as EchoStar improperly would, to signals its DVRs “process” as well as “accept.” He identified at least five such standards for each EchoStar product: DVB-S, the basic EchoStar transmission standard, is in turn based on the MPEG2 Transport standard, the MPEG2 video standard, in most cases the MPEG1 audio standard, the AC3 (Dolby) audio standard, and the Nagra encryption standard. A1534-A1538; *see* A4439; *see also* A376[3:37-39] (“DBS, DSS and ATSC are based on standards called Moving Picture Experts Group 2 (MPEG2) and MPEG2 Transport.”). As Gibson explained (A1537), his testimony was based on review of EchoStar documents—which were themselves in evidence. A4439 (citing relevant exhibits). Finally, in its Rule 50(a) motions EchoStar conceded that its products could have been found to accept signals based on up to three standards (including one analog

standard, NTSC). A4384. There was more than substantial evidence to sustain the jury's finding.

B. Tuning TV Signals To A Specific Program

EchoStar next asserts (Br. 52-53) that its DVRs do not “tun[e] said TV signals to a specific program” (A380[12:43]). That contention defies common sense. Tuning to a program is what allows EchoStar's customers to watch, record, and manipulate the programs they want.

EchoStar evidently advocates the narrowing construction it urged below: “using a tuner to select a radio frequency bandwidth that carries exactly one television program at a time.” A140. The district court properly rejected that proposal, however, when it construed the limitation to require “tuning said TV signals to a specified frequency range” (*id.*)—which EchoStar concedes its products do (Br. 53). When, as in digital broadcasting, multiple programs are transmitted over one broadcast channel, tuning to a particular program requires tuning to that channel (or “frequency range”). The specification expressly describes a corresponding embodiment in which, for digital signals, “[t]he 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.” A376[3:46-49]. Adopting EchoStar's approach would read that example out of the patent.

If more were needed, Dr. Gibson supplied it. He explained that, in each EchoStar DVR, when the user specifies a desired program the DVR tunes to the frequency range known to contain that program data. The system uses a packet identification (PID) filter to select only those data packets that relate to the program selected. *See* A1539-A1541; A1548-A1550. The jury's infringement finding was amply supported.

Moreover, even if EchoStar's DVRs did not literally infringe the "tuning" limitation, the judgment would stand. As Gibson explained, in testimony that EchoStar does not challenge (A1548-A1550), the EchoStar products' conceded process of tuning to a specific frequency range and selecting one program a user can watch and manipulate is, at the very least, manifestly equivalent to "tuning ... to a specific program."

C. Converting The Program To An MPEG Formatted Stream For Internal Transfer And Manipulation

EchoStar also challenges (Br. 53-54) the jury's finding that its DVRs "convert[] said specific program to [a] Moving Pictures Expert Group (MPEG) formatted stream for internal transfer and manipulation" (A380[12:45-47]). Although EchoStar purports to focus on the term "converts," its real argument is broader. Whether "converts" is left undefined or defined as "changes" (as EchoStar proposed below, *see* A141), EchoStar cannot prevail unless it rewrites the rest of the limitation by adding the words "from a non-MPEG signal" after

“program,” and then deleting the claim’s explanatory phrase, “for internal transfer and manipulation.” See ES Br. 23-24, 53-54. The district court properly rejected that wholesale revision of the claim. A141, 206.

Tellingly, EchoStar never discusses the phrase “for internal transfer and manipulation”—which appears in its brief only when EchoStar reproduces the full text of Claim 1 or block-quotes from the specification. ES Br. 10, 20. But it is that phrase that describes the required “conver[sion],” and thus illuminates what types of changes fall within the broad term. Even accepting EchoStar’s position that incoming satellite signals are in MPEG format (although, like any broadcast signal, they arrive in analog form), the point of the limitation is not, as EchoStar would have it (Br. 21-22, 54), that the Input Section must be the first place that TV program data is converted from non-MPEG to some-MPEG format. Any such reading would be wholly at odds with the specification, which obviously contemplates embodiments that process incoming satellite signals. Indeed, in its first detailed description of the Input Section, the specification describes the Input Section’s role of “produc[ing] MPEG streams” *first* in terms of processing an incoming “MPEG2 transport multiplex” stream to “extract[] a specific MPEG program,” which it then “feeds ... to the rest of the system.” A376[3:43-49]. It then explains how “[a]nalog TV signals are encoded into a similar MPEG format,” with the result that “the remainder of the system is unaware of how the signal was

obtained.” A376[3:49-52]; *see also, e.g.*, A376[3:33, 3:40-43] (referring to TV input streams, including satellite broadcast streams); A376[3:64-65] (“Input streams are converted to an MPEG stream and sent to the Media Switch[.]”). As this discussion confirms, the point of the “Input Section converts” limitation is just what its language indicates: Broadcast streams, whatever their format as they enter the DVR, must be converted to a uniform, purely digital MPEG format that is suitable for “internal transfer and manipulation” by the remainder of the system.

EchoStar makes much of the specification’s use of the term “extracts” in connection with satellite signals. ES Br. 10, 54. But extraction of one program stream from a multiplexed satellite broadcast signal is simply part of how the Input Section’s tuning and conversion process works in an embodiment that includes processing of satellite signals. That elaboration on how the claim terms apply in the context of one embodiment is no basis for imposing additional limitations on the claim itself.

EchoStar acknowledges (Br. 53) that there is no dispute over how its DVRs process incoming signals. As Dr. Gibson explained, EchoStar’s DVRs cannot manipulate a stream of program data to produce DVR functionality without first putting incoming broadcast signals through a series of transformations. A1547. Because incoming signals are in analog form (although carrying digitally-encoded data), they must be passed through an analog-to-digital signal converter and then a

demodulator. A1542-A1543. (EchoStar's expert confirmed, A2823-A2824, that "[t]he first stage in the ... extraction of the digital data is to perform an analog-to-digital conversion.") Because broadcast transmission of digital data tends to introduce errors, the signal must be put through a series of steps known as "forward error correction." A1543-A1544. And where the broadcast signals are encrypted, the program data must be unscrambled into a plain-form MPEG stream for processing by the rest of the system. A1546-A1547. There was ample evidence to support the jury's finding that EchoStar's DVRs "convert[] said specific program to an [MPEG] formatted stream for internal transfer and manipulation."

IV. The Jury Properly Found That EchoStar's Broadcom-based DVRs Meet The "Is Separated" Limitation

EchoStar next contends (Br. 56-59) that this Court must reverse the jury's finding that EchoStar's Broadcom-based DVRs provide a Media Switch, "wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components." A380[12:48-50]. That argument also lacks merit.

In seeking review without deference (Br. 56-57), EchoStar urges on appeal the claim construction it proposed to the district court: that the Media Switch limitation "require[s] separation of the incoming MPEG stream into two different

streams: a video-data stream and an audio-data stream.” ES Br. 49.⁹ On that basis, it challenges Dr. Gibson’s testimony—and the jury’s finding—that EchoStar’s Broadcom-based DVRs meet the limitation by building a table or index, thereby logically separating key components of each program stream to allow for efficient handling of the separate components. ES Br. 57; A1554. EchoStar’s position, focusing on the physical cleaving of digital data, has no basis in the claims and makes no sense in the context of a computer-based invention.

As described above, using a Media Switch to help build a list or index that allows the system to locate and process specific data components (for instance, the various video “I-frames” that provide complete picture data) rather than having to repeatedly move and copy entire MPEG streams, is a key feature of the claimed invention. *See* pp. 8-10, *supra*. That is what allows the DVR to manipulate voluminous TV program data efficiently, reliably, and cheaply, making possible a functional consumer DVR. Whether during that process the individual components (coded packets of 1’s and 0’s) are or are not placed into physically separate video-only or audio-only streams—as EchoStar argues is required—is a secondary matter of implementation, not addressed by the language of Claims 1 and 32.

⁹ This is the only construction EchoStar urged the district court to adopt. *See* A143; A3538-A3539; A4382; A8261. It cannot argue for any other now. *See* p. 22, *supra*.

EchoStar’s argument for its “separate streams” construction depends on reading the claim language “video and audio components” to mean “video and audio streams.” *See, e.g.*, ES Br. 57 (citing A375[2:15-16]—“The invention parses the resulting MPEG stream and separates it into its video and audio components”—and arguing that the patent describes division “into two (or more) separate streams”). As usage in the specification makes clear, however, there is no support for that construction. In the very passage EchoStar cites, the word “components” is clearly used to mean individual segments of MPEG-format data, not streams composed of many such segments. A375[2:15-21, 26-29] (an “event” records “the type of component that has been found, where it is located, and when it occurred”; when display is requested, “components” are retrieved from storage and “reassembled into an MPEG stream”). There is no justification for EchoStar’s conflation of “components” and “streams.”

Referring to Figure 3, EchoStar argues that “the patent unequivocally states that the MPEG stream ‘must be separated’ to ‘create separate video 308 and audio 309 streams,’ and that this is a ‘necessary’ step.” ES Br. 57 (quoting A376[4:26-30]). The use of carefully snipped quotations betrays the misleading nature of this contention. The full text says that, in one embodiment, the MPEG *components* “must be separated *and recombined to create* separate video 308 and audio 309 streams or buffers”—which is “necessary *because* separate *decoders* are used to

convert MPEG elements back into audio or video analog components” that will be displayed on a user’s TV. A376[4:26-30] (emphasis added). The reference to “separate ... streams or buffers” is to the *output* stage, when appropriate components must ultimately be placed into distinct streams or buffers for *decoding*.¹⁰ This is confirmed by the immediately succeeding language, which describes how the Media Switch ensures that appropriate time stamps are associated with specific data components, so that later the system will be able to assemble them accurately for playback. A376[4:29-54]; *see also* A377[5:41-50]. Figure 3 is a conceptual schematic. Nothing in it or the related discussion indicates that division into physically separate streams is “necessary” at the Media Switch stage—and EchoStar can suggest no reason why it would be.

EchoStar also relies on Figures 4 and 6 to argue that the Media Switch must generate physically separate audio and video data streams, because those figures show separately-labeled audio and video buffers. ES Br. 11-12, 14-16, 56-59. The figures illustrate, in a conceptually clear way, one way a Media Switch *can* be structured to perform the parsing and cataloguing of data components that Claim 1 covers. The figures and accompanying text do not purport to describe the only way to implement the Media Switch, and nothing in Claim 1 requires that

¹⁰ EchoStar treated this more candidly below. *See* A7115 (“[T]he interleaved video and audio segments ... ‘must be separated’ because as the information is being output later in the process, ‘separate decoders are used[.]’”).

particular implementation. *Compare* A380[12:48-50] (Claim 1) *with* A381[13:20-48] (dependent Claims 8-11, claiming additional steps specifying the use of distinct video and audio buffers).¹¹ In any event, these figures show neither the creation or storage of separate “streams” nor the physical cleaving of data, as EchoStar would require. At most, they show an embodiment that temporarily places information into circular buffers as an aid to the creation of a table of logical segments, separated by event type and other characteristics.

Indeed, Figure 6 and the accompanying text make clear that the patent focuses on the logical segmentation and cataloguing of data into an event table to help *avoid* unnecessary physical data transfers. A377[5:33-6:15]. “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 A unique feature of the MPEG stream transformation into PES buffers is that the data associated with logical segments need not be present in the buffer itself[.]” A377[5:61-6:1]. In other

¹¹ EchoStar acknowledged below that Figure 4 shows only one embodiment. *See* A4461 (referring to Figure 4 and A377[5:3-40]: “[T]he preferred embodiment of the ’389 patent shows the data being physically separated into ... a video buffer and a separate audio buffer.”). As is customary, the entire specification describes the invention “with reference to the preferred embodiment,” A380[12:20-21], using enabling rather than limiting examples. Indeed, in this patent even phrases such as “according to the invention” are plainly not limiting. *See, e.g.,* A375[2:44]-A376[3:15] (using “preferred embodiment” and “according to the invention” together in describing patent drawings); *compare* A375[2:63-65] (describing Figure 7 as showing Media Switch “according to the invention”) *with* A377[6:26-35] (describing how Figure 7 would be altered to reflect an alternative, digital-signal embodiment).

words, the creation of “logical segments” means that full-form stream data need *not* be moved repeatedly from place to place.

Most important, nothing in Figures 4 and 6, or the concomitant discussion, supports EchoStar’s attempt to shift the focus from the step of parsing (analyzing) specific data components and cataloguing their nature, relative sequence, and location, thus *logically* separating them in a way that allows for efficient CPU manipulation, to the question whether particular groups of 0’s and 1’s in the incoming MPEG stream are physically separated from each other as part of that process and end up “divided into separate video and audio streams” (ES Br. 14). The logical separation step, one embodiment of which is disclosed in Figure 6 and the accompanying discussion (A367; A377[5:33-6:15]; *see* ES Br. 15-16)), is central to the invention. Whether video and audio data are physically separated from each other is not.

Notably, EchoStar does not reproduce or discuss Figure 7 (A368), which also illustrates how the Media Switch may be implemented. *See* pp. 12-15, *supra*. The corresponding text (A377[6:26]-A378[7:47]) discusses at length the process by which, in one embodiment, the Media Switch: (1) parses the incoming data and logically separates components by detecting “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,” A377[6:42-45], and (2) builds an “event

queue” that presents that information to the CPU in easily manageable form, A377[6:46-58]. As the specification explains, the purpose and result of all this is that when the user requests either “play back” or “special effects,” A377[6:43-44], the CPU can find the needed information quickly, “[r]ather than having to parse through an immense stream looking for the start of where each frame would be,” A378[7:12-13]. This is the heart of the “is separated” limitation. Yet nothing in Figure 7 or the discussion suggests that the system must physically “divide[]” incoming data “into separate video and audio streams,” as EchoStar would require (Br. 14). Indeed, while the figure actually shows separate video and audio inputs, a single line—representing both video and audio data—connects the Media Switch 701 to the FIFO 706, hard disk 710, and DRAM 714.

Finally, EchoStar argues (Br. 58) that Claim 1 must require physical separation because the patent teaches that the generation of a component index occurs “*after* the video and audio data streams have been separated.” For that proposition it cites pages 13-16 of its own brief. Those pages discuss Figures 3 and 6, but nothing in either suggests that creation of an index must occur after “separation.” At page 14 EchoStar asserts that “[t]he patent recognizes that since the MPEG stream has been divided into separate video and audio streams, additional steps are necessary ‘for accurate playback of the signal,’” and then suggests that those steps include creating an index of the MPEG components. But

the sentence from which EchoStar isolates the “accurate playback” phrase discusses only one step—generating time-sequence information, so that data components may be properly synchronized when they are ultimately presented for playback. A376[4:30-34]. Nothing in the discussion indicates that, even in the embodiment described, the generation of time stamps or any other cataloguing-related step must take place after, rather than as part of, the step required by the claim’s “is separated” language.¹²

While the intrinsic evidence more than suffices to rebut EchoStar’s arguments, extrinsic evidence also supports the district court’s refusal to adopt EchoStar’s separate-streams construction. Dictionaries define “separate” to mean, among other things, “to make a distinction between.” *Webster’s Third New Int’l Dictionary* 2069 (2002); *see also Am. Heritage Dictionary of the English Language* 1587 (4th ed. 2000) (“to differentiate or discriminate between; distinguish”). That usage is common. For example, references to “separate” bank accounts at a single bank do not mean that the money in each account is physically

¹² Nor is there any significance here to the use of the word “indexing” in Claim 10. *See* ES Br. 58. First, Claim 10 refers to “indexing into” a buffer, not to the creation of a frame table or index. Indeed, the patent does not use the term “indexing” to refer to table-creation—even in Claim 11, which actually describes one embodiment of that process. Second, as noted above (*see* text accompanying n.11), dependent Claims 8-11 claim a particular method of parsing and separation that does depend on the use of separate audio and video buffers. The proper inference is that components may also be “separated,” within the meaning of independent Claim 1, in other ways.

kept in different places, but rather that the bank distinguishes between the funds in each account in a variety of ways—most prominently by keeping records (usually a computerized index) of which depositors have how much in which accounts. Similarly, by identifying, tagging, and keeping track of key frames, the Media Switch “make[s] a distinction between” them. It does so, moreover, to advance the invention’s central objective of allowing rapid and efficient manipulation of television data. EchoStar’s separate-streams construction bears no such relation to the goals of the invention. Yet, on the basis of this and similar arguments, EchoStar would deny TiVo the value of its patent.

As EchoStar appears to concede (Br. 56), once its separate-streams construction is rejected there was plainly sufficient evidence to support the jury’s finding that EchoStar’s Broadcom products meet the “is separated” limitation. After demonstrating to the jury that all EchoStar DVRs have a Media Switch, A1550, Dr. Gibson explained—with specific reference to a Broadcom product—that all EchoStar DVRs all analyze the incoming MPEG stream, find the start of video frames, and build a table containing needed information about those frames, A1552-A1557. EchoStar’s expert Dr. Rhyne agreed with this. A2833. Gibson also explained why the separation performed by the Broadcom-based products falls within the claims. A1554. This testimony, and the exhibits in evidence to which

Gibson referred, *see* A4478-A4482 (listing relevant exhibits), were more than sufficient to support the verdict.¹³

V. The Jury Properly Found That EchoStar’s 50X DVRs Meet The “Assembling” Limitation

EchoStar briefly asserts (Br. 59-60) that TiVo failed to present substantial evidence that the accused 50X DVRs have an Output Section that “assembles said video and audio components into an MPEG stream.” A380[12:57-58]. That is incorrect.

EchoStar’s argument is founded on the premise that the claim requires assembly of video components and audio components into a single, interleaved MPEG stream. *See, e.g.*, A2674-A2679. But while the claim language certainly includes assembling video and audio components in one stream, it also covers the assembly of video components into a video stream or audio components into an audio stream. *See, e.g., CollegeNet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 1232 (Fed. Cir. 2005) (“It is well settled that the term ‘a’ or ‘an’ ordinarily means ‘one or more.’”) Indeed, some of EchoStar’s favorite language from the specification makes clear that, at least in one embodiment, what happens at the

¹³ *See also* A7201 (specification for BCM7021 (MPEG processor in DP-721/921) showing “SCD”—the start code detector, a part of the Media Switch—and “SCD-DMA link-list”—the start code table or frame index); A4504, A4512, A4518 (similar); A4704, A4708-A4710, A4718-A4724 (BCM7038 (MPEG processor in DP-942) specification: parsing stream to find start codes); A4897, A4908-A4909, A4913 (BCM 7320 (MPEG processor in DP-522/625)); A5008-A5010, A5014-A5016, A5021 (similar).

output stage is that video and audio components are “assembled” into *separate* “streams or buffers,” because at that stage “separate decoders are used” to convert them back into analog TV signals (video going to the screen, and audio to the speakers). A376[4:26-29]. And EchoStar acknowledges that its 50X boxes assemble video components into video streams for decoding, and likewise with audio components. *See, e.g.*, ES Br. 27; A2678-A2679 (Rhyne); *see also* A2675-A2676 (Broadcom products).

The jury also heard evidence on this point from Dr. Gibson, with specific reference to “trickplay,” such as fast-forwarding or rewinding a television program. A1564-A1566. As he explained, to create the fast-forward effect at, for example, three times normal speed, the DVR locates every third video frame and strings them together—*i.e.*, assembles them—into an MPEG stream, which is passed to the decoder and output to the user’s television. A1565-A1566; *see also id.* at A1527; A1636 (making same point in passing); p. 12, *supra* (including concomitant demonstrative); A2676 (Rhyne acknowledging demonstrative as “correct technically”).¹⁴ Gibson confirmed that all of EchoStar’s products—

¹⁴ Trickplay also requires assembly of audio components. No sound is decoded during, *e.g.*, fast-forwarding, but when regular play resumes the sound must correspond to the picture. Correctly restarting audio playback requires selectively extracting audio data components from memory and reassembling them into a customized audio stream.

including, therefore, the 50X DVRs—meet the assembly limitation in this way.

A1565-A1566; *see also* A1658-A1659.¹⁵

Gibson’s testimony was not “conclusory” or “factually unsupported” (ES Br. 59-60). He testified that he “perform[ed] an analysis ... for every ... EchoStar product,” and that he “compare[d] every EchoStar product to every claim element.” A1658-A1659; *accord* A1662. While expert testimony naturally requires “support[] by sufficient facts to validate it in the eyes of the law,” Br. 59 (quoting *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 242 (1993)), this Court has recognized that that standard is satisfied where the expert “supported his opinion by relying on [the defendant’s] own technical documents,” *nCube Corp. v. SeaChange Int’l, Inc.*, 436 F.3d 1317, 1323 (Fed. Cir. 2006). That was the situation here, as Gibson, the only infringement expert who reviewed all of EchoStar’s source code (*see* p. 50, *infra*), showed the jury the precise source code that carries out assembly. *See* A1564-A1565. If more were

¹⁵ EchoStar complains (Br. 28) that Gibson focused on one product, but there was no reason to require him to repeat his explanation. *See* A1572 (“[H]e has said that they all operate basically the same way.”); A1581. If EchoStar believed there were material differences in its products it was free to cross-examine on that issue. It did not. It elicited Rhyne’s testimony that EchoStar’s products do not practice assembly. A2672-A2679. But “in case[s] of conflicting expert testimony, the jury is entitled to make credibility determinations and believe the witness it considers more trustworthy.” *Streber*, 221 F.3d at 726 (alteration in original); *see also U.S. Philips Corp. v. Windmere Corp.*, 861 F.2d 695, 704 (Fed. Cir. 1988) (five-judge panel) (“The jury was not required to accept [t]his expert testimony, even if it was uncontradicted.”).

required (which it is not), the underlying EchoStar user's guides, engineering documents, and source code were in evidence.¹⁶ They provide ample independent support for the jury's verdict. *See Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1219-1220 (Fed. Cir. 2006).

VI. The Jury Correctly Found That EchoStar's Products Infringe Claims 31 And 61

A. The District Court Correctly Construed The Term "Object"

EchoStar contends (Br. 60-61) that the district court erred in construing the term "object," as used in Claims 31 and 61, to mean "a collection of data and operations." It apparently renews its argument below that the term must be defined as "an item written in an object-oriented computer programming language (for example, C++) that is an instance of a class from which it inherits properties, and that includes both data and all procedures that operate on the data." ES Br. 30 (quoting A7027). The district court correctly rejected that effort to complicate and sharply narrow the claim. *See Terlep v. Brinkmann Corp.*, 418 F.3d 1379, 1382

¹⁶ *See, e.g.*, A6383 ("Trick Modes with HDD and STi5508 and STi5518" (DP-50X)); A6386-A6388 (similar); A6404-A6406, A6453-A6459 (50X user's guide); A6569-A6572, A6619-A6624 (similar); A6720 (DP501 block diagram); A6721, A6735-A6736, A6740-A6740, A6779-A6786 (dvrPlayback_Process.c module, including dvrPlayback_Process_Main(), which calls routines that implement trick play functions, *e.g.*, move_to_closest_I_frame(), move_index_to_display_position()); A6792, A6803-A6805 (dvr_utility.c); A6812-A6819 (frameindex.c); A6820, A6830-A6833 (decoder_process.c); A6836-A6843 (DVRdatadefine.h, which defines the frame index) (portions of DP-50X software involved with assembly).

(Fed. Cir. 2005) (purpose of construction is “to understand and explain, but not to change, the scope of the claims”).¹⁷

EchoStar argues (Br. 30) that “the patent uses the term ‘object’ solely in the context of an object-oriented programming language,” but that is incorrect. Most importantly, the term is used without any such connotation in the claims themselves. Claims 31 and 61 require only the provision of different software “objects”—sink, source, transform—to perform one or more specified functions. A381[14:52-67]-A382[15:1-16]; A383[18:3-30]. The claims neither require the use of an object-oriented language to create those objects nor suggest the other restrictions EchoStar would impose, and nothing in the intrinsic record justifies adding those limitations. To the contrary, in its initial conceptual description, the specification uses “source” and “source object” interchangeably. A378[7:58, 62]. Moreover, “objects” and object-oriented techniques can be used with different types of programming languages, A7137 (Gibson Decl. ¶ 44), and even in object-oriented languages, a programmer need not use particular techniques, *see, e.g.*, A6844-A6848 (object-oriented programming treatise describing other programming methods, *e.g.*, using “functions” rather than classes). The claims’

¹⁷ At times (*e.g.*, Br. 60), EchoStar appears to propose requiring only the use of an object-oriented language. The construction it proposed below, however, included the use of classes and a particular form of grouping, which are material additional limitations. EchoStar cannot retreat from that position on appeal. *See* p. 22, *supra*.

unadorned use of the term “object” provides no basis for limiting their scope in the manner EchoStar would prefer.

EchoStar also overreaches in claiming (Br. 60) that “the specification uses ‘object’ exclusively to describe software written in C++, an object-oriented language.” The specification certainly refers to C++, and uses commensurate language, in discussing one embodiment of the invention. *See* A378[8:9-10]. The introductory discussion of Figure 8, however, which presents the highest-level overview of this portion of the invention, describes the source, transform, and sink as “conceptual components,” without reference to any particular programming language or type of language. *See* pp. 15-16, *supra*; A378[7:47-8:8]. EchoStar suggests no plausible reason why the inventors, having described the invention conceptually in general terms, would then use the term “object” to limit their claims to embodiments using a particular type of programming language. *Cf. IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1434 (Fed. Cir. 2000) (“It is irrelevant to the claimed invention whether a data block is stored as a line of G- and M-code, in a binary format, or in any other format.”). Any reader skilled in the art would understand that the disclosed concepts could be implemented using a variety of programming languages or techniques.

The district court also permissibly sought guidance from a widely accepted technical dictionary and adopted a general definition of “object” as “a collection of

data and operations.” A151-152. Contrary to EchoStar’s suggestion (Br. 60), nothing in that definition “contradict[s] any definition found in or ascertained by a reading of the patent documents,” *Phillips*, 415 F.3d at 1322-1323. While EchoStar quibbles with where in a list the definition appears and what primary sub-field of use is indicated by the editors’ abbreviations (Br. 60), the court properly selected a general definition appropriate to the context and nature of the claims being construed. That definition is consistent with the intrinsic evidence and likely aided the jury by putting the correct concept in more familiar terms.¹⁸ Its use provides no basis for reversal.

B. The Jury Properly Found That EchoStar’s DVRs Use “Objects”

EchoStar contends (Br. 61-62) that there was no evidence its software contains “collection[s]” of data and operations performing the source, transform, and sink functions. That is not true. When asked whether the EchoStar software he had identified was “a collection of data and operations,” Dr. Gibson explained that it was, because the relevant subroutines were part of the same program and were “able to interact and get access to the data they need to.” A1634-A1635; *see also, e.g.*, A1642 (“Q. What makes it a collection? A. Well, these subroutines

¹⁸ Given EchoStar’s stated criteria, it might prefer the definition listed fifth (rather than tenth) and labeled “C” for “Computer”: “An abstraction of a physical or logical resource.” A8535. But that definition would likely have been less helpful to the jury, and it provides no more support for EchoStar’s proposed narrowing of the claim.

come together to achieve a particular function in each case, and they can share data. So that's a collection of data and operation[s]."). Gibson addressed each object in his testimony. *See* A1629-A1633 (source), A1633-A1637 (transform), A1640-A1643 (sink), A1651-A1654, A1663-A1665 (control). The jury was entitled to credit that testimony, which fully supports the verdict.

EchoStar cannot overcome testimony by a qualified expert that its software has "collection[s]" of data and operations, and a verdict to that effect, by continuing to assert that computer code and data cannot constitute a "collection" unless they appear in the same subroutine or subdirectory and in "encapsulat[ed]" form. *See* ES Br. 31-33, 61-62; *see also, e.g.*, A1692 (Gibson cross). As Gibson testified, a "collection of data and operations" need not be in the same subdirectory any more than a museum's "collection" of Impressionist paintings need all be found in the same room. A1782. The question is whether pieces of code and data interact together to carry out the tasks listed in the claims. A1781, A1634. There is no basis for limiting the claims in a way that would make literal infringement turn on functionally irrelevant differences in how particular programmers construct computer code.

While no more is necessary, the jury also had good grounds for rejecting the countervailing testimony of EchoStar's experts. Dr. Rhyne asserted that EchoStar's products lacked "objects" in a single answer containing virtually no

analysis or explanation. A2696. His opinion rested partly on what EchoStar's own engineers told him. *Id.* And he testified only that EchoStar's products "do not have a collection of procedures and data *that were defined by the programmers.*" *Id.* (emphasis added). Similarly, Dr. Johnson struggled with the relevance of the programmers' "intent," initially asserting that "[y]ou really have to look at the code that is in those files to see if the programmer really intended for them to be an object." A2743; *see also* A2739. On cross-examination she first reversed herself, contending that the programmer's "state of mind really doesn't have anything to do with it." A2789; *id.* ("I don't think I can agree with programmer intent."). Confronted with her direct testimony, she retreated in confusion. A2790 ("Well, if I said that, then yes."). In addition, Johnson acknowledged that she—like Rhyne, A2815, but unlike Dr. Gibson, *see* A1689—did not review all the accused products' source code, or even all the code related to DVR functionality, A2781-A2782. It is hardly surprising that the jury credited Gibson's consistent and sensible application of the software claims to that proffered by these experts. In any event it was entitled to do so. *See* n.15, *supra* (quoting *Streber*, 221 F.3d at 726).

Finally, EchoStar is wrong in asserting (Br. 61-62) that TiVo made no alternative showing under the doctrine of equivalents. Dr. Gibson testified that software written in any language would practice the invention in virtually the same

way. A1638-A1640. He illustrated using the transform object, explaining that in any event EchoStar's DVRs performed the object's storage and retrieval functions in essentially the same way and with the same result. *See* ES Br. 34 (quoting A1639-1640). This testimony was un rebutted. Indeed, EchoStar's Dr. Johnson testified that it is impossible to tell from the machine code actually executed by a computer whether the higher-level source code created by a human programmer was written in an object-oriented language. A2791-A2792. The evidence demonstrating equivalence was independently sufficient to support the verdict.

C. The Jury Properly Found That EchoStar's Software Extracts Video And Audio Data From A Physical Data Source

EchoStar likewise asks this Court (Br. 62-64) to reverse the jury's resolution of conflicting expert testimony regarding whether the source object in EchoStar's DVR software "extracts video and audio data from [a] physical data source." A381[14:59-61]. As EchoStar concedes (Br. 37-38), Dr. Gibson testified that it does. EchoStar disparages that testimony as "conclusory" and unsupported (Br. 63-64), but it was not: Gibson pointed the jury to specific software code that does the extraction, and all the relevant software and system descriptions were themselves admitted into evidence. *See, e.g.*, A1629-A1630; A1632-A1633; A1689-A1690; A7176; A5062 (DP-721 block diagram); A7198, A7201, A7207 (DP-721/921 physical data source); A7991, A8045-A8046 (DP-721 source object). While EchoStar repeatedly characterizes its own evidence on the issue as "without

contradiction” (Br. 37), that evidence certainly did not “indisputably show[]” that Gibson was wrong (Br. 63).¹⁹ Without that sort of showing, there is no basis for this Court to revisit the jury’s resolution of a dispute among the parties’ experts. *See Streber*, 221 F.3d at 726.

EchoStar also complains that Gibson did not address each accused product individually. Br. 38. As with the “assembles” limitation, however (*see* n.15, *supra*), it was entirely appropriate for Gibson to illustrate his analysis by reference to one product and then to tell the jury, as he did, that the same analysis applied to all the products. A1630-A1633. The underlying factual evidence for each product was also before the jury.²⁰ EchoStar did not challenge this approach in its cross-

¹⁹ Indeed, it is EchoStar that is wrong. EchoStar quibbles about whether the “physical data source” in its Broadcom products includes a special-purpose RAM chip (not the main system RAM) that sits, as EchoStar puts it (Br. 37), “next to—but separate from—the Broadcom chip” that is part of the physical data source. (For a helpful view of the relevant circuitry, *see* A5062). As EchoStar acknowledges, however (Br. 38), that RAM chip simply holds parsed data temporarily until the “Ioctl” software command identified by Gibson as part of EchoStar’s source object extracts the data by directing a DMA engine—hardware that performs block memory transfers—on the Broadcom chip to move data from the temporary RAM chip, through the Broadcom chip, along the PCI bus, and into the main system memory connected directly to the CPU. *See* A5062; A1627-A1630; A7991, A8045-A8046 (source code), A7198, A7201, A7207 (Broadcom chip specification). The evidence shows (and certainly permitted the jury to conclude) that the “Ioctl” command, the relevant part of EchoStar’s source object, “extracts video and audio data from said physical data source.”

²⁰ *See, e.g.*, A5119 (DP-522 block diagram); A4913 (DP-522/625 physical data source); A5015-A5016, A5021 (similar); A5121, A5126-A5127 (DP-522/625 source object); A7198, A7201, A7207 (DP-721/921 physical data source); A4509-A4510, A4512, A4518 (similar); A5129, A5179 (DP-921 source object); A5222,

examination, leaving the application of Gibson's testimony to all the products un rebutted, and certainly sufficient to support the verdict.

VII. TiVo's Jury Arguments Regarding The Abandoned Bozicevic Infringement Opinion Provide No Basis For A New Trial

EchoStar is not entitled to a new trial (Br. 64-67) because of jury arguments TiVo's counsel made regarding EchoStar's failure to obtain a non-infringement opinion from outside counsel. The arguments were perfectly proper. In any event, the district court repeatedly instructed the jury that attorney arguments were not evidence; and the issue goes only to willfulness, which is irrelevant in light of the district court's decision, unchallenged here, not to award enhanced damages or attorneys' fees.

EchoStar cites (Br. 44-46, 64-65) statements made by TiVo's counsel during an interim argument at the close of TiVo's case (A2291:9-A2292:11) and during closing argument (A3721:9-18).²¹ Both statements properly invited the jury to

A5230, A5309-A5311, A5323-A5324 (DP-50X physical data source); A5582-5583 (similar); A5771, A5779, A5861-A5863, A5877, A5879-A5880 (similar); A6179-A6180 (similar); A6369-A6374 (DP-50X source object); A4710, A4718 (DP-942 physical data source); A6375, A6379-A6381 (DP-942 source object).

²¹ EchoStar did not object to the statements made in closing, either contemporaneously or in seeking a new trial. See A8241-A8242. Those statements are thus reviewable at most for plain error, as EchoStar's own case shows. See *Novo Nordisk A/S v. Becton Dickenson & Co.*, 304 F.3d 1216, 1220 (Fed. Cir. 2002); see also *United States v. Young*, 470 U.S. 1, 14-16 (1985); *United States v. Chambers*, 922 F.2d 228, 241 (5th Cir. 1991); *United States v. Wicker*, 933 F.2d 284, 291 (5th Cir. 1991) (each discussing plain error).

draw one possible inference from evidence it had heard from two lawyers from the Bozicevic firm, Becking and Cannon: that EchoStar had approached them about an opinion shortly after learning of TiVo's patent; that they repeatedly asked for additional technical information to complete their opinion; and that no opinion was delivered because EchoStar never provided the information. *See* A2203-A2206; A2212-A2213; *see also* A2099-A2104. EchoStar has its own explanation for that sequence of events (Br. 40-42), which it was free to urge on the jury (although it chose to say almost nothing on the subject, *see* A3691-A3694).²² That does not make TiVo's argument improper.

EchoStar contends that "TiVo's counsel spoke *generally* and did not restrict his statements to the Bozicevic firm" (Br. 64), so that the statements made were equivalent to arguing "that EchoStar had never received a written opinion from *any* outside lawyer" (Br. 65). That distorts the record. While EchoStar likes to quote or paraphrase the words "never got a written opinion" in isolation (Br. 2, 3, 44, 50, 64), in context there was never any question that this and similar statements

²² EchoStar's current account of the matter should be read skeptically. For example, it says an internal conclusion of non-infringement was "orally confirmed by" Bozicevic (Br. 44), but Becking and Cannon both denied giving an oral opinion, A2203-A2204, A2212-A2213. EchoStar suggests it "never followed up" with Bozicevic because it was negotiating with TiVo, which did not expressly allege infringement (Br. 41-42), but the in-house counsel who originally requested the opinion swore he did not know why it was never finished (A3630-A3631).

referred to an opinion from Bozicevic. As to that phrase, for example, the preceding and succeeding sentences are clear:

The biggest patent issue that EchoStar ever had, they decided they had to go outside of the company. They went to Mr. Becking and Mr. Cannon, and they asked for outside help, an independent opinion.

And they never got a written opinion. They had asked for a written opinion. Mr. Miller says, well, I got an oral opinion, but Mr. Becking and Mr. Cannon, testifying under oath—you saw them before the break today—they both said, well, he might have misunderstood us, but we never gave him a written opinion; it's not our practice.

* * *

And Mr. Cannon, I believe, said, well, I was trying to be a go-between, trying to get that technical information for a year, more or less, or thereabouts, he said. For a year they were trying to get that information.

Why didn't they?

Because [EchoStar] knew if they gave the lawyers, the independent lawyers, the technical information, the written opinion that they would write would say that there is infringement.

A2291-A2292. The same context applies to every similar statement.²³ Indeed, as EchoStar itself stresses (Br. 65), “the only ‘independent’ lawyers the jury heard

²³ See, e.g., A3720-A3721 (emphasis added) (“But you would think they would have at least gone out and gotten *that* opinion from outside. And they started it. ... Mr. Miller called *these two lawyers* and said, I want an opinion. ... And that’s why they didn’t get an opinion, and that’s why they wouldn’t send the technology to *those* outside lawyers, because they didn’t want *that* opinion in front of you.”); see also A3716:9-18; A3726:1-8.

testimony about were the Bozicevic lawyers.” TiVo’s arguments were fair comment on the evidence the jury heard.

In any event, when EchoStar objected to the statement made in interim argument, the district court noted that it had cautioned the jury “numerous times that statements of attorneys are not evidence.” A2293. Indeed, it had reminded the jury of that point just moments before. A2290. And it did so again in its final instructions. A3554. Those cautions amply impressed on the jury that lawyers on both sides were only commenting on the evidence, and that it must look only to that evidence and decide itself what inferences to draw. *See, e.g., Wilson v. Johns-Manville Sales Corp.*, 810 F.2d 1358, 1362 (5th Cir. 1987) (similar instructions “specifically address and effectively defuse possible prejudice that might have arisen” if jury argument “went beyond proper bounds”).

There is no basis for EchoStar’s argument (Br. 66-67) that because TiVo commented on the significance of EchoStar’s failure to obtain the opinion it requested from Bozicevic, the district court should have allowed EchoStar to introduce different opinions it obtained from a different law firm (Merchant & Gould) after the start of litigation. EchoStar was properly precluded from using those opinions at trial because EchoStar refused to comply with the district court’s discovery rulings relating to them. *See* A5065-A5066. On EchoStar’s petition for mandamus, this Court sustained much of the district court’s discovery rulings, but

concluded that EchoStar was not required to produce uncommunicated attorney work product. *In re EchoStar Comm'ns Corp.*, 448 F.3d 1294, 1298-1299 (Fed. Cir. 2006) (rejecting EchoStar's argument that there was no waiver of attorney-client privilege); *id.* at 1302-1305 (agreeing that work-product protection was waived as to communicated material or material referencing communications, but holding no waiver as to other work product). That partial reversal does not affect the propriety of exclusionary rulings made at the time of trial.²⁴

Finally, if there were error with respect to opinion evidence, it would go only to the issue of willfulness. There is no basis for EchoStar's assertion (Br. 66) that anything in the district court's treatment of willfulness evidence "poison[ed]

²⁴ Despite ample opportunity, EchoStar did not ask the district court to postpone the trial pending disposition of its mandamus petition. It sought a continuance in the middle of trial, but the district court properly rejected that request. A2262-A2264; *see also* A2259-A2260. It is a good thing the trial was not postponed on this ground, because EchoStar has continued to resist producing even the documents required by this Court's opinion. The latest production was made in subpoena-enforcement proceedings in Georgia on May 16, 2007, on specific compulsion after in camera review. *See* A5072-A5080. Review of Judge Duffey's recent orders in those proceedings will give this Court some sense of how EchoStar conducts litigation. *See* A5072-A5073 ("EchoStar's Response to the March 22 Order acknowledges that, after two years of perpetuating the present discovery dispute, and multiple representations by EchoStar that all documents had been produced, certain discoverable documents had not been produced."); A5077 (noting "repeated refusals, or at least reluctance, to give this Court sufficient, clear, and unqualified representations"); A5081-A5084; A5086 (EchoStar's brief "suggests a legal shell game, which ... EchoStar may be playing without a pea."). Similar conduct was one alternative basis for excluding the Merchant & Gould opinions from the proceedings below even without regard to the failure to produce uncommunicated work product. *See* A8284-A8285.

EchoStar's entire case." And because the district court decided not to enhance damages or award attorneys' fees, A182, the willfulness verdict is ultimately beside the point. Thus, even if there had been error with respect to the willfulness evidence (which there was not), there would be no ground for ordering a new trial.

VIII. The District Court Did Not Impermissibly Limit Dr. Polish's Testimony

Nor is EchoStar entitled to a new trial because the district court ruled that the testimony of EchoStar's invalidity expert, Dr. Polish, "should be limited to the Court's claim construction and the prior art." ES Br. 47 (quoting A2965).

EchoStar first argues (Br. 68) that TiVo's infringement expert, Dr. Gibson, testified about the "meaning" of claim terms. It gives no record citation. Gibson testified about how the court's claim constructions applied to EchoStar's products. *E.g.*, A1535-A1536; A1556-A1559. EchoStar did not object.

Polish's invalidity testimony should have been "a comparison of the construed claims to the prior art." *Helifix Ltd. v. Blok-Lok, Ltd.*, 208 F.3d 1339, 1346 (Fed. Cir. 2000). Instead, EchoStar repeatedly sought to focus it on Gibson's infringement analysis. The court properly sustained several objections. *See* A2964-A2965; A3009-A3010; A3054; A3058.

For example, the court struck EchoStar's question whether a prior-art device had "all of the features of a media switch as Dr. Gibson has defined it." A2993. Such questions suggested that Gibson had departed from the court's constructions,

or that construction was a matter for the jury to decide based on conflicting expert views. But only the court “defined” claims. *See also* A2977-A2978, A3007-A3008. Likewise, it was improper for EchoStar to pursue questioning that, by focusing on Gibson’s infringement testimony, asked the jury to compare the prior art to EchoStar’s products, rather than to the construed claims. *See Tate Access Floors, Inc. v. Interface Architectural Res., Inc.*, 279 F.3d 1357, 1367 (Fed. Cir. 2002) (“[A]ccused infringers are not free to flout the requirement of proving invalidity by clear and convincing evidence by asserting a ‘practicing prior art’ defense to literal infringement under the less stringent preponderance of the evidence standard.”).

The court did not prevent Polish from applying the claims to the prior art as TiVo’s experts applied them to EchoStar’s products. *See* ES Br. 67. Nothing, for example, precluded Polish from testifying that the prior art disclosed a frame index, and then opining that the asserted claims were anticipated or obvious. In fact, he did just that. A3016-A3019. Moreover, the court allowed Polish to testify that he read Gibson’s report and deposition testimony; heard or read Gibson’s trial testimony; understood Gibson’s “allegations of infringement”; and, “in reviewing [his] analysis of the validity of the claims, look[ed] to how TiVo applied its allegations through Dr. Gibson to the EchoStar devices.” A2975-A2976.

EchoStar argues (Br. 67) that the district court “required the jury to construe critical claim terms,” and “EchoStar therefore should have been allowed to explain to the jury that the necessary consequence of Dr. Gibson’s infringement analysis was that the claims would be invalid.” Its premise is false. *See* Part II, *supra*. In any event, rightly or wrongly, EchoStar repeatedly made this argument. *See* A1067-A1068 (opening) (“TiVo is trying to ... move out the boundaries of what the [PTO] gave them. ... [I]f you let them do that, then these claims also read on all of the other DVRs that were out in the marketplace before TiVo even existed as a company[.]”); A2878-A2879 (interim argument) (“TiVo has a patent that EchoStar does not infringe, and that patent is valid. ... [I]n order to say that we infringe, they have to [move out] the boundaries of their invention, as set by the claim[.]”); A3688-A3689 (closing, mentioning Gibson three times).

Finally, EchoStar argues for a new trial on infringement because TiVo argued to the jury that Polish “disagreed with EchoStar and its infringement experts” (Br. 68; *see* Br. 4, 48). EchoStar made no contemporaneous objection, and review is only for plain error. *See* n.21, *supra*. There was no error at all, because TiVo’s arguments were fair.

For example, Polish discussed the Krause ’948 patent, disclosing a system for detecting the start of video frames and logically separating them by placing information about their location into a table. A3055-A3056. On cross-

examination, TiVo asked whether, in Polish's opinion, that system met the Media Switch limitation of the Barton patent, including its "is separated" language. A3056-A3057. Polish categorically answered "Yes." A3057 ("There is no physical separation necessarily.").

That answer was not compelled by any trial ruling. If Dr. Polish did not believe it, he should not have said it. While EchoStar is understandably unhappy with its expert's testimony, it cannot use TiVo's recounting of the testimony in summation to manufacture a basis for retrial.

IX. This Court Should Reinstate The District Court's Injunction And Remand For Computation Of Additional Damages

EchoStar does not challenge either the damages awarded to TiVo or the district court's decision to enter an injunction, which rests on detailed findings as to the grave harm that EchoStar's infringement has caused and continues to cause as TiVo strives to commercialize and profit from its invention. A27-A29. The arguments EchoStar makes fail to undermine the jury's verdict on any point; and infringement of *any one* of the asserted claims is independently sufficient to support the judgment below. In addition, because this Court stayed the district court's injunction, TiVo has continued to sustain damages during this appeal. As EchoStar recognized in seeking a stay, TiVo is entitled to recover those additional damages after prevailing on appeal. *See* A8432.

After years of infringement and litigation, this Court should reject EchoStar's strained and implausible analysis of the Barton patent and affirm the overdue enforcement of TiVo's rights. As the pioneer of consumer DVR technology, TiVo should finally be permitted to protect and develop the market it created.

CONCLUSION

The district court's judgment should be affirmed. This Court's stay should be lifted, and the case should be remanded for computation of additional damages.

Respectfully submitted,

s/ Edward C. DuMont

Dated: May 30, 2007

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CERTIFICATE OF SERVICE

I hereby certify that on this 30th day of May, 2007, I caused two copies of the foregoing Brief for TiVo Inc. to be hand-delivered to:

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CERTIFICATE OF COMPLIANCE

I hereby certify that the foregoing Brief for TiVo Inc. complies with the type-volume limitation of Federal Rule of Appellate Procedure 32(a)(7)(B) in that, according to the word-count function of the word-processing program in which it was prepared (Microsoft Word), it contains 13,997 words, excluding the parts exempted by Federal Rule 32(a)(7)(B)(iii) and Circuit Rule 32(b).

s/ Daniel S. Volchok

Daniel S. Volchok

TiVo v. EchoStar (No. 2006-1574): Index to Appendix Materials

Numbers not used	A4000-A4029
'389 Patent Prosecution History File (TiVo Ex. 240).....	A4030-A4348
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TiVo's Motion for Entry of Judgment and Permanent Injunction, dated May 22, 2006 (Docket No. 733)	A4349-A4378
EchoStar's [Rule 50(a)] Motion for Judgment as a Matter of Law, dated April 11, 2006 (Docket No. 681)	A4379-A4401
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EchoStar's Rule 50(b) Renewed Motion for Judgment as a Matter of Law, dated July 24, 2006 (Docket No. 764).....	A4402-A4438
Gibson Trial Graphic No. 30: EchoStar's DVRs Accept Signals Based on Numerous Standards	A4439
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EchoStar's Opposition to TiVo's Motion for Partial Summary Judgment of Infringement of Claims 1 and 32, dated September 6, 2005 (Docket No. 261)	A4440-A4477
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Gibson Trial Graphic Nos. 45-46, 49-51	A4478-A4482
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Broadcom Preliminary Data Sheet, BCM7021/31RC: "High Definition Video PCI-Client Subsystem with Graphics" (TiVo Ex. 481)	A4483-A4676
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Product Requirements Document for Dish Player DVR-522 Digital Satellite Receiver (TiVo Ex. 1870).....	A5097-A5120
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ST Preliminary Data Sheet: “Trick Modes with HDD and STi5508 and STi5518” (TiVo Ex. 9).....	A6383-A6388
User’s Guide for EchoStar 501/508 DVRs (TiVo Ex. 536)	A6389-A6551
DishPVR Satellite System User’s Guide (TiVo Ex. 538).....	A6552-A6699

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Product Requirements Document for the DishPro-501 Digital
Satellite Receiver (TiVo Ex. 1869)..... A6700-A6720

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EchoStar source code (TiVo Ex. 157) A6721-A6791

CONFIDENTIAL

EchoStar source code (TiVo Ex. 511) A6792-A6811

CONFIDENTIAL

EchoStar source code (TiVo Ex. 524) A6812-A6819

CONFIDENTIAL

EchoStar source code (TiVo Ex. 156) A6820-A6835

CONFIDENTIAL

EchoStar source code (TiVo Ex. 524) A6836-A6843

Excerpts from *Using Borland C++ 4.5* (TiVo Ex. 1875) A6844-A6848

Gibson Trial Graphic No. 61 (DD169): Frame Index Enables

Trickplay - Fast Forward Example A6849

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Reexam

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Commissioner for Patents
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Art Unit 3992

Attn: Mail Stop Ex Parte Reexam

Re: Reexamination of U.S. Patent No. 6,233,389
Reexam Control No. 90/007,750; Filed: October 17, 2005
For: **Multimedia Time Warping System**
Inventors: BARTON *et al.*
Our Ref: 2513.001REX0

Sir:

Transmitted herewith for appropriate action are the following documents:

1. Supplemental Information Disclosure Statement;
2. Notification of Concurrent Proceedings Under 37 C.F.R. §1.565;
3. Certification of Service on Third Party Requestor of Supplemental Information Disclosure Statement and Notification of Concurrent Proceedings;
4. One (1) sheet of Form PTO/SB/08B listing four (4) documents;
5. Copies of documents NPL1-NPL4; and
6. One (1) return postcard.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

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Enclosures

684858_1.DOC

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/007,750	10/17/2005	6233389	2513.001REX0	4653

26111 7590 07/30/2007

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EXAMINER

ART UNIT PAPER NUMBER

DATE MAILED: 07/30/2007

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



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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO 90/007750
PATENT NO. 6,233,389
ART UNI 3992

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

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

Office Action in Ex Parte Reexamination	Control No. 90/007,750	Patent Under Reexamination 6233389	
	Examiner DAVID E. HARVEY	Art Unit 3992	

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

- a Responsive to the communication(s) filed on 09 March 2007. b This action is made FINAL.
c A statement under 37 CFR 1.530 has not been received from the patent owner.

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

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

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

Part II SUMMARY OF ACTION

- 1a. Claims 1-61 are subject to reexamination.
1b. Claims _____ are not subject to reexamination.
2. Claims _____ have been canceled in the present reexamination proceeding.
3. Claims 2,6-14, 19,26-31,33,37-45,50 and 56-61 are patentable and/or confirmed.
4. Claims 1, 3-5, 15-18, 20-25, 32, 34-36, 46-49, and 51-55 are rejected.
5. Claims _____ are objected to.
6. The drawings, filed on _____ are acceptable.
7. The proposed drawing correction, filed on _____ has been (7a) approved (7b) disapproved.
8. Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some* c) None of the certified copies have
1 been received.
2 not been received.
3 been filed in Application No. _____ .
4 been filed in reexamination Control No. _____
5 been received by the International Bureau in PCT application No. _____
* See the attached detailed Office action for a list of the certified copies not received.
9. Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. Other: _____

cc: Requester (if third party requester)

Art Unit: 3992

X

1. As to lines 8-18 on page 16 of the response filed 7/17/2006:

1) During the interview of 6/21/2006, the examiner agreed with the Patent Owner that the prior art of record fails to show or fairly suggest the system configuration illustrated in figure 1 of instant U.S. Patent #6,233,389 and, more specifically, the illustrated "Media Switch" (@ 102) for performing the functions described the instant specification; e.g.,

"A unique aspect of the Media Switch is the ability to handle high data rates effectively and inexpensively. It performs the functions of taking video and audio data in, sending video and audio data out, sending video and audio data to disk, and extracting video and audio data from the disk on a low cost platform. Generally, the Media Switch runs asynchronously and autonomously with the microprocessor CPU, using its DMA capabilities to move large quantities of information with minimal intervention by the CPU."
(Emphasis added) [Lines 16-25 of column 6]

The examiner, however, indicated that he did not see how/where this "distinguishing" feature was positively set forth via the recitations of independent claim 1. That is, with respect to the configuration and operation of the recited "Media Switch", independent claim 1 only recites a step of:

"[P]roviding a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components"

Broadly interpreted, this recitation only requires that a "Media Switch" be provided wherein the media switch "parses" an MPEG data stream that was obtained via the tuning/conversion of an "accepted" television (TV) Broadcast signals. Significantly, this recitation does not specify how and by what means/step, "said MPEG stream is separated into its video and audio components," as set forth in this recitation. Thus, it is maintained that this recitation only requires:

- a) The MPEG stream to be "parsed" by the media switch; and
- b) The MPEG stream to be "separated" into its audio and video components in some an unspecified manner (not necessarily by the parsing).¹

2) Further, subsequent to the recited "parsing" step cited above, claim 1 recites a step of:

"[S]toring said video and audio components on a storage device."

Broadly interpreted, it is maintained that this recitation only requires the video and audio components that are stored to be *the same as* the audio and video components that are separated. This recitation does not require the storage device to store the audio and

¹ In related litigation, it appears that "separated" was itself broadly construed as being inclusive of a "logical" separation of the components and, as such, was interpreted as not being limited to a "physical" separation of the components.

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video components in their "separated" state. This distinction is significant with respect to the section 103 issues that follow. Specifically:

a) **As disclosed** in the specification of the instant '389 Patent, the audio and video components of the "specific program" pass through the "media switch" (@102) on their way to the storage device (@105) [note figure 1];

b) **As claimed** in claim 1, however, all that is required is:

1. For the media switch to "parse" the MPEG data stream of the specific program;
2. For said MPEG data stream to be separated into its video and audio components; and
3. For the audio and video components of the MPEG data stream to be stored on the storage device.

3) It is noted that "prior art" recording systems were known to have utilized the MPEG format to compress the TV signals that were being stored in order to better utilize the storage capacity of the storage medium. However, the "prior art" of record does not appear to show or suggest a recording system in which an incoming MPEG "element" data stream is parsed and separated into its audio and video components for recording/storage thereof. That is, when recording MPEG element data streams, it appears that the audio and video components were conventionally stored together, i.e., in their existing interleaved MPEG element data stream format, in order to maintain synchronization between the audio and video components during playback.

"The MPEG standard requires that sound be recorded simultaneously with video data, and the video and audio data are interleaved in a single file to attempt to maintain the video and audio synchronized during playback" [Note lines 15-22 of column 3 in US Patent #5,642,171 to Baumgartner et al]

In contrast, **as disclosed**, the invention of instant U.S. Patent 6,233,389 as does not appear to store incoming element MPEG data stream, as is, in its existing MPEG format:

"A binary search can be performed on a stored file to index into a stream. Each stream is stored as a sequence of fixed-size segments enabling fast binary searches because of the uniform time stamping. If the user wants to start in the middle of the program, the system performs a binary search of the stored segments until it finds the appropriate spot, obtaining the desired results with a minimal amount of information. ***If the signal were instead stored as an MPEG stream, it would be necessary to linearly parse the stream from the beginning to find the desired location***" (Emphasis added).

Instead, the MPEG element data stream is parsed, separated into its audio and video components, and then indexed, for recording thereof. However, for reasons addressed in part "2)" above, the examiner maintains the limitations of claim 1 fail to positively set forth this "distinguishing" feature.

2. **"Prior Art" Recording/Playback (illustrated):**

1) Figures 1A and 1B of U.S. Patent #5,563,714 to Inoue et al. are cited for their illustration of a conventional digital TV signal receiving/recording/playback system [Note the figure on the cover page of said patent]. As illustrated, the system comprises-

A) A tuner (@ 1), having an input thereto, for receiving/"**accepting**" RF TV signal transmissions wherein each RF TV signal transmission is **based on different standards**; e.g., is based on a transmission signal standard, various MPEG formatting standards², etc, ...

B) An **Input Section** (i.e., the front end circuitry @ 1-3) for:

1) "**Tuning**" (@ 1) the system to select the specific one of the RF TV signal transmissions that is to be received; and

2) "**Converting**" (@ 1-3) the selected RF TV signal transmission into and MPEG formatted transport stream;

C) A "**Media Demultiplexer/Switch**" (@ 4) for demultiplexing the MPEG formatted transport stream and for generating an MPEG formatted element stream corresponding to a specific TV program therefrom, wherein:

1) As evidenced via Figures 1 and 4 of the Fujii et al. publication titled, "Implementation of MPEG Transport Demultiplexer with a RISC-Based Microcontroller," said switch functions to **parse** the received MPEG transport stream (e.g., "TS input" of figure 1) whereby:

a) The **audio and video components** of said specific TV program are **separated** from the transport stream into **separate** audio and video component data streams (e.g., "AUDIO" and "VIDEO" of figure 1); and

b) The separate audio and video data streams are then combined/mixed together to generate said MPEG formatted element stream (e.g., "ES output" of figure 1).

D) A "**storage device**" (@ 14 and 18) for storing the MPEG formatted element stream corresponding to the specific TV program and, more specifically, "**for storing said video and audio components**" thereof;

E) An "**Output Section**" (e.g., represented @ 15 and 19) for reproducing an MPEG formatted element stream from the storage device wherein the stored audio and video components corresponding thereto are **extracted** from the storage medium and **assembled** into said reproduced MPEG formatted element stream; and

² E.g., Note lines 37-39 of column 3 in instant US Patent #6,233,389.

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F) An MPEG "**Decoder**" (@ 9) for receiving the MPEG formatted element streams sent to it via the "Output Section," and for generating a TV signal output therefrom for display on a TV receiver (not shown); and

G) A remote control (@ 28) for providing **control commands from the user** which, when accepted by the system (@ 27 and 23), control the flow of MPEG signals through the system.

As was addressed in paragraph 1 of the Office action mailed 5/25/2006³, claim 1 of the instant patent differs from this conventional system configuration in *at least* claim 1 requires:

A) First, the **tuning** of TV signals to "a specific program";

B) Next, the **conversion** of "said specific program" to an MPEG formatted stream; and

C) Finally, the **parsing** of "said MPEG formatted stream" via a provided "Media Switch".

That is, with respect to the prior art systems discussed above, the MPEG demultiplexer (i.e., a "media switch") functions to parse the MPEG formatted "transport" stream to obtain an MPEG formatted "element" data stream corresponding to said "specific program." Thus, in the case of this prior art, "parsing" occurs within the "tuning" and "conversion" that is performed to obtain the MPEG formatted data stream of a "specific program." More specifically, this prior art does not parse an MPEG formatted stream "of a specific program" as is recited/required in claim 1, rather this prior art parses an MPEG formatted *transport* stream having many programs to separate the MPEG formatted *element* data stream of a "specific program" therefrom.

³ i.e., part "A)" (@ page 2).

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3. The significance of Greer et al. [US # 6,788,882] and Cobbley et al. [US #5,614,940] as they relate to the "parsing" issue discussed above in part "2)" of paragraph "1." of this Office action (@ page 2):

A) As addressed in paragraph 1 of the Office action mailed 5/21/2006⁴, Greer et al. is significant to the "parsing" issue discussed above because it provides an explanation as to why one of ordinary skill in the art would have been "motivated" to modify conventional recording/playback systems with a "Media Switch" for parsing an MPEG formatted "element" data stream, pertaining to a "specific" TV program, as it is being stored/recorded. In this regard, Greer et al. teaches that it was desirable to enable digital TV recording/playback systems to perform "computerized content searches" on the TV programming stored therein so as to allow a user to find desired TV program files/content for playback [Note lines 21-37 of column 11]. To provide this capability, Greer et al. describes:

- 1) Feeding the audio signal component "of the broadcast signals" to a text generating device, such as speech recognition device, to convert the audio signal into a text format; and
- 2) Then indexing the generated text data into a full-text database *via software*, whereby the database indexes "words" of the generated text to specific TV program to specific TV program files, channels, times, etc,...

When "the broadcast signals" being received and recorded by the Greer et al. system arrive in the compressed digital signal format of MPEG II, i.e., as set forth in Greer et al. (e.g., lines 19-25 and 32-37 of column 6), some type of "media switch" would be required by the system for parsing and separating the audio component from the MPEG formatted data stream. That is, as acknowledged by the Patent Owner, the audio component of the incoming MPEG element signal cannot be converted to text and indexed, as required in the Greer et al. system, without being decompressed; e.g.,

"As pointed out by the Examiner and as is well-known to persons of skill in the art, the content-based analysis of Greer must be performed on an uncompressed signal"
[SEE: the last line on page 18 and the first two lines on page 19 of the arguments filed 7/17/2006].

As appears to be acknowledged within the specification of the instant patent, this decompression of the audio component of the MPEG stream requires the audio component to be parsed and separated from the MPEG stream via some type of demultiplexer.

"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.***

⁴ i.e., Section "3)" of part "B)" (@ page 4)

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Thus, the desire to provide a digital video recorder system with the "computerized content searching" capability taught by Greer et al. would have motivated one skilled in the art to modify the system with a demultiplexer (i.e., a "media switch") for "parsing" and "separating" the MPEG data "element" stream to obtain the decompressed audio signal component that is, as admitted by the patent owner, required for content-based analysis thereon.

"As pointed out by the Examiner and as is well-known to persons of skill in the art, the content-based analysis of Greer must be performed on an uncompressed signal"
[SEE: the last line on page 18 and the first two lines on page 19 of the arguments filed 7/17/2006].

B) As addressed in paragraph 1 of the Office action mailed 5/21/2006⁵, Cobbley is significant to said "parsing" because it evidences that it was desirable to utilize the video component of the "broadcast signal," in addition to the audio component (as described in Greer et al.), to obtain the indexing information used to perform the type of computerized content searches described in Greer et al. [note lines 15-20 of column 6]. That is, Cobbley provides the motivation for parsing and separating the video component from the MPEG stream for content-based analysis "too" (i.e., in addition to the audio component).

⁵ i.e., Section "4)" of part "B)" (@ page 4)

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4. Rejections Under 35 USC 103:

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

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

5. Claims 1 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940], for the same reasons that were set forth in paragraph 3 of the Office action mailed 5/25/2006.⁶

A. Preface:

Paragraph 1 of this Office action provides a discussion as to how specific ones of the recitations of claim 1 have been interpreted/construed by the instant examiner.

B. The showing of Greer et al. (summarized):

As shown in figures 1 and 2, Greer et al. describes a system for selectively receiving (e.g., @ 150a-n or 250a-n) and selectively recording (@ 120a) MPEG data stream transmissions. However, unlike the conventional MPEG recording systems discussed in paragraph 2 of this Office action, it is maintained that Greer et al. describes an embodiment of invention which requires circuitry for "parsing and separating" media components of the MPEG element stream (i.e. the audio and/or captioning components thereof) prior to storage on the recording medium (i.e., on the recording side of the system) [SEE paragraph 3 of this Office action] Specifically, it is the examiner's position that Greer et al. describes a system/process in which the audio and/or captioning media content of the incoming MPEG element stream is automatically analyzed and indexed to a data base prior to storage thereby enabling computer-based content searches to be performed on the stored MPEG programming [note lines 20-38 of column 11].

C. The showing of Greer et al. (as applied against the limitations of claim 1):

1. The preamble of claim 1 recites;

"A process for the simultaneous storage and play back of multimedia data."

Greer et al. describes a system that allows TV programming to be continuously received and stored and, at the same time (simultaneously), allows portions of said continuously stored TV programming to be played back and displayed [Note: Lines 11-16 of column2; Lines 63-67 of column 1; and lines 1-5 of column 2].

⁶ U.S. Patent #5,614,940 has been included within the heading of the rejection in order to correct an obvious typographical error [e.g., See the Office action mailed 5/25/2006 at: part "4)" on page 4; the paragraph which begins in the last 12 lines on page 6; and footnote "1." at the bottom of page 15].

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2. Lines 3-7 of Claim 1 recite:

"[A]ccepting television (TV) broadcast signals, wherein said TV signals are *based on* a multitude of standards, including, but not limited to, National Television Standards Committee (NTSC) broadcast, PAL broadcast, satellite transmission, DSS, DBS, or ATSC." (Emphasis added)

The Greer et al. system is described as receiving (i.e. "accepting") TV signals from different sources (i.e., elements 160a to 160c of figure 2), wherein the received signals conform to different transmission signal standards which are themselves "based on" different signal formatting standards [e.g., Note: lines 10-15 of column 4; lines 8-18 of column 7; and claim 16].⁷

3. Lines 8-12 of claim 1 recite:

"[T]uning said TV signals to a specific program"

and

"[P]roviding at least one Input Section, wherein said Input Section converts said specific program to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation;

One of the tuner cards or boxes (e.g. @ 150a-150n of figure 1 and @ 250a-250n of figure 2), corresponding to the recited "input Section," includes the tuning circuitry and necessary processing circuitry that is required to recover the signal of a specific program and "convert" it into a compressed data stream which is, in the preferred embodiment, a compressed MPEG formatted data stream [Note: lines 32-37 of column 6; lines 9-14 of column 7; lines 26-33 of column 7; and lines 50-57 of column 7].⁸

4. Lines 13-15 of claim 1 recites:

"[P]roviding a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components."

While not shown in the figures, Greer et al. describes an embodiment of the system that permits computerized content searches to be performed on the

⁷ As addressed in the last Office action, the examiner's interpretation of this recitation seems consistent with the way in which this recitation was interpreted in related litigation

⁸ The specification of instant US Patent #6,233,389 describes the recited "tuning" as being performed by the "Input Section" [Lines 46-49 of column 3]. Thus the application of the Greer et al. prior art against the recitation in line 8-12 of claim 1 is consistent with the interpretation that is provided via said instant specification.

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stored programming. To accomplish this, Greer et al. describes a process in which:

- a) The "**audio portion**" of "**the broadcast signal**" is fed to an optional speech recognition capability which converts said audio portion into text; and
- b) Said generated text is then indexed into a full-text database to provide an index for linking words of the text (or a subsets thereof) to the channel file and time recorded pertaining thereto [SEE: lines 19-38 of column 11].

In this described embodiment, when the "broadcast signal" being received and analyzed comprises a compressed digital format [Note: lines 31-37 of column 6; and lines 9-14 of column 7], i.e., when the broadcast signal arrives as an MPEG formatted data stream [Note: 14-25 of column 6, lines 32-37 of column 2; Lines 51-64 of column 7], the Greer et al. system requires some type of demultiplexing circuitry for "parsing" the received MPEG stream to separate the audio component in order for it to be converted to text and analyzed in the described manner. Specifically, it is impossible to analyze the audio portion of an MPEG data stream without decompressing it first. Decompression requires a demultiplexer (i.e., a "media switch") for parsing and separating the audio component from the stream so that it can be decompressed.

While Greer et al. only describes the indexing the audio component of the broadcast signals to the database, it was well-known in the computerized content-base search/retrieval art to have indexed the video component too; i.e., such being evidenced in lines 18-20 in column 6 of Cobbley et al. As set forth in Cobbley et al., the indexing of both the audio and video component advantageously permitted the user to:

"[T]o select only those stories they think will interest them, and jump over certain stories if they are not of interest, or repeat them if they are especially interesting."
[col. 11, lines 48-50].

As such, it would have been obvious to one of ordinary skill in the art to have modified the system disclosed by Greer et al. with circuitry for automatically analyzing and indexing the video content of the MPEG formatted broadcast signals too, thereby desirably enabling the user to search the stored programming based on both video and audio content. The motivation for this modification being the ability to better define search strategies to locate desired programming [e.g., to select only those stories that interest the user, to jump over those stories which are not of interest, and/or repeat those stories that are especially interesting to the user as was taught in lines 48-50 in column 11 of Cobbley et al.].

5. Lines 16 and 17 of claim 1 recite:

"[S]toring said video and audio components on a storage device."

Greer et al. clearly show and describe such a storage device [e.g., @ 120b of figure 1].

6. Lines 18-24 of claim 1 recite:

"[P]roviding at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;

wherein said Output Section assembles said video and audio components into an MPEG stream;

wherein said Output Section sends said MPEG stream to a decoder;

The system described by Greer et al includes circuitry, i.e., an "output section," for:

a) Obtaining/"extracting" the stored MPEG components that are representative of the TV programming to be displayed; and

b) "Assembling" the obtained data back into an MPEG formatted data stream, e.g., packet by packet, whereby the assembled data stream is suitable for decoding by an MPEG decoder.

[Note: lines 42-55 of column 15];

7. Lines 25-28 of Claim 1 recite:

"[W]herein said decoder converts said MPEG stream into TV output signals; wherein said decoder delivers said TV output signals to a TV receiver"

The MPEG decoder in Greer et al operated accordingly [e.g., Lines 48-52 of column 15; element 180 of figure 1, etc...]

D. The recitations of claim 32 correspond to those of claim 1 and, therefore, claim 32 is rejected for the same reasons that are set forth above for claim 1.

With respect to the arguments filed 7/17/2006:

1) In the last line on page 18 and the first two lines on page 19 of the arguments filed 7/17/2006, the Patent Owner acknowledges the fact that the content-based analysis

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described in Greer et al. must be performed on an uncompressed audio signal component of the programming:

"As pointed out by the Examiner and as is well-known to persons of skill in the art, the content-based analysis of Greer must be performed on an uncompressed signal"

This acknowledgment appears, likewise, to be an implicit acknowledgment that some type of "media switch" (i.e., a demultiplexer) is required in the Greer et al. system for "parsing" the received programming - at least when said received programming is in the compressed MPEG signal format - to extract the audio component from the MPEG signal stream for the content-based analysis described therein to be performed.

2) As argued by the Patent Owner, Greer et al. does not explicitly describe where, within the described system/processing, the content-based analysis of the audio signal component is to be performed [e.g., note the last two lines on page 19 of the arguments filed 7/17/2006]. However, Greer et al. does explicitly state that said content-based analysis is to be performed by feeding "the audio portion of the broadcast signal" into an optional speech recognition capability [See: lines 23-26 of column 11]. The plain meaning of this statement clearly suggests, if not indicates, that the content-based analysis described in Greer et al. was to be performed on the components of the "broadcast signals" and, as such, on the signals as they are received and stored. The examiner maintains that this interpretation also makes sense when considered in the context of the Greer et al. disclosure. For example:

a) The Greer et al. disclosure is directed to Personal Computer implemented Digital Video Recorder (DVR) wherein the PC is arranged to accepted a plurality of internally mounted Set Top Box computer cards (figure 1) or, alternatively, to be connected externally to a plurality of Set Top Boxes (figure 2). In either configuration, it would be readily apparent to one of ordinary skill in the art that the described "Computerized Content Search" feature of the Greer et al. system, (e.g., note lines 19-38 of column 11), was to be performed by the Personal Computer as the label "**Computerized** Content Search" clearly indicates. Specifically, the examiner takes the position that one skilled in the art would have understood that it is in fact the PC/Computer of Greer et al. system which provides the "Computerized Content Search" feature being that no other computer is described;

b) If one were to perform the content-based analysis on the output side of the Greer et al. system, i.e., an alternative embodiment proposed by the Patent Owner [note line 13-18 on page 19 of the arguments filed 7/17/2006], then one would have to continuously playback and view the recorded program content from the of the storage device in order to acquire/maintain the required indexed database that is used for performing the computerized content based searches. Such a process, if deemed plausible, would obviously have been highly inconvenient to the user and would have placed a heavy burden on both the storage device and the PC.

3) The examiner disagrees with the Patent Owner's allegation that the Examiner's statements made with respect to the Cobbley et al. patent also apply to the Greer et al. [note lines 7-12 on page 19 of the arguments filed 7/17/2066]. In this regard, the

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following is noted:

a) Unlike Cobbley, Greer et al. describes a system in which the "broadcast signals" being received and recorded are already in a compressed MPEG signal format which means, as acknowledged by the Patent Owner, that these received MPEG data streams must first be parsed and decompressed before performing the described content-based analysis thereon; i.e.,

"As pointed out by the Examiner and as is well-known to persons of skill in the art, the content-based analysis of Greer must be performed on an uncompressed signal" [SEE: the last line on page 18 and the first two lines on page 19 of the arguments filed 7/17/2006].

Hence, as described in the Greer et al. patent, the Greer et al. system already includes/requires MPEG decompression circuitry (whereas, in contrast, the Cobbley system/disclosure did not). That is, MPEG decompression circuitry is unnecessary in Cobbley system as described, whereas it is required in Greer et al. system as described.

b) Because the MPEG decompression circuitry is necessarily present in Greer et al. it is not "unlikely" that one would compress received TV signals when in analog format and then decompress them for content based analysis - as was argued by the Examiner to be the case with respect to Cobbley system. Indeed, compressing the analog signals prior to the content-based analysis in Greer et al. would have been advantageous for at least the following reasons:

1. It would have simplified the processing performed by the PC in that it would have converted all incoming signals to the PC into that same MPEG signal format thereby allowing all received signals to be processed by the PC in an identical manner; and
2. It would have eliminated the need of providing a separate PC/Computer within in each Set Top Box unit for performing the "computerized" content-based search; i.e., the illustrated PC itself would perform the analysis on all the incoming signals [which, in fact, appears to be the preferred embodiment for reasons already discussed above].

c) Further, such a configuration is not disadvantageous for the reasons previously described with respect to Cobbley; i.e.,

1. It would not have required MPEG decoding circuitry to be "added" to the system, as it would in Cobbley, because such MPEG decoding circuitry was already necessary/required/present in Greer et al. (i.e., feeding compressed analog signals to an existing decoder does not add any decoding circuitry to the system).

6. Claims 3 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:

In Greer et al., the user inputs "commands" to control which signals are extracted from storage and displayed [note lines 48-56 of column 8].

7. Claims 4 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:

In Greer et al., the user inputs "commands" to control which signals are extracted from storage and displayed [note lines 48-56 of column 8]. The user selections create "custom" program output sequences.

8. Claims 5 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:

In Greer et al., the system could not continuously store programming, and also permit access to the recorded programming, if storage and retrieval did not occur simultaneously [note lines 6-16 of column 2].

9. Claims 15 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:

The signal in Greer et al. includes EPG data which, by definition, identifies program schedules and therefor the starting and ending of the TV programming.

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10. Claims 16, 17, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:

The examiner notes that the caption data in Greer et al. is searched to find programming of interest and, implicitly, the location thereof (i.e., starting and ending locations) [note lines 25-30 of column 11].

11. Claims 18 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:

Note bus "140" of figure 1.

12. Claims 20, 21, 23, 51, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:

While Greer et al. does not specify the specific structure used to parse and separate the audio signal from the MPEG stream such parsing circuitry, as noted in paragraph 1 above, was conventionally performed by MPEG stream demultiplexing hardware. It would have been obvious to have utilized a conventional MPEG stream demultiplexer to provide the required "parsing and separation" of the audio and video components in the modified system of Greer et al being that is the conventional purpose of such circuitry. The demultiplexer would necessarily provide the separated components to memory and the CPU for the required content-based analysis.

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- 13. Claims 22 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:**

While Greer et al. does illustrate a DMA controller in figure 1, it would have been obvious to one skilled in the art to provide such circuitry to remove the burden of receiving and outputting data from the CPU. Given the fact that the system processes video signals at real-time video rates, the processing power of the CPU would clearly have been pressed to its limits. In implementing the system, one skilled in the art would have been forced to look for ways to conserve the processing power of the CPU. The provision a DMA controller is a conventional and obvious way of providing such conservation.

- 14. Claims 24 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 1 and 32 above. Further, the following is noted:**

Note elements 120a and 120b of figure 1 in Greer et al. [e.g., lines 49-65 of column 6]. Further, in view that the system described by Greer et al. provides a standard analog TV signal output, attaching a standard VCR/VTR to the output thereof, i.e., thereby desirably enabling one to obtain a transportable cassette/copy of the TV program being displayed, would have been obvious.

- 15. Claims 25 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greer et al. [US Patent #6,788,882] in view of Cobbley [US Patent #5,614,940] for the same reason that was set forth for claims 24 and 54 above. Further, the following is noted:**

The system described by Greer et al. necessarily includes the circuitry needed to "queue" up the programming in storage that is reproduced/played; i.e., the system must include circuitry for providing required functions.

16. "PRIOR ART" CITED BY THE EXAMINER:

a) U.S. Patent #5,729,741 to Liaguno et al.:

The Liaguno et al. patent has been cited for its showing of "indexing" within a content-based search environment.

b) U.S. Patent #6,516,467 to Schindler et al.:

The Schindler et al. patent has been cited for its showing of "indexing" within a content-based search environment (figure 8).

17. "PRIOR ART" CITED BY THE PATENT OWNER:

The Japanese Patent Documents cited on the IDS filed 6/16/2006 were not considered because neither a translation nor a statement of relevance was provided. It is noted that the English abstracts pertaining thereto, also cited in this IDS, were considered.

The documents cited on the IDS filed 6/8/2007 were reviewed but were not "considered" because they do not constitute prior art patents and printed publications.

18. STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

The following is an examiner's statement of reasons for patentability and/or confirmation of the claims found patentable in this reexamination proceeding:

A) With respect to claim 2:

The prior art of record does not show or suggest an "Input Section" as set forth in claim 1 wherein said input section directs the MPEG stream to the destination indicated by control commands, as recited in claim 2.

B) With respect to claim 6:

The prior art of record does not show or suggest a "Media Switch" as set forth in claim 1 wherein said Media Switch calculates and associates a time stamp to the audio and video components as is recited in claim 6.

C) With respect to claim 7:

The prior art of record does not show or suggest a "Media Switch" as set forth in claim 1 wherein said Media Switch logically associates received time stamp values with the audio and video components as is recited in claim 7.

D) With respect to claim 8:

The prior art of record does not show or suggest the "posting" of an event in a circular event file indicative of the location of a video component in a circular video buffer as set forth in claim 8.

E) With respect to claim 9:

The prior art of record does not show or suggest the "posting" of an event in a circular event file indicative of the location of a audio component in a circular video buffer as set forth in claim 9.

F) With respect to claims 10 and 11:

Claims 10 and 11 depend from claims 8 and 9 and avoid the art of record at least for the reasons expressed above for those claims.

G) With respect to claim 12:

The prior art of record does not show or suggest a method as recited in claim 1 in which the rate of the decoder system clock is increased for fast playback as is recited in claim 12.

H) With respect to claim 13:

The prior art of record does not show or suggest a method as recited in claim 1 in which the rate of the decoder system clock is decreased for slow playback as is recited in claim 13.

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I) With respect to claim 14:

The prior art of record does not show or suggest a method as recited in claim 1 in which audio cues and on-screen displays are combined with the TV output signals as is recited in claim 14.

J) With respect to claim 19:

The prior art of record does not show or suggest a method as recited in claim 1 in the Media switch shares and address bus with the CPU.

K) With respect to claim 26:

The prior art of record does not show or suggest a method as recited in claim 24 in the user set time schedules the times during which stored programming is provided to an external recording device.

L) With respect to claim 27:

The prior art of record does not show or suggest a method as recited in claim 24 in a tile page is set to the external recording device.

M) With respect to claim 28:

The prior art of record does not show or suggest a method as recited in claim 24 in which the program is sped up to fit within the limited time available on the recording medium.

N) With respect to claim 29:

The prior art of record does not show or suggest a method as recited in claim 24 in which frames of the programming are dropped to permit it to fit within the limited time available on the recording medium.

O) With respect to claim 30:

The prior art of record does not show or suggest a method as recited in claim 24 in which the output of the recording device is provided back to the input section.

P) With respect to claim 33:

The prior art of record does not show or suggest an "Input Section" as set forth in claim 32 wherein said input section directs the MPEG stream to the destination indicated by control commands, as recited in claim 33.

Q) With respect to claim 37:

The prior art of record does not show or suggest a "Media Switch" as set forth in claim 32 wherein said Media Switch *itself*⁹ calculates and associates a time stamp to the audio and video components as is recited in claim 37 (note, however, .

R) With respect to claim 38:

The prior art of record does not show or suggest a "Media Switch" as set forth in claim

⁹ The examiner notes that time stamps are associated with the files in Greer et al., however, not by the "media switch" [e.g., note lines 21-31 of column 13].

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32 wherein said Media Switch *itself*¹⁰ logically associates received time stamp values with the audio and video components as is recited in claim 38.

S) With respect to claim 39:

The prior art of record does not show or suggest the "posting" of an event in a circular event file indicative of the location of a video component in a circular video buffer as set forth in claim 39.

T) With respect to claim 40:

The prior art of record does not show or suggest the "posting" of an event in a circular event file indicative of the location of an audio component in a circular video buffer as set forth in claim 40.

U) With respect to claims 41 and 42:

claims 41 and 42 depend from claims 39 and 40 and avoid the art of record at least for the reasons expressed above for those claims.

V) With respect to claim 43:

The prior art of record does not show or suggest an apparatus as recited in claim 32 in which the rate of the decoder system clock is increased for fast playback as is recited in claim 43.

W) With respect to claim 44:

The prior art of record does not show or suggest an apparatus as recited in claim 32 in which the rate of the decoder system clock is decreased for slow playback as is recited in claim 44.

X) With respect to claim 45:

The prior art of record does not show or suggest a method as recited in claim 32 in which audio cues and on-screen displays are combined with the TV output signals as is recited in claim 45.

Y) With respect to claim 50:

The prior art of record does not show or suggest a method as recited in claim 32 in the media switch shares and address bus with the CPU.

Z) With respect to claim 56:

The prior art of record does not show or suggest a method as recited in claim 54 in the user set time schedules the times during which stored programming is provided to an external recording device.

A1) With respect to claim 57:

The prior art of record does not show or suggest a method as recited in claim 54 in a tile page is set to the external recording device.

¹⁰ The examiner notes that time stamps are associated with the files in Greer et al., however, not by the "media switch" [e.g., note lines 21-31 of column 13].

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B1) With respect to claim 58:

The prior art of record does not show or suggest a method as recited in claim 54 in which the program is sped up to fit within the limited time available on the recording medium.

C1) With respect to claim 59:

The prior art of record does not show or suggest a method as recited in claim 54 in which frames of the programming are dropped to permit it to fit within the limited time available on the recording medium.

D1) With respect to claim 60:

The prior art of record does not show or suggest a method as recited in claim 54 in which the output of the recording device is provided back to the input section.

E1) With respect to claims 31 and 61:

The prior art of record does not show or suggest an object-based method/apparatus that is recited in claims 31 and 61.

Any comments considered necessary by PATENT OWNER regarding the above statement must be submitted promptly to avoid processing delays. Such submission by the patent owner should be labeled: "Comments on Statement of Reasons for Patentability and/or Confirmation" and will be placed in the reexamination file.

Art Unit: 3992

19. NOTICE RE PATENT OWNER'S CORRESPONDENCE ADDRESS

Effective May 16, 2007, 37 CFR 1.33(c) has been revised to provide that:

The patent owner's correspondence address for all communications in an *ex parte* reexamination or an *inter partes* reexamination is designated as the correspondence address of the patent.

Revisions and Technical Corrections Affecting Requirements for Ex Parte and Inter Partes Reexamination, 72 FR 18892 (April 16, 2007)(Final Rule)

The correspondence address for any pending reexamination proceeding not having the same correspondence address as that of the patent is, by way of this revision to 37 CFR 1.33(c), automatically changed to that of the patent file as of the effective date.

This change is effective for any reexamination proceeding which is pending before the Office as of May 16, 2007, including the present reexamination proceeding, and to any reexamination proceeding which is filed after that date.

Parties are to take this change into account when filing papers, and direct communications accordingly.

In the event the patent owner's correspondence address listed in the papers (record) for the present proceeding is different from the correspondence address of the patent, it is strongly encouraged that the patent owner affirmatively file a Notification of Change of Correspondence Address in the reexamination proceeding and/or the patent (depending on which address patent owner desires), to conform the address of the proceeding with that of the patent and to clarify the record as to which address should be used for correspondence.

Telephone Numbers for reexamination inquiries:

Reexamination and Amendment Practice	(571) 272-7703
Central Reexam Unit (CRU)	(571) 272-7705
Reexamination Facsimile Transmission No.	(571) 273-9900

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

21. THIS ACTION IS MADE FINAL.

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

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

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

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

Art Unit: 3992

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


By U.S. Postal Service Mail:


Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Office of Patent Legal Administration
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

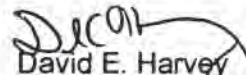
By FAX to: (571) 273-9900
Central Reexamination Unit

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

Any inquiry concerning this communication or earlier communications from the examiner, or as to the to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.


Conferee CRU-unit 3492


Conferee OPQA


David E. Harvey
Primary Examiner
(571) 272-7345

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Substitute for form 1449/PTO				<i>Complete if Known</i>	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Control Number	90/007,750
				Filing Date	October 17, 2005
				First Named Inventor	J. Barton
				Art Unit	3992
				Examiner Name	David E. Harvey
Sheet	1	of	2	Attorney Docket Number	454030000041

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume issue number(s), publisher, city and/or country where published	T ²
DH	NPL1	Neil MCMANES, "QuickTime ready for prime time", MacWEEK, Vol. 5, Number 42, December 13, 1991.	
DH	NPL2	Chris RUEMMLER, et al., "UNIX disk access patterns", Hewlett-Packard Laboratories, Winter USENIX, San Diego, CA, January 25-29, 1993.	
DL	NPL3	J.M. HARKER, et al, "A Quarter Century of Disk File Innovation," IBM J. Res. Develop., Vol. 25, No. 5, September 1981	
DA	NPL4	Andrew David HOSPODOR, "The Effect of Prefetch in SCSI Disk Drive Cache Buffers," Doctoral Thesis, Santa Clara University, May 2, 1994	
DA	NPL5	D. J. WOODHAM, "A Solid State 'Action Replay' Recorder," International TV Symposium and Technical Exhibition, Montreux, Switzerland, June 17-22, 1989	
DL	NPL6	English Language Abstract of Japanese Patent Publication No. JP 04-088772, data supplied by delphion, 1 page (March 23, 1992 - Date of Publication)	
DL	NPL7	English Language Abstract of Japanese Patent Publication No. JP 06-233234, data supplied by delphion, 1 page (August 19, 1994 - Date of Publication)	
DL	NPL8	English Language Abstract of Japanese Patent Publication No. JP 06-245157, data supplied by delphion, 1 page (September 2, 1994 - Date of Publication)	
DL	NPL9	English Language Abstract of Japanese Patent Publication No. JP 07-111629, data supplied by delphion, 1 page (April 25, 1995 - Date of Publication)	
DL	NPL10	English Language Abstract of Japanese Patent Publication No. JP 07-131754, data supplied by delphion, 1 page (May 19, 1995 - Date of Publication)	

Examiner Signature	<i>DLH</i>	Date Considered	6/6/07
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.
 This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Control Number	90/007,750
				Filing Date	October 17, 2005
				First Named Inventor	J. Barton
				Art Unit	3992
				Examiner Name	David E. Harvey
Sheet	2	of	2	Attorney Docket Number	454030000041
<input checked="" type="checkbox"/>	NPL11	English Language Abstract of Japanese Patent Publication No. JP 07-250305, data supplied by delphion, 1 page (September 26, 1995 - Date of Publication)			
<input checked="" type="checkbox"/>	NPL12	English Language Abstract of Japanese Patent Publication No. JP 07-264529, data supplied by delphion, 1 page (October 13, 1995 - Date of Publication)			
<input checked="" type="checkbox"/>	NPL13	English Language Abstract of Japanese Patent Publication No. JP 09-233415, data supplied by delphion, 2 pages (September 5, 1997 - Date of Publication)			
	NPL14				
	NPL15				
	NPL16				
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	NPL18				
	NPL19				
	NPL20				
	NPL21				

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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>	Control Number	90/007,750	
	Filing Date	October 17, 2005	
	First Named Inventor	BARTON	
	Art Unit	3992	
	Examiner Name	David E. Harvey	
Sheet	I	of	1
	Attorney Docket Number	45403000041	

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
DE	US1	5,521,630	05/28/1996	CHEN et al.	
DE	US2	5,583,652	12/10/1996	WARE	
DE	US3	5,586,264	12/17/1996	BELKNAP et al.	
DE	US4	5,603,058	02/11/1997	BELKNAP et al.	
DE	US5	5,664,044	09/02/1997	WARE	
DE	US6	5,668,948	09/16/1997	BELKNAP et al.	
DE	US7	5,712,976	01/27/1998	FALCON, Jr. et al.	
DE	US8	5,761,417	06/02/1998	HENLEY et al.	
DE	US9	5,805,821	09/08/1998	SAXENA et al.	
DE	US10	5,808,607	09/15/1998	BRADY et al.	
	US11				
	US12				
	US13				
	US14				
	US15				
	US16				
	US17				
	US18				
	US19				
	US20				

FOREIGN PATENT DOCUMENTS					
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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)			
	FP1				
	FP2				
	FP3				
	FP4				
	FP5				
	FP6				
	FP7				
	FP8				
	FP9				

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Examiner Signature	<i>Dec 7</i>	Date Considered	<i>6/6/07</i>
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				Control Number	90/007,750
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Filing Date	October 17, 2005
				First Named Inventor	J. Barton
				Art Unit	3992
				Examiner Name	David E. Harvey
				Attorney Docket Number	45403000041
Sheet	1	of	1		

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
DA	US2	5,787,225	07/28/1998	HONJO	
DA	US3	5,761,166	06/02/1998	SEDIMAYR, et al.	
	US4				
	US5				
	US6				
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FOREIGN PATENT DOCUMENTS						
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		Country Code ³ Number ³ Kind Code ³ (if known)				
DA	FP1	WO 92/22983 A2	12/23/1992	BROWNE, et al.		
	FP2	JP 04 088772	03/23/1992	HIROSHI		
	FP3	JP 06-233234	08/19/1994	SHIGERU		
	FP4	JP 06-245157	09/02/1994	TAKESHI, et al		
	FP5	JP 07-111629	04/25/1995	KYO		
	FP6	JP 07-131754	05/19/1995	OSAMU		
	FP7	JP 07-250505	09/26/1995	KENJI, et al		
	FP8	JP 07-264329	10/13/1995	HIROSHI, et al		
	FP9	JP 09-233413	09/05/1997	BRODSKY, et al		

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SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Control Number	90/007,750
		Filing Date	October 17, 2005
		First Named Inventor	BARTON
		Art Unit	3992
		Examiner Name	David E. Harvey
Sheet	1	of	1
		Attorney Docket Number	45403000041

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume issue number(s), publisher, city and/or country where published	T ²
DH	NPL14	I. FREEDMAN, et al. "Systems Aspects of COBE Science Data Compression", pp. 85-97.	
	NPL15		
	NPL16		
	NPL17		
	NPL18		
	NPL19		
	NPL20		
	NPL21		
	NPL22		
	NPL23		

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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Substitute for form I449/PTO SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				<i>Complete if Known</i>		
				Reexam Control Number	90/007,750	
				Filing Date	October 17, 2005	
				First Named Inventor	James M. BARTON	
				Art Unit	3992	
Sheet	1	of	1	Examiner Name	Harvey, David E.	
				Attorney Docket Number	2513.001REX0	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume issue number(s), publisher, city and/or country where published	T ²
	NPL1	Brief for EchoStar Communications Corporation, et al, <i>TiVo Inc. v. EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC</i>, United States Court of Appeals for the Federal Circuit, Nos. 2006-1574 and 2007-1022, April 17, 2007	
	NPL2	<i>TiVo v. Echostar</i>, Appeal No. 06-1574, Index to Appendix Materials - Brief for EchoStar Communications Corp., 6 pages.	
	NPL3	Brief for Appellee <i>TiVo Inc.</i>, <i>TiVo Inc. v. EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC</i>, United States Court of Appeals for the Federal Circuit, No. 2006-1574, May 30, 2007.	
	NPL4	<i>TiVo v. Echostar</i>, No. 2006-1574, Index to Appendix Materials - Brief for Appellee <i>TiVo, Inc.</i>, 3 pages.	
	NPL5		
	NPL6		
	NPL7		
	NPL8		
	NPL9		

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Examiner Signature		Date Considered	6/25/07
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Notice of References Cited	Application/Control No. 90/007,750	Applicant(s)/Patent Under Reexamination 6233389	
	Examiner DAVID E. HARVEY	Art Unit 3992	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,729,741	03-1998	Liaguno et al.	707/104.1
*	B	US-6,516,467	02-2003	Schindler et al.	725/153
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims



Application/Control No.

90/007,750

Examiner

DAVID E. HARVEY

Applicant(s)/Patent under Reexamination

6233389

Art Unit

3992

√	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted


N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date			
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Reexamination 	Application/Control No. 90/007,750	Applicant(s)/Patent Under Reexamination 6233389
	Certificate Date	Certificate Number

Requester Correspondence Address: <input type="checkbox"/> Patent Owner <input checked="" type="checkbox"/> Third Party
David L. Fehrman MORRISON & FOERSTER LLP 555 W. Fifth Street, Suite 3500 Los Angeles, CA 90013

LITIGATION REVIEW <input checked="" type="checkbox"/>	(examiner initials) <i>DF</i>	(date) 6/25/07	
Case Name	Director Initials		
<i>Tivo, Inc. v. Echostar Communications Corp. et al</i> <i>1105-cv-07789</i> <i>US District Court - Georgia Northern (Atlanta)</i>	<i>WHL for</i> <i>Liss: Mojica Morphis</i>		
<i>Tivo Inc v. Echostar Communications Corp et al</i> <i>1:05-mj-208</i> <i>US District - Georgia Northern (Atlanta)</i>	↓		
<i>Tivo Inc v. Echostar Communications Corp et al</i> <i>1:05-mj-180</i> <i>US District - Georgia Northern (Atlanta)</i>			
<i>Tivo Inc. v. Echostar Comm, et al.</i> <i>2:04-cv-1</i> <i>US District - Texas Eastern (Marshall)</i>			
<i>Tivo Inc de Sun. et de Inc et al</i> <i>3:02-cv-367</i> <i>US District California Northern (San Francisco)</i>			✓

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
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3.	
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2 of 2

Reexamination 	Application/Control No. 90/007,750	Applicant(s)/Patent Under Reexamination 6233389
	Certificate Date	Certificate Number

Requester Correspondence Address: <input type="checkbox"/> Patent Owner <input checked="" type="checkbox"/> Third Party
David L. Fehrman MORRISON & FOERSTER LLP 555 W. Fifth Street, Suite 3500 Los Angeles, CA 90013

LITIGATION REVIEW <input checked="" type="checkbox"/>	DA <small>(examiner initials)</small>	6/25/07 <small>(date)</small>
Case Name		Director Initials
Tivo Inc v SonicBlue Inc. et al 4:03-cv-385 US District - California Northern (Oakland)		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
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**Sterne Kessler
Goldstein Fox**
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Kenneth C. Bass III
Marvin C. Guthrie
Christopher P. Wrist

*Admitted only in Maryland
*Admitted only in Virginia
*Practice Limited to
Federal Agencies

September 24, 2007

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INTERNET ADDRESS:
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Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Re: Reexamination of U.S. Patent No. 6,233,389
Reexam Control No. 90/007,750; Filed: October 17, 2005
For: **Multimedia Time Warping System**
Inventors: BARTON *et al.*
Our Ref: 2513.001REX0

Sir:

Transmitted herewith for appropriate action are the following documents:

1. Petition for Extension of Time under 37 C.F.R. § 1.550(c); and
2. Certification of Service of Petition for Extension of Time under 37 C.F.R. § 1.550(c); and
3. Online Credit Card Payment Authorization for \$200.00 to cover petition fee.

The above-listed documents are filed electronically through EFS-Web.

Fee payment is provided through online credit card payment. The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

EJK/LAG/mlb
Enclosures
724529_1.DOC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re reexam of: U.S. Patent 6,233,289
(Barton)
Reexam Control No.: 90/007,750
Filed: October 17, 2005
For: **Multimedia Time Warping System**

Confirmation No.: 4653
Art Unit: 3992
Examiner: David E. Harvey
Atty. Docket No.: 2513.001REX0

Petition for Extension of Time Under 37 C.F.R. § 1.550(c)

Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Mail Stop: Ex Parte Reexam

Dear Sir:

Pursuant to 37 C.F.R. § 1.550(c), the patent owner, TiVo Inc. ("TiVo"), hereby requests an extension of time to respond to the Final Office Action mailed July 30, 2007.

The extension of time is sought for the following reason.

On September 13, 2007, TiVo's representative left a message with Examiner Harvey requesting an interview to discuss the Final Office Action. On September 18, 2007, Examiner Harvey contacted TiVo's representative regarding the interview request. During the call, Examiner Harvey explained that he was leaving the Central Reexamination Unit ("CRU") on October 1, 2007, the due date for filing the response to the Final Office Action. Examiner Harvey further explained that he was not scheduling any interviews in his cases prior to his departure from the CRU.

On September 20, 2007, TiVo's representative spoke with Examiner Harvey's supervisor, Special Program Examiner Mark J. Reinhart regarding the possibility of having a replacement Examiner assigned to the above-captioned reexamination to allow time for an interview prior to the due date for the Reply. Special Program Examiner

Reinhart explained that the reexamination would not be assigned to a new Examiner until after Examiner Harvey's departure date.

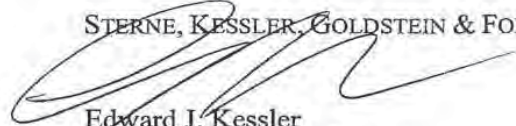
The Patent Owner believes that, in light of the fact that a new (to this matter) Examiner will assume responsibility for this reexamination processing, at this late stage, an interview will be particularly useful. The Patent Owner proposes to apprise the Examiner of the issues and to present new evidence, particularly a series of Declarations under 37 C.F.R. §1.131, which they believe will overcome the currently outstanding rejection.

Accordingly, an extension of time is sought to enable the Patent Owner to have an opportunity to conduct an interview with the newly assigned Examiner prior to filing a response to the Final Office Action.

For the above reason, TiVo specifically requests that the extension of time to respond to the Office Action be granted for a period of at least one month to allow sufficient time for a new Examiner to be assigned to the reexamination and for an interview to be conducted.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

Date: 24 Sept. 2007

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

724123_1.DOC

Patent Under Reexamination: 6,233,389
Reexamination Control No.: 90/007,750
Examiner: Harvey, David E.
Art Unit: 3992

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

**CERTIFICATION OF SERVICE OF PETITION FOR EXTENSION OF TIME
UNDER 37 C.F.R. §1.550(c)**

In compliance with 37 C.F.R. § 1.550(f), the undersigned, on behalf of the patent owner, hereby certifies that a copy of this paper has been served on the third-party requester by first class mail on September 24, 2007. The name and address of the party served is as follows:

David L. Fehrman
Morrison & Foerster, LLP
555 W. Fifth Street, Suite 3500
Los Angeles, CA 90013

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

Date: 24 Sept. 2007
1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

724123_1.DOC

Electronic Patent Application Fee Transmittal

Application Number:	90007750			
Filing Date:	17-Oct-2005			
Title of Invention:	MULTIMEDIA TIME WARPING SYSTEM			
First Named Inventor/Applicant Name:	6233389			
Filer:	Edward J. Kessler/Maya Bennett			
Attorney Docket Number:	2513.001REX0			
Filed as Large Entity				
ex parte reexam Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Petition fee- 37 CFR 1.17(g) (Group II)	1463	1	200	200
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				200

Electronic Acknowledgement Receipt

EFS ID:	2233306
Application Number:	90007750
International Application Number:	
Confirmation Number:	4653
Title of Invention:	MULTIMEDIA TIME WARPING SYSTEM
First Named Inventor/Applicant Name:	6233389
Customer Number:	26111
Filer:	Edward J. Kessler/Maya Bennett
Filer Authorized By:	Edward J. Kessler
Attorney Docket Number:	2513.001REX0
Receipt Date:	24-SEP-2007
Filing Date:	17-OCT-2005
Time Stamp:	16:49:53
Application Type:	ex parte reexam

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$200
RAM confirmation Number	13040
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Trans Letter filing of a response in a reexam	2513001REX0SKGFCCoverLetter.pdf	46637 12d7b1b8dd0ecb3447dcff6e2aebf09acc7e6b1a	no	1
Warnings:					
Information:					
2	Reexam Request for Extension of Time	2513001REX0PetitionForExtensionOfTime.pdf	70006 23187e4d2121e03d4a324c31e03632a43c90a560	no	2
Warnings:					
Information:					
3	Reexam Certificate of Service	2513001REX0CertificationOfService.pdf	23482 cb5ad81077b492cca7ccf53a2085c585c2a5340	no	1
Warnings:					
Information:					
4	Fee Worksheet (PTO-06)	fee-info.pdf	8155 9030eb30137df98c1bc9b29f5733d58f1c080b1a	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				148280	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



FAX RECEIVED

SEP 24 2007

CENTRAL REEXAMINATION UNIT

Fax

Urgent

Return reply requested

Original will be sent as confirmation

To: U.S. Patent and Trademark Office
 Attention: Special Program Examiner Mark J. Reinhart
 From: Edward J. Kessler
 Total Pages: 5
 Fax No: 571-273-9900

Date: September 24, 2007
 Re: Reexam Control No. 90/007,750
 Our Reference: 2513.001REX0

Message

The Petition for Extension of Time filing documents follow.

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If any portion of this transmission is not received clearly or in full,
 contact us at 202.371.2600 or f 202.371.2540

This message is intended for the exclusive use of the individual or entity to which it is addressed. The message may contain information that is privileged, confidential, or otherwise exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, copying or use of this communication in any way is strictly prohibited. If you have received this communication in error, please call us collect immediately, and return the original message to us at the above address via the U.S. Postal Service.

Sterne, Kessler, Goldstein & Fox P.L.L.C. : 1100 New York Avenue, NW : Washington, DC 20005 : 202.371.2600 f 202.371.2540 : www.skgf.com

PAGE 1/5 * RCVD AT 9/24/2007 11:10:51 AM [Eastern Daylight Time] * SVR:USPTO-EFXRF-617 * DNIS:2739900 * CSID:202 371 2540 * DURATION (mm-ss):02-02



Rubert Greene Sterne
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 *Admitted only in Virginia
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September 24, 2007

WRITER'S DIRECT NUMBER:
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 INTERNET ADDRESS:
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Commissioner for Patents
 PO Box 1450
 Alexandria, VA 22313-1450

Re: Reexamination of U.S. Patent No. 6,233,389
 Reexam Control No. 90/007,750; Filed: October 17, 2005
 For: **Multimedia Time Warping System**
 Inventors: **BARTON et al.**
 Our Ref: **2513.001REX0**

FAX RECEIVED
 SEP 24 2007
 CENTRAL REEXAMINATION UNIT

Sir:

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The above-listed documents are filed electronically through EFS-Web.

Fee payment is provided through online credit card payment. The U.S. Patent and Trademark Office is hereby authorized to charge any fee deficiency, or credit any overpayment, to our Deposit Account No. 19-0036.

Respectfully submitted,
 STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Edward J. Kessler
 Attorney for Patent Owner
 Registration No. 25,688

EJK/LAG/mlb
 Enclosures
 724529_1.DOC



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Alexandria, VA 22313-1450
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SEP 29 2007

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555 W. Fifth Street, Suite 3500 :
Los Angeles, CA 90013 :

DECISION GRANTING
PETITION FOR EXTENSION
OF TIME
[37 CFR 1.550(c)]

In re: Barton et alia :
Ex Parte Reexamination Proceeding :
Control No. 90/007,750 :
Filed: October 17, 2005 :
For: US Patent No. 6,233,389 :

This is a decision on the September 26, 2007, "Petition for Extension of Time Under 37 CFR 1.550 (c)," requesting that the time for responding to the Office action mailed May 17, 2007, be extended by one month.

The petition is before the Director of the Central Reexamination Unit for consideration.

The petition is granted for the reasons set forth below.

Decision

The Patent Owner requests an extension of time in which to file a response to the Office action mailed July 30, 2007, which set a two month date for filing a response thereto. The Office action is a non-final Office action. The petition for extension of time was timely filed on September 26, 2007, together with the Electronic Fee Transmittal for the \$200.00 petition fee required by 37 CFR 1.515(c).

37 CFR 1.550 (c) states:

(c) The time for taking any action by a patent owner in an ex parte reexamination proceeding will be extended only for sufficient cause and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of a request effect any extension. Any request for such extension must be accompanied by the petition fee set forth in § 1.17(g). See § 1.304(a) for extensions of time for filing a notice of appeal to the U.S. Court of Appeals for the Federal Circuit or for commencing a civil action.

Addressing the requirement of 37 CFR 1.550 (c) to make a showing of "sufficient cause" to grant an extension of time request, MPEP 2265 states, in pertinent part:

Evaluation of whether sufficient cause has been shown for an extension must be made in the context of providing the patent owner with a fair opportunity to present an argument against any attack on the patent, and the requirement of the statute (35 U.S.C. 305) that the proceedings be conducted with special dispatch. ...

Any request for an extension of time in a reexamination proceeding must fully state the reasons therefor. ...

Analysis and Findings

On balance, the Patent Owner's showing of "sufficient cause" is met by reasoning regarding the extensive time required to adequately respond to the outstanding Office action. The Patent owner notes that the examiner in charge of the proceeding is leaving this position and will require additional time to meet with the yet to be assigned new examiner.

The petition request is **granted**.

Conclusion

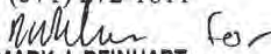
1. The patent owner's petition for extension of one-month time in which to file a response to the Office action dated July 30, 2007 is **granted**.
2. The Patent Owner's response is due **October 30, 2007**.
3. Response may be submitted as follows:

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

By Fax to: (571) 273-9900
Central Reexamination Unit

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

4. Telephone inquiries with regard to this decision should be directed to Mark Reinhart, Supervisory Patent Examiner in the Central Reexamination Unit, Art Unit 3992, at (571) 272-1611


MARK J. REINHART
SPRE-AU 3992
CENTRAL REEXAMINATION UNIT

Lissi Mojica Marquis,
Director,
Central Reexamination Unit
3999



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* Admitted only in Maryland
 * Admitted only in Virginia
 * Practice Limited to
 Federal Agencies

October 23, 2007

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INTERNET ADDRESS:
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Commissioner for Patents
 PO Box 1450
 Alexandria, VA 22313-1450

Art Unit 3992

Attn: Mail Stop Ex Parte Reexam

Re: Reexamination of U.S. Patent No. 6,233,389
 Reexam Control No. 90/007,750; Filed: October 17, 2005
 For: **Multimedia Time Warping System**
 Inventors: BARTON *et al.*
 Our Ref: 2513.001REX0

Sir:

Transmitted herewith for appropriate action are the following documents:

1. Proposed Agenda for Interview on October 25, 2007; and
2. Certification of Service on Third Party Requestor of Proposed Agenda for Interview on October 25, 2007.

The above-listed documents are filed electronically through EFS-Web.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Edward J. Kessler
 Attorney for Patent Owner
 Registration No. 25,688

EJK/LAG/mlb
 Enclosures
 736390_1.DOC

PROPOSED AGENDA FOR EXAMINER INTERVIEW

Thursday, October 25, 2007

- I. Review differences between cited reference, U.S. Patent No. 6,788,882 to Geer, et al. and claims 1 and 32 previously discussed in the June 20, 2006 interview with Primary Examiner David E. Harvey, Primary Examiner Margaret R. Rubin, and Special Program Examiner Mark J. Reinhart

- II. Declarations Under 37 C.F.R. §1.131

Patent Under Reexamination: 6,233,389
Reexamination Control No.: 90/007,750
Examiner: Harvey, David E.
Art Unit: 3992

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

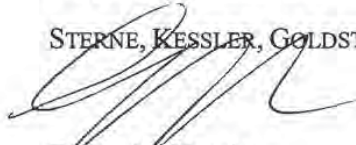
CERTIFICATION OF SERVICE OF PROPOSED AGENDA FOR INTERVIEW

In compliance with 37 C.F.R. § 1.550(f), the undersigned, on behalf of the patent owner, hereby certifies that a copy of this paper has been served on the third-party requester by first class mail on October 22, 2007. The name and address of the party served is as follows:

David L. Fehrman
Morrison & Foerster, LLP
555 W. Fifth Street, Suite 3500
Los Angeles, CA 90013

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

Date: 23 Oct 2007
1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

736382_1.DOC

Electronic Acknowledgement Receipt

EFS ID:	2355723
Application Number:	90007750
International Application Number:	
Confirmation Number:	4653
Title of Invention:	MULTIMEDIA TIME WARPING SYSTEM
First Named Inventor/Applicant Name:	6233389
Customer Number:	26111
Filer:	Edward J. Kessler
Filer Authorized By:	
Attorney Docket Number:	2513.001REX0
Receipt Date:	23-OCT-2007
Filing Date:	17-OCT-2005
Time Stamp:	13:58:12
Application Type:	ex parte reexam

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	2513_001REX0_ProposedA genda_Interview10252007.p df	80459 205244cd5fb98970e99bde2b41cnc30fe a9521d8	no	3

Warnings:

Information:	
Total Files Size (in bytes):	80459
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	



**RECEIVED
CENTRAL FAX CENTER**

OCT 23 2007

Fax Urgent Return reply requested Original will be sent as confirmation

To: **U.S. Patent & Trademark Office**
 Attention: **Examiner Ovidio Escalante**

Date: **October 23, 2007**
 Re: **Scheduled Interview dated
 October 25, 2007 - Proposed Agenda**

From: **Edward J. Kessler**
 Pages (including cover sheet): **4**
 Fax Number: **(571) 273-7537**

Our Reference: **2513.001REX0**
 Your Reference: **Reexam Control No.
 90/007,750; filed: October 17, 2005**

Message

Original Proposed Agenda electronically filed on October 23, 2007.

please sign and return this page as acknowledgment of receipt

If any portion of this transmission is not received clearly or in full, contact us at the numbers below.

This message is intended for the exclusive use of the individual or entity to which it is addressed. The message may contain information that is privileged, confidential, or otherwise exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, copying or use of this communication in any way is strictly prohibited. If you have received this communication in error, please call us collect immediately, and return the original message to us at the above address via the U.S. Postal Service.

Sterne, Kessler, Goldstein & Fox P.L.L.C. : 1100 New York Avenue, NW : Washington, DC 20005 : 202.371.2600 f 202.371.2540

OCT 23 2007



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October 23, 2007

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Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Art Unit 3992

Attn: Mail Stop Ex Parte Reexam

Re: Reexamination of U.S. Patent No. 6,233,389
Reexam Control No. 90/007,750; Filed: October 17, 2005
For: **Multimedia Time Warping System**
Inventors: **BARTON et al.**
Our Ref: 2513.001REXO

Sir:

Transmitted herewith for appropriate action are the following documents:

- 1. Proposed Agenda for Interview on October 25, 2007; and
- 2. Certification of Service on Third Party Requestor of Proposed Agenda for Interview on October 25, 2007.

The above-listed documents are filed electronically through EFS-Web.

It is respectfully requested that the attached postcard be stamped with the date of filing of these documents, and that it be returned to our courier. In the event that extensions of time are necessary to prevent abandonment of this patent application, then such extensions of time are hereby petitioned.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

EJK/LAG/mlb
Enclosures
736390_1.DOC

Ex Parte Reexamination Interview Summary	Control No.	Patent Under Reexamination	
	90/007,750	6233389	
	Examiner	Art Unit	
	Ovidio Escalante	3992	

All participants (USPTO personnel, patent owner, patent owner's representative):

- (1) Ovidio Escalante (3) Edward J. Kessler, Lori Gordan
(2) Mark Reinhart, Minh Nguyen (4) James Barton (Patent Owner)

Date of Interview: 10/25/07

Type: a) Telephonic b) Video Conference
c) Personal (copy given to: 1) patent owner 2) patent owner's representative)

Exhibit shown or demonstration conducted: d) Yes e) No.
If Yes, brief description: Potential 1.131 affidavit

Agreement with respect to the claims f) was reached. g) was not reached. h) N/A.
Any other agreement(s) are set forth below under "Description of the general nature of what was agreed to..."

Claim(s) discussed: 1 and 32.

Identification of prior art discussed: Geer - U.S. Patent 6,788,882.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:
See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims patentable, if available, must be attached. Also, where no copy of the amendments that would render the claims patentable is available, a summary thereof must be attached.)

A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION MUST INCLUDE PATENT OWNER'S STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. (See MPEP § 2281). IF A RESPONSE TO THE LAST OFFICE ACTION HAS ALREADY BEEN FILED, THEN PATENT OWNER IS GIVEN **ONE MONTH** FROM THIS INTERVIEW DATE TO PROVIDE THE MANDATORY STATEMENT OF THE SUBSTANCE OF THE INTERVIEW (37 CFR 1.560(b)). THE REQUIREMENT FOR PATENT OWNER'S STATEMENT CAN NOT BE WAIVED. **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

Ovidio Escalante

cc: Requester (if third party requester)

Examiner's signature, if required

Continuation of Description of the general nature of what was agreed to if an agreement was reached, or any other comments: The Patent Owner contended that Geer performs content-based analysis after the decompression process which occurs prior to transmission to the television i.e., after storage and right before being outputted to the TV. The Examiner acknowledged that the content-based analysis must be performed on an uncompressed signal, which would thus entail that a MPEG signal must be decompressed before any content based analysis is performed. The Examiner disagreed that it was performed at the output. No final agreement with respect to Geer was made. The Examiner stated that he needed more time to review the Patent Owner's arguments and will call the Patent Owner no later than Monday October 29th, to discuss the Examiner's final position.

Ex Parte Reexamination Interview Summary	Control No.	Patent Under Reexamination	
	90/007,750	6233389	
	Examiner	Art Unit	
	Ovidio Escalante	3992	

All participants (USPTO personnel, patent owner, patent owner's representative):

- (1) Ovidio Escalante (3) Edward J. Kessler
(2) Scott Weaver, Roland Foster (4) Lori Gordan

Date of Interview: 26 October 2007

Type: a) Telephonic b) Video Conference
c) Personal (copy given to: 1) patent owner 2) patent owner's representative)

Exhibit shown or demonstration conducted: d) Yes e) No.
If Yes, brief description: _____

Agreement with respect to the claims f) was reached. g) was not reached. h) N/A.
Any other agreement(s) are set forth below under "Description of the general nature of what was agreed to..."

Claim(s) discussed: 1 and 32.

Identification of prior art discussed: Geer.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:
See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims patentable, if available, must be attached. Also, where no copy of the amendments that would render the claims patentable is available, a summary thereof must be attached.)

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Ovidio Escalante

cc: Requester (if third party requester)

Examiner's signature, if required

Continuation of Description of the general nature of what was agreed to if an agreement was reached, or any other comments: In a follow-up of the Interview held on October 25, 2007, the examiner explained how Geer reads on the parsing step and storage of the data in combination with being able to using a decoder for the stored MPEG stream prior to outputting the stream to the television. The Patent Owner's representatives again argued that Geer in no way parses an MPEG stream into its audio and video components and stores the audio and video components. The Patent Owner contended that the "content analysis" of Geer is not performed when a MPEG signal is received because the system of Geer would have to decompress the MPEG stream for analysis and then recompress the stream back to its compressed form for storage. The Examiner disagreed since Geer discloses of providing the content analysis on the broadcast signal which includes a MPEG stream. NO agreement with respect to the claims was made. The Examiner will wait for the Patent Owner's after final response and will issue a response in due course.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re REEXAM of: U.S. Patent 6,233,389
(Barton)

Reexam Control No.: 90/007,750

Filed: October 17, 2005

For: **Multimedia Time Warping System**

Confirmation No.: 4653

Art Unit: 3992

Examiner: Ovidio Escalante

Atty.Docket: 2513.001REX0

**Reply to Office Action in *Ex Parte* Reexamination and
Statement of Substance of Interview Under 37 C.F.R. § 1.560**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the Final Office Action dated July 30, 2007, the Patent Owner submits the following Listing of Claims and Remarks. The Patent Owner was granted a one-month extension of time to reply to the Office Action.

In compliance with 37 C.F.R. § 1.560, Applicants submit the following Statement of Substance of Interview for the interview conducted on October 25, 2007 between Primary Examiner Ovidio Escalante, Primary Examiner Minh T. Nguyen, and Special Program Examiner Mr. Mark J. Reinhart and Patent Owner's representatives, Mr. James M. Barton, Edward J. Kessler, and Lori A. Gordon and for the follow-up telephone interview of October 26, 2007.

It is not believed that any additional extensions of time or other fees are required. However, if any fees are necessary to prevent abandonment of this application, then such fees are hereby petitioned and hereby authorized to be charged to our Deposit Account No. 19-0036.

Listing of the Patent Claims

A listing of the status of each claim under reexamination is provided below.

1. (original patent claim) A process for the simultaneous storage and play back of multimedia data, comprising the steps of:

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

tuning said TV signals to a specific program;

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

providing a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;

storing said video and audio components on a storage device;

providing at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;

wherein said Output Section assembles said video and audio components into an MPEG stream;

wherein said Output Section sends said MPEG stream to a decoder;

wherein said decoder converts said MPEG stream into TV output signals;

wherein said decoder delivers said TV output signals to a TV receiver; and

accepting control commands from a user, wherein said control commands are sent through the system and affect the flow of said MPEG stream.

2. (original patent claim) The process of claim 1, wherein said Input Section directs said MPEG stream to the destination indicated by said control commands.

3. (original patent claim) The process of claim 1, wherein said Output Section extracts said video and audio components from the storage device indicated by said control commands.

4. (original patent claim) The process of claim 1, further comprising the step of:
creating custom video output sequences, wherein said sequences are specified by a user or program control.

5. (original patent claim) The process of claim 1, wherein the storing and extracting of said video and audio components from said storage device are performed simultaneously.

6. (original patent claim) The process of claim 1, wherein said Media Switch calculates and logically associates a time stamp to said video and audio components.

7. (original patent claim) The process of claim 1, wherein said Media Switch extracts time stamp values from a digital TV stream and logically associates said time stamp values to said video and audio components.

8. (original patent claim) The process of claim 1, further comprising the steps of:
- placing said video component into a circular video buffer;
 - posting an event in a circular event buffer, wherein said event contains an indication that a video component was found and the location of said video component in said circular video buffer; and
 - sending notice of said event posting.
9. (original patent claim) The process of claim 1, further comprising the steps of:
- placing said audio component into a circular audio buffer;
 - posting an event in a circular event buffer, wherein said event contains an indication that an audio component was found and the location of said audio component in said circular audio buffer; and
 - sending notice of said event posting.
10. (original patent claim) The process of claims 8 or 9, further comprising the steps of:
- receiving said notice;
 - retrieving said event posting from said event buffer; and
 - indexing into the appropriate buffer indicated by the type and location information in said event buffer.
11. (original patent claim) The process of claim 10, further comprising the steps of:
- generating a buffer containing the logical audio or video segments in order, including ancillary information, wherein each of said logical segments points to the appropriate circular buffer location where corresponding audio or video components have been placed.

12. (original patent claim) The process of claim 1, further comprising the step of:
increasing the decoder system clock rate for fast playback or fast reverse
playback.

13. (original patent claim) The process of claim 1, further comprising the step of:
decreasing the decoder system clock rate for slow playback or slow reverse
playback.

14. (original patent claim) The process of claim 1, further comprising the step of:
combining system audio cues and on-screen displays with said TV output signals.

15. (original patent claim) The process of claim 1, further comprising the steps of:
decoding the Vertical Blanking Interval (VBI) data or private data channel
information from said TV signal; and
examining said data to determine the starting or ending indicators of a specific
program.

16. (original patent claim) The process of claim 1, further comprising the step of:
scanning the words contained within the closed caption (CC) fields to determine
program starting and ending times, wherein particular words or phrases are used to
trigger the recording of a specific program and wherein the CC information is preserved
in time synchronization with the audio and video, and can be correctly presented to the
viewer when the stream is displayed.

17. (original patent claim) The process of claim 16, further comprising the step of:
performing a specific action when a specific word is found in said CC
information.
18. (original patent claim) The process of claim 1, wherein said Media Switch has a
data bus connecting it to a CPU and DRAM.
19. (original patent claim) The process of claim 1, wherein said Media Switch shares
an address bus with a CPU and DRAM.
20. (original patent claim) The process of claim 1, wherein said Media Switch
operates asynchronously and autonomously with a CPU.
21. (original patent claim) The process of claim 1, wherein said storage device is
connected to said Media Switch.
22. (original patent claim) The process of claim 1, wherein said Media Switch
allows the CPU to queue up Direct Memory Access (DMA) transfers.
23. (original patent claim) The process of claim 1, wherein said Media Switch is
implemented in hardware.
24. (original patent claim) The process of claim 1, further comprising the step of:
providing a multimedia recording device, including, but not limited to, a Video
Cassette Recorder (VCR) or a Digital Video Disk-Random Access Memory (DVD-
RAM) device, wherein said recording device is attached to the output side of said
decoder, allowing said user to record said TV output signals.

25. (original patent claim) The process of claim 24, wherein said user queues up programs from said storage device to be stored on said recording device.

26. (original patent claim) The process of claim 24, wherein said user sets time schedules for said programs to be sent to said recording device.

27. (original patent claim) The process of claim 24, wherein title pages may be sent to said recording device before sending a program to be stored on said recording device.

28. (original patent claim) The process of claim 24, wherein a program that is longer in duration than a magnetic tape in said recording device allows, is sped up to fit within the desired time limit.

29. (original patent claim) The process of claim 24, wherein a program that is longer in duration than a magnetic tape in said recording device allows, has frames dropped from it to fit within the desired time limit.

30. (original patent claim) The process of claim 24, wherein the output of said recording device is routed to said Input Section, allowing said recording device to act as a storage back up system, said recording device accepts overflow storage, TV programs, software updates, or other data that are later retrieved and sent to said Input Section.

31. (original patent claim) 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.

32. (original patent claim) An apparatus for the simultaneous storage and play back of multimedia data, comprising:

- a module for accepting television (TV) broadcast signals, wherein said TV signals are based on a multitude of standards, including, but not limited to, National Television Standards Committee (NTSC) broadcast, PAL broadcast, satellite transmission, DSS, DBS, or ATSC;
- a module for tuning said TV signals to a specific program;
- at least one Input Section, wherein said Input Section converts said specific program to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation;
- a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;
- a module for storing said video and audio components on a storage device;
- at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;
- wherein said Output Section assembles said video and audio components into an MPEG stream;
- wherein said Output Section sends said MPEG stream to a decoder;
- wherein said decoder converts said MPEG stream into TV output signals;
- wherein said decoder delivers said TV output signals to a TV receiver; and
- accepting control commands from a user, wherein said control commands are sent through the system and affect the flow of said MPEG stream.

33. (original patent claim) The apparatus of claim 32, wherein said Input Section directs said MPEG stream to the destination indicated by said control commands.

34. (original patent claim) The apparatus of claim 32, wherein said Output Section extracts said video and audio components from the storage device indicated by said control commands.

35. (original patent claim) The apparatus of claim 32, further comprising:
a module for creating custom video output sequences, wherein said sequences are specified by a user or program control.

36. (original patent claim) The apparatus of claim 32, wherein the storing and extracting of said video and audio components from said storage device are performed simultaneously.

37. (original patent claim) The apparatus of claim 32, wherein said Media Switch calculates and logically associates a time stamp to said video and audio components.

38. (original patent claim) The apparatus of claim 32, wherein said Media Switch extracts time stamp values from a digital TV stream and logically associates said time stamp values to said video and audio components.

39. (original patent claim) The apparatus of claim 32, further comprising:
a module for placing said video component into a circular video buffer;
a module for posting an event in a circular event buffer, wherein said event contains an indication that a video component was found and the location of said video

component in said circular video buffer; and

a module for sending notice of said event posting.

40. (original patent claim) The apparatus of claim 32, further comprising:

a module for placing said audio component into a circular audio buffer;

a module for posting an event in a circular event buffer, wherein said event contains an indication that an audio component was found and the location of said audio component in said circular audio buffer; and

a module for sending notice of said event posting.

41. (original patent claim) The apparatus of claims 39 or 40, further comprising:

a module for receiving said notice;

a module for retrieving said event posting from said event buffer; and

a module for indexing into the appropriate buffer indicated by the type and location information in said event buffer.

42. (original patent claim) The apparatus of claim 41, further comprising:

a module for generating a buffer containing the logical audio or video segments in order, including ancillary information, wherein each of said logical segments points to the appropriate circular buffer location where corresponding audio or video components have been placed.

43. (original patent claim) The apparatus of claim 32, further comprising:

a module for increasing the decoder system clock rate for fast playback or fast reverse playback.

44. (original patent claim) The apparatus of claim 32, further comprising:
a module for decreasing the decoder system clock rate for slow playback or slow reverse playback.

45. (original patent claim) The apparatus of claim 32, further comprising:
a module for combining system audio cues and on-screen displays with said TV output signals.

46. (original patent claim) The apparatus of claim 32, further comprising:
a module for decoding the Vertical Blanking Interval (VBI) data or private data channel information from said TV signal; and
a module for examining said data to determine the starting or ending indicators of a specific program.

47. (original patent claim) The apparatus of claim 32, further comprising:
a module for scanning the words contained within the closed caption (CC) fields to determine program starting and ending times, wherein particular words or phrases are used to trigger the recording of a specific program and wherein the CC information is preserved in time synchronization with the audio and video, and can be correctly presented to the viewer when the stream is displayed.

48. (original patent claim) The apparatus of claim 47, further comprising:
a module for performing a specific action when a specific word is found in said CC information.

49. (original patent claim) The apparatus of claim 32, wherein said Media Switch has a data bus connecting it to a CPU and DRAM.

50. (original patent claim) The apparatus of claim 32, wherein said Media Switch shares an address bus with a CPU and DRAM.

51. (original patent claim) The apparatus of claim 32, wherein said Media Switch operates asynchronously and autonomously with a CPU.

52. (original patent claim) The apparatus of claim 32, wherein said storage device is connected to said Media Switch.

53. (original patent claim) The apparatus of claim 32, wherein said Media Switch allows the CPU to queue up Direct Memory Access (DMA) transfers.

54. (original patent claim) The apparatus of claim 32, further comprising:
a multimedia recording device, including, but not limited to, a Video Cassette Recorder (VCR) or a Digital Video Disk-Random Access Memory (DVD-RAM) device, wherein said recording device is attached to the output side of said decoder, allowing said user to record said TV output signals.

55. (original patent claim) The apparatus of claim 54, wherein said user queues up programs from said storage device to be stored on said recording device.

56. (original patent claim) The apparatus of claim 54, wherein said user sets time schedules for said programs to be sent to said recording device.

57. (original patent claim) The apparatus of claim 54, wherein title pages may be sent to said recording device before sending a program to be stored on said recording device.

58. (original patent claim) The apparatus of claim 54, wherein a program that is longer in duration than a magnetic tape in said recording device allows, is sped up to fit within the desired time limit.

59. (original patent claim) The apparatus of claim 54, wherein a program that is longer in duration than a magnetic tape in said recording device allows, has frames dropped from it to fit within the desired time limit.

60. (original patent claim) The apparatus of claim 54, wherein the output of said recording device is routed to said Input Section, allowing said recording device to act as a storage back up system, said recording device accepts overflow storage, TV programs, software updates, or other data that are later retrieved and sent to said Input Section.

61. (original patent claim) 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.

Remarks

Claims 1-61 are currently pending in the reexamination proceeding of U.S. Patent No. 6,233,389 ("the '389 patent") with claims 1, 31, 32, and 61 being independent claims. Claims 2, 6-14, 19, 26-31, 33, 37-45, 50, and 56-61 have been confirmed. Based on the following remarks, the Patent Owner respectfully requests that the Examiner reconsider all outstanding rejections on the remaining claims, and that they be withdrawn.

I. Statement of Substance of Interview

The Patent Owner thanks Primary Examiner Ovidio Escalante, Primary Examiner Minh T. Nguyen, and Special Program Examiner Mark J. Reinhart for the courtesy extended to their representatives, James M. Barton, Edward J. Kessler, and Lori A. Gordon, during the interview held on October 25, 2007 and in the follow-up telephone interview held on October 26, 2007.

During those interviews, the Patent Owner's representatives explained the differences between the invention, as recited in claim 1 and 32, and the cited reference, U.S. Patent No. 6,788,882 to Geer, et al (Geer). The discussion of the differences between the invention of claims 1 and 32 and Geer are summarized below in Section II. No agreement was reached during those interviews.

II. Rejection Under 35 U.S.C. §103

In the Office Action, claims 1, 3-5, 15-18, 20-25, 32, 34-36, 46-49, and 51-55 were rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No.

6,788,882 (Geer) in view of Cobbley, U.S. Patent No. 5,614,940 (Cobbley). The Patent Owner respectfully traverses this rejection.

The combination of Geer and Cobbley does not teach or suggest each and every feature of independent claims 1 and 32. In the Office Action, the Examiner indicated that "Greer et al. describes an embodiment of the system that permits computerized content searches to be performed on the stored programming." (Office Action, pp. 10-11). However, Geer does not describe how or where in the disclosed system this content-based analysis is performed. As pointed out by the Examiner and as is well-known to persons of skill in the art, the content-based analysis of Geer must be performed on an uncompressed signal. (Office Action, p. 11).

In Geer, there are two points in the system where a signal may be uncompressed for performing content-based analysis. First, certain signals may be received by the system in an uncompressed format. For these uncompressed signals, a set-top box card 150 performs compression to generate a compressed signal. (Geer, col. 7, lines 13-15). As pointed out by the Examiner in the discussion of U.S. Patent No. 5,614,940 to Cobbley, et al (Cobbley) in the First Office Action mailed May 21, 2006, "it seems unlikely that one would receive a digital TV signal, compress the digital TV signal into an MPEG data stream, and then decompress the MPEG data stream back into its digital format for analysis." (5/21/06 Office Action, p. 3). Thus, for received uncompressed signals, content-based analysis in Geer would be understood to be performed prior to compression by the set-top box card.

Geer also describes the use of a "decompression device or software, e.g., the MPEG II decoder" to decompress compressed video retrieved from the recording media

for output to a television for viewing. (Geer, col. 15, lines 48-52). Thus, the output of the decompression device is uncompressed video. For compressed signals, content-based analysis in Geer would be understood to be performed after the decompression process and prior to transmission to the television. Again, however, Geer does not describe where or how the content-based analysis is performed.

In the Office Action, the Examiner equates the "media switch" recited in claims 1 and 32 to demultiplexing circuitry in an MPEG decoder which is assumed by the Examiner to be used for content-based analysis of compressed input signals. (Office Action, p. 11)("when the 'broadcast signal' being received and analyzed comprises a compressed digital format [Note: lines 31-37 of column 6; and lines 9-14 of column 7], the Greer et al. system requires some type of demultiplexing circuitry for 'parsing' the received MPEG stream to separate the audio component in order for it to be converted to text and analyzed in the described manner. Specifically, it is impossible to analyze the audio portion of an MPEG data stream without decompressing it first. Decompression requires a demultiplexer (i.e., a 'media switch') for parsing and separating the audio component from the stream so that it can be decompressed.").

Geer describes the computerized content search process:

This process can proceed as follows: (1) using the audio portion of the broadcast signal and feeding it into an optional speech recognition capability (well known to those familiar with computing devices), or using the already text translated closed-caption signal if available and (2) the resulting text of the audio is then indexed into a full-text database. This database provides an index linking each (or a subset of) word to the channel file and time recorded.

When the user then wants to search for a certain content, the user is presented with a text search engine (similar to the now well established World Wide Web search engines). After entering the sought after words or

phrase, the DVR then presents the user with a prioritized list of programming blocks (channel and time unit) from which the user can then pick what he or she wants to view.

(Geer, col. 11, lines 22-37). Thus, in Geer, the indexed text of the uncompressed audio is stored in a full-text database after the content-based search.

Claim 1 of the '389 patent recites, among other elements:

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

tuning said TV signals to a specific program;

providing at least one Input Section, wherein said Input Section converts said specific program to an Moving Pictures Expert Group (MPEG) formatted stream for internal transfer and manipulation;

providing a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;

storing said video and audio components on a storage device;

providing at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;

wherein said Output Section assembles said video and audio components into an MPEG stream;

wherein said Output Section sends said MPEG stream to a decoder;

wherein said decoder converts said MPEG stream into TV output signals.

Claim 32 of the '389 patent recites, among other elements:

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

a module for tuning said TV signals to a specific program;

at least one Input Section, wherein said Input Section converts said specific program to an Moving Pictures Experts Group (MPEG) formatted stream for internal transfer and manipulation;

a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio components;

a module for storing said video and audio components on a storage device;

at least one Output Section, wherein said Output Section extracts said video and audio components from said storage device;

wherein said Output Section assembles said video and audio components into an MPEG stream;

wherein said Output Section sends said MPEG stream to a decoder;

wherein said decoder converts said MPEG stream into TV output signals.

Thus, independent claims 1 and 32 require the system to accept "TV broadcast signals" and tune "to a specific program." The system also "converts said specific program to an ... MPEG formatted stream for internal transfer and manipulation." The system "parses said MPEG stream, said MPEG stream is separated into its video and audio components." This is the first mention of "video and audio components." These *same* video and audio components are stored on a storage device and also extracted for playback. In other words, the "MPEG stream is separated into its video and audio components," and both the storing and extracting must be of these *same* "said video and audio components." These "said video and audio components" are also assembled into an MPEG stream which is sent to a decoder for conversion into TV output signals.

As described above, the content-based analysis in Geer, if performed, must be performed either in Geer's input - prior to compression - or in Geer's output - after decompression by the decoder for output of the decompressed signal to the television.

Further, after the content-based analysis, Geer stores the indexed text of the uncompressed audio. Therefore, Geer does not teach or even suggest a *compressed (MPEG)* stream that is separated into its video and audio components and storing these same *compressed MPEG video and audio components*, as is required by the recitations of independent claims 1 and 32. Specifically, Geer does not teach or suggest "providing a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio component; storing *said* video and audio components on a storage device; providing at least one Output Section, wherein said Output Section extracts *said* video and audio components from said storage device," as recited in independent claim 1. Geer also does not teach or suggest, at least "a Media Switch, wherein said Media Switch parses said MPEG stream, said MPEG stream is separated into its video and audio component; a module for storing *said* video and audio components on a storage device; providing at least one Output Section, wherein said Output Section extracts *said* video and audio components from said storage device," as recited in independent claim 32.

As acknowledged by the Examiner, Cobbley does not overcome the above deficiencies of Geer. For at least the foregoing reasons, independent claims 1 and 32 are patentable over the combination of Geer and Cobbley. Claims 3-5, 15-18, and 20-25 depend from independent claim 1, and claims 34-36, 46-49, and 51-55 depend from claim 32. For at least the foregoing reasons, and further in view of their own features, claims 3-5, 15-18, 20-25, 32, 34-36, 46-49, and 51-55 are patentable over the combination of Geer and Cobbley. Reconsideration and withdrawal of this rejection is therefore respectfully requested.

III. Patentable Subject Matter

The Patent Owner acknowledges with appreciation the Primary Examiner's indication that original patent claims 2, 6-14, 19, 26-31, 33, 37-45, 50, and 56-61 are patentable.

IV. Related Proceedings

The claims of the '389 are the subject of a pending Appeal in the United States Court of Appeals for the Federal Circuit, *TiVo Inc. v. EchoStar Communications Corporation, EchoStar DBS Corporation, EchoStar Technologies Corporation, EchoSphere Limited Liability Company, and EchoStar Satellite LLC*, No. 2006-1574.

The claims of the '389 patent were the subject of litigation in the United States District Court for the Eastern District of Texas, Marshall Division, *TiVo Inc. v. Echostar Communications Corp., et al.*, Case No. 2-04CV-01. A jury verdict in TiVo's favor finding infringement by Echostar was filed on April 13, 2006. The case is currently on appeal to the Federal Circuit, as discussed above.

The '389 patent was also previously asserted in an additional litigation in the United States District Court for the Northern California (San Francisco), *TiVo Inc. v. Sonicblue, Inc.*, Case No. 3:02cv365, filed on January 23, 2002. The parties stipulated to dismiss the case without prejudice.

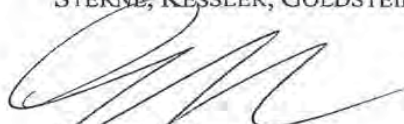
V. Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. The Patent Owner therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. The Patent Owner believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present reexamination proceeding is in condition for a Notice of Intent to Issue a Reexamination Certificate. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

Date: October 29, 2007

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740302_1.DOC

Barton, *et al*
Reexam of Pat. No. 6,233,389
Reexam Control No.: 90/007,750

Patent Under Reexamination: 6,233,389
Reexamination Control No.: 90/007,750
Examiner: Ovidio Escalante
Art Unit: 3992

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

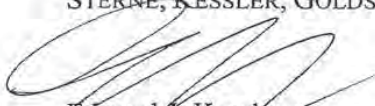
**CERTIFICATION OF SERVICE OF REPLY TO FINAL OFFICE ACTION AND
STATEMENT OF SUBSTANCE OF INTERVIEW**

In compliance with 37 C.F.R. § 1.550(f), the undersigned, on behalf of the patent owner, hereby certifies that a copy of this paper has been served on the third-party requester by first class mail on October 29, 2007. The name and address of the party served is as follows:

David L. Fehrman
Morrison & Foerster, LLP
555 W. Fifth Street, Suite 3500
Los Angeles, CA 90013

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.


Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

Date: October 29, 2007

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re reexam of: U.S. Patent 6,233,289
(Barton)

Reexam Control No.: 90/007,750

Filed: October 17, 2005

For: **Multimedia Time Warping System**

Confirmation No.: 4653

Art Unit: 3992

Examiner: David E. Harvey

Atty. Docket No.: 2513.001REX0

Petition for Extension of Time Under 37 C.F.R. § 1.550(c)

Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Mail Stop: Ex Parte Reexam

Dear Sir:

Pursuant to 37 C.F.R. § 1.550(c), the patent owner, TiVo Inc. ("TiVo"), hereby requests an extension of time to respond to the Final Office Action mailed July 30, 2007. A first extension of time was requested and granted. The currently extended due date is set to expire on October 30, 2007. An additional extension of time of one week, until November 5, 2007 is hereby requested. The extension of time is sought for the following reason.

On October 25, 2007, TiVo's representatives conducted an interview with Primary Examiner Ovidio Escalante, Primary Examiner Minh T. Nguyen, and Special Program Examiner Mark J. Reinhart. During that interview TiVo's representatives explained the differences between the invention, as recited in claim 1 and 32, and the cited reference, U.S. Patent No. 6,788,882 to Geer, et al (Geer). Subsequently, on October 26, 2007, a further telephone interview was conducted. Based on the results of those interviews, TiVo believes it is able to answer the questions raised by Primary Examiner Escalante and to clearly explain the differences between the present invention

and the Geer disclosure. A response to the outstanding Office Action is being concurrently filed with this Petition.

This Petition is requested to enable the Examiner to review the response and act on it before the Patent Owner must take alternative action. It is hoped that the granting of this Petition and the Examiner's actions upon review of the Patent Owner's response will in fact expedite the disposition of this re-examination proceeding.

For the above reason, TiVo specifically requests that the extension of time to respond to the Office Action be granted for a period of one week to allow sufficient time for Examiner Escalante to review and act on the Patent Owner's response.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

Date: October 29, 2007

1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
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740367_1.DOC

Patent Under Reexamination: 6,233,389
Reexamination Control No.: 90/007,750
Examiner: Escalante, Ovidio
Art Unit: 3992

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

**CERTIFICATION OF SERVICE OF PETITION FOR EXTENSION OF TIME
UNDER 37 C.F.R. §1.550(c)**

In compliance with 37 C.F.R. § 1.550(f), the undersigned, on behalf of the patent owner, hereby certifies that a copy of this paper has been served on the third-party requester by first class mail on October 29, 2007. The name and address of the party served is as follows:

David L. Fehrman
Morrison & Foerster, LLP
555 W. Fifth Street, Suite 3500
Los Angeles, CA 90013

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Edward J. Kessler
Attorney for Patent Owner
Registration No. 25,688

Date: 29 Oct 2007
1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

740367_1.DOC

Electronic Patent Application Fee Transmittal

Application Number:	90007750			
Filing Date:	17-Oct-2005			
Title of Invention:	MULTIMEDIA TIME WARPING SYSTEM			
First Named Inventor/Applicant Name:	6233389			
Filer:	Edward J. Kessler			
Attorney Docket Number:	2513.001REX0			
Filed as Large Entity				
ex parte reexam Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Petition fee- 37 CFR 1.17(g) (Group II)	1463	1	200	200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				200

Electronic Acknowledgement Receipt

EFS ID:	2381985
Application Number:	90007750
International Application Number:	
Confirmation Number:	4653
Title of Invention:	MULTIMEDIA TIME WARPING SYSTEM
First Named Inventor/Applicant Name:	6233389
Customer Number:	26111
Filer:	Edward J. Kessler
Filer Authorized By:	
Attorney Docket Number:	2513.001REX0
Receipt Date:	29-OCT-2007
Filing Date:	17-OCT-2005
Time Stamp:	11:20:46
Application Type:	ex parte reexam

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$200
RAM confirmation Number	6844
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Trans Letter filing of a response in a reexam	2513_001REX0_SKGFCoverLetterReplytoFinalOAdated07302007.pdf	57325 6e486a821a97c736e001e1f065eb1150889b102	no	2
Warnings:					
Information:					
2		2513_001REX0_ReplytoFinalOAdated07302007.pdf	811140 41fb6918116475b374dad7e470e721d631d3d5d	yes	24
Multipart Description/PDF files in .zip description					
		Document Description	Start	End	
		Reexam Response to Final Rejection	1	23	
		Reexam Certificate of Service	24	24	
Warnings:					
Information:					
3	Reexam Request for Extension of Time	2513_001REX0_PetitionforExtensionofTime.pdf	83495 746acdde38d743376b0f190a48d10711064575a3	no	3
Warnings:					
Information:					
4	Fee Worksheet (PTO-06)	fee-info.pdf	8145 0c2fc6691b835751660f585213544bfd3efbce88	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			960105		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					