Exhibit 8

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA (SAN FRANCISCO)

APPLE COMPUTER, INC.,	)	
	)	
Plaintiff,	)	
	)	
-against-	)	Case No.
	)	C-06-00019
BURST.COM, INC.,	)	(MHP)
	)	
Defendant.	)	

DEPOSITION of JOEL HALPERN, an Expert Witness, taken by Defendant at the offices of Susman Godfrey, L.L.P., 590 Madison Avenue, New York, New York, on Monday, November 13, 2006, commencing at 10:11 a.m., before Charleane M. Heading, a Registered Professional Reporter and Notary Public within and for the State of New York.

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Internet technologies. It's not exclusively Internet, but that is a focus.

Q How long has that been the case?

A More than, more than 18 years. If you extend it really to telecom in general, more than 24 years.

Q So you were working with Internet technologies approximately 24 years ago?

A No. I was working with telecommunications technologies 24 years ago, many of which became relevant to Internet. I was working with Internet technologies at least 18 years ago.

Q Approximately in 1998 you started work in Internet?

A 1988.

Q I'm sorry. 1988. Thank you.

A Approximately.

Q You got a degree in math.

Let me be clear about this. In 1988, you started focusing your work around Internet technologies, is that correct?

A Approximately 1988. It might have been 1987.

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Newbridge Networks began building an Internet router and it was my job to provide architecture for that device and so I needed to understand the Internet technologies as opposed to our proprietary telecommunications technologies.

Q We kind of got off on a tangent. I asked you a global question regarding your areas of expertise. Can you just articulate what you believe to be your areas of technical expertise?

A I'm a little uncomfortable trying to answer that question the way you're asking it.

I am particularly expert in Internet related technologies. I don't want to, I don't want that to somehow be read as meaning I'm not familiar with and sufficiently expert to report on other aspects of solutions. That's, that's why I'm having a little trouble with answering the questions.

Q I'm not trying to trick you. I'm just trying to understand your background.

So I think it's clear based on your testimony so far that you believe that you're an expert at least in Internet technologies, correct?

A That sounds correct, yes.

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Q Can you identify any other specific areas that you believe you have technical expertise in?

A The general use of telecommunications systems which is development, deployment and use of telecommunications systems and solutions is probably another aspect.

Q What are telecommunications systems?

A Systems for transmitting and receiving or processing information that is being transmitted and received over long distances.

Q Would that include audio and video information?

A Certainly.

Q So you believe you have technical expertise in the field of, for example, data transmission?

A That is part of what I have expertise in, yes.

Q Including the transmission of audio and/or video data, correct?

A Yes.

Q Are there any other areas that you believe you have technical expertise in?

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A Probably, but sitting here at this time, I can't list them for you.

Q Let me ask it this way. Are there any other areas that you think you have technical expertise in that have any relevance to this lawsuit?

A The building of embedded systems, for example, which are systems like the ones that have been discussed is something that I have expertise it that I continue to maintain knowledge and skill in. The capabilities of processors, algorithms as implemented in computer chips might be relevant.

I don't know -- the part of it is until we get further down, I can't be sure what will turn out to be relevant and so I've worked in this industry a very long time. I maintain my skills in a lot of things by working with people on a lot of projects and so I don't, I can't list everything I have sufficient expertise in. I might be asked to opine on in it this case.

Q What are embedded systems?

A It's a general term used for products with a processor embedded in them for a

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specific purpose.

So the processors that we used at Megisto Systems for processing packets were embedded processors and historically, those have used different operating systems and different programming styles.

The distinction has become fuzzy in recent years. So Linux which is a general purpose operating system is also used in embedded solutions now. To some degree, control processors and routers were considered embedded systems. We now use general purpose systems for that.

I'm familiar with them, I know how they're used there and how we build solutions using those things. So it was, it's a space of work that impinges on the notion of general purpose computing and operating systems and all the other programming tasks but it's focused on devices with specific purposes.

Q Have you designed network systems?

A I'm not sure I understand the question the way you asked it.

Q What's your confusion?

A Do you mean have I designed systems

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for use in networks or have I designed networks or systems of networks or --

Q All of the above.

MR. BROWN: Compound. Go ahead.

MR. PAYNE: Good one.

Q Have you designed networks?

A I have designed networks for customers and for clients over the years, yes.

Q Have you designed systems for networks?

A Very much so, yes.

Q Have you been involved in design work concerning packet switched networks?

A Yes.

Q Have you been involved in the design work concerning circuit switched networks?

A I have not been designed, involved -- well, I have been involved in the design of virtual circuit networks as well, yes.

Q What are virtual circuit networks?

A It's a subset of circuit networks focused on technologies that are more recent, not the design of wiring but the design of the

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allocation of circuit capacity to needs, to allocate things that look like intend circuits and manage that structuring using other technologies such as frame relay and ATM.

Q Are virtual networks fixed rate or variable rate or both?

A Virtual circuits can be fixed rate circuits, for example, if their purpose is to emulate a fixed rate classical T1 or T3 circuit or they can be variable rate if their focus is to provide connectivity without regard to the data rate.

Q When did you start working on packet switched systems? Would that have been 1987 or 1988?

A Earlier. I'd say 1983 was my professional involvement with packet switched networks. I had studied them earlier.

Q When did packet switched systems come into being?

A The best known use of packet switched networks and packet switching systems goes back to 1969. There actually are earlier packet switched networks and packet switching

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devices that had been developed. I don't have the references to the years for those.

Q Is it fair to say that by the 1980s, packet switched systems were well known?

A Yes.

Q In your report which we'll get to in a minute, you use the phrases "fixed rate communication networks" and "variable rate communication networks," correct?

A If you say so. It sounds right. I'd have to look at the words but that sounds correct.

Q I'll represent to you that's correct. I'm reading on pages 3 and 4 if you want to look at it.

Do you see "Fixed Rate Communication Service," for example, on page 3?

A Yes.

Q And "Variable Rate Communication Networks" appears on page 4, correct?

A Yes.

Q When you talk about fixed rate communication networks, are you necessarily talking about circuit switched systems or is that

a broader term?
A There are techniques for delivering fixed rate communication over other things and I'm familiar with those techniques but certainly in 1988, for example, fixed rate communication would have almost always been circuit communication.
Q So in 1988, it's your belief that fixed rate communication networks and circuit switched networks were synonymous?
A No. That's not what I said, sir.
Q All right.
A There were variable rate circuit switched technologies in 1988, but almost any use of fixed rate would have been likely to have been circuit switched.
Q You said there were variable rate circuit switched technologies in existence --
A Yes.
Q -- in 1988?
MR. BROWN: Let him finish the question.
THE WITNESS: Sorry.
MR. BROWN: Go ahead.
A Yes.

Q So fixed rate -- strike that.
When we're talking about circuit switched systems in 1988, we're talking about both fixed rate systems and variable rate systems?
A If you use the general term "circuit switched," yes.
Q What does "circuit switched" mean?
A It refers to establishing a communications path between two entities with known properties, i.e., a circuit, before communicating.
Q Describe to me how that type of circuit would be fixed rate?
A If the properties of the circuit were fixed rate, for example, if the circuit was a T1 circuit from the telephone company where the telephone company commits to giving a certain fixed, always available bandwidth, you may not have more, you may not -- you will always get that much, that is a fixed rate. They are committing to delivering it at a very regular time with very tight bounds.
That is an example of a fixed rate circuit switched communication.

Q What's an example of a variable rate circuit switched communication?
A A service, for example, such as a frame relay circuit with a difference between its committed rate and its burst rate when in some cases, the committed rate might even be zero and the burst rate might be in the megabits per second.
Q You talked about committed rates and burst rates, correct?
A Yes.
Q What are committed rates?
A These were parameters used with certain kinds of circuits.
As I said, a circuit has characteristics and so a committed rate would be a characteristic of the circuit that says you'll always get at least this many bits through but that might be zero in which case that doesn't tell you anything about your communication. So that frame relay circuits often had a very high burst rate.
Q What's a burst rate in connection with the frame relay circuit that you described as

variable bandwidth?
A It was the instantaneous rate that you were allowed to communicate over a frame relay, the short term time limited rate.
Some frame relay circuits had an unlimited burst rate.
Q Were those variable rate circuit switched systems used in connection with audio and video back in 1988?
A There was certainly discussion of doing so. I don't know if it was being done yet but that was certainly talked about.
Q In 1988, were the fixed rate circuit switched systems used to transmit audio and/or video?
A I'm sure they were.
Q Can you give me an example?
A Well, telephone circuits would be used to carry audio or video between locations. Many uses for that.
Q Give me a couple of applications, please.
A A T1 circuit could be used to interconnect private phone exchanges and would

carry audio, therefore voice.

There were, at the time I believe they were still quite expensive but there were videoconferencing solutions that used fixed rate circuits to exchange video and audio across, between remote locations.

I believe there were actually other uses.

Q Are packet switched systems always variable rate?

A As I said, there are ways of delivering fixed rate communication using packet rate systems but, and there have been fixed rate packet rate systems occasionally.

Q You're saying "packet rate." Do you mean "packet switched"?

A There have been fixed rate packet switched communication systems. Most packet switched networks are basically variable rate networks.

Q For example, the Internet is an example of a packet switched system that's variable rate, right?

A Yes.

Q Are most fixed rate systems circuit switched systems?

A Yes.

Q But you said there are packet switched fixed rate systems as well?

A What I said was there are ways of differing fixed rate data delivery over packet switched networks and there have been at times in the past fixed rate packet switched networks.

Q But if we're talking about using packets, per se, to transmit the data --

A One would expect the communication to be variable rate.

Q Yes, well, okay. If the data is being transmitted in the form of packets, is that type of transmission always going to be variable rate?

A I would hate to say always. People build many interesting things. Typically it would be variable rate.

Q Do you have any specific expertise with respect to memory systems?

A I am -- not with respect to the design of memory chips but to their usage in

solutions.

Q You used the phrase "time compression" on page 3 of your report, correct?

A Yes.

Q You say that's essentially increasing the frequency in order to decrease the duration or transmission of the data, right?

A Yes.

Q Do you have expertise in the area of time compression?

A As part of my work, for example, at Network Systems, I worked with Network Systems' time division multiplexing systems which did provide time compression as part of those solutions.

While I worked with those solutions later, those were offered in approximately this time frame. I don't know what year Newbridge started off with it precisely but it's not far off, and the TDM technology they used goes back further than that, a lot further than that.

Q "TDM," you mean "time division multiplexing"?

A Yes.

Q When I use the phrase "time compression" today, I'm going to use that phrase in the same manner you used the phrase in your report on page 3 unless I say otherwise.

Do you understand me?

A Okay.

Q I'm not saying I agree with how you're using "time compression" mind you, but I'm going to use that phrase in the same way you've used it on page 3. Okay?

A Okay.

Q Similarly, with respect to data compression, I will use that phrase in the same manner that you've used it on page 2 of your report.

Do you understand me?

A Do you mean page 2 through the top of page 3?

Q Correct.

A Yes.

Q So in your mind, there's a difference between data compression and time compression, correct?

A There is a difference between data

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compression and time compression as those terms are used, yes.

Q You've talked about your work at Network Systems and Newbridge in connection with time division multiplexing in the context of time compression, correct?

A Yes.

Q Is there any other work that you've done in the past in connection with what you call time compression?

A I don't believe so.

Q Have you ever written code?

A Yes.

Q Do you have software expertise?

A Yes.

Q What software languages are you able to write?

A I concurrently, comfortably write in C and Java. I can read and work with C Plus Plus, Pascal, a variety of assembler languages. I guess I can write in PEARL. I can read a number of other languages that are used for scripting.

I'm a well-versed programmer who has maintained his skill as a programmer. That is an

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example of why I said I couldn't list earlier all of my expertise.

Q How many times have you served as an expert witness?

A Including current cases?

Q Yes.

A I believe it's eight times.

Q Were those all in connection with patent infringement cases?

A Yes.

Q How many cases are you currently working on?

A I believe it's five.

Q Can you list for me those five cases?

A I don't think I can list some of them for you.

Q Well, because of confidentiality issues?

A Yes.

Q Okay. Fair enough. But they're all patent cases, right?

A They're all patent cases.

Q One case you're involved in

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obviously is the Apple/Burst case. Can you list any other cases?

A I believe -- okay.

Q For example, if you've given a report, I assume you can tell me.

A Yes, that's why I'm trying to think.

Historically, I was involved in the Cisco/Alcatel case and the Cisco/StorageTek case. Both of those cases are complete.

Q I'm sorry. You mentioned the Cisco/StorageTek case, right?

A Yes.

Q And what was the other case you mentioned?

A Cisco/Alcatel and there may be a minor error in my list of previous testimony. I recently learned that I had forgotten a deposition in 2003 in that case.

Q In the Cisco/Alcatel case?

A Yes. I was surprised to learn it but somebody showed me the dep transcript and I said, well, okay. I had forgotten it.

So I have been -- I've done a number of reports in the Toshiba/Juniper case. I have

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done a report in the Call Wave/Catch Curve case.

I believe that's all the cases in which I have filed reports. I'm trying to be complete. I'm not trying -- I'm just trying to remember. And this case. That's the ones I have reports in that have been filed.

Q Let me make sure I understand you. With respect to reports --

A Reports or declarations.

Q Reports or declarations. You've done such reports or declarations in connection with this case, the Cisco/Alcatel case, the Cisco/StorageTek case, the Toshiba/Juniper case and the, I'm sorry, I didn't catch this one, Call Way?

A Call Wave v. Catch Curve. I may have them in the wrong order.

Q Call Wave?

A Call Wave versus Catch Curve and I'm not even sure which order the case is officially listed in. There's a standard, I know. I just --

Q Were any of those reports done in connection with claim construction issues?

A Yes.

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Q Which ones?
A I believe there were claim construction issues in the Alcatel/Cisco case, there were claims construction issues in the Cisco/StorageTek case, there were claims construction issues in the Juniper/Toshiba case, there were claim construction issues in this case and there are claims construction issues in Call Wave v. Catch Curve.
So, yes, all of those included claim construction issues.
Q Do you have copies of those previous reports on claim construction?
A No.
Q You didn't retain any copies?
A No.
Q What law firm did you work with in connection with the Cisco Alcatel case?
A Weil Gotshal & Manges.
Q Give me the name of one attorney, please?
A That case would have involved Doug Lumish.
Q Same question as to all the other

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three cases.
A Okay. Cisco/StorageTek, again, was Weil Gotshal. The lawyer, I think Sacco Bajikian was a lawyer for a Weil. Dave Ball was a lawyer that I worked on in that case.
What's the next one on the list?
Q Toshiba and Juniper, please.
A Toshiba versus Juniper, the law firm is Oblon Spivak McClellan Maier & Neustadt. The lawyer I worked with most on that case is Thomas Fisher.
Q The next one is the Call Wave case.
A Call Wave, I worked with Weil Gotshal & Manges. Steve Carlson is the lawyer.
Q Have you worked with Weil Gotshal in any other cases?
A And this case of course. That's --
Q So you've worked with Weil Gotshal on four cases, correct?
A Yes.
Q I can't remember if you told me whether all four of those cases in which you did reports are pending or not?
A Some of them are completed. Some of

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them are still pending.
Q Is the Alcatel case pending?
A I believe that was settled.
Q When?
A I don't know.
Q When is the last time you worked on it?
A The 2003 deposition.
Q What about the Cisco StorageTek case?
A I believe, I have been informed by some folks that there is no appeal and therefore it is done. It went to trial in May of 2005, May, June, 2005, and I believe it is complete.
Q What about the Toshiba/Juniper case?
A I believe that is under appeal.
Q What about the Call Wave case?
A That's in its early stages.
Q Were you on the defense side in each of those cases?
A No.
Q It's probably a poor question. You're on the plaintiff side in this case, aren't you? The style of the case is Apple V Burst.com.

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Let's just walk through these cases.
Cisco/Alcatel, did you, were you retained -- who was Weil Gotshal representing in that case? Were they representing the patent owner or alleged infringer?
A They were representing Cisco. There were patents alleged by both sides in that case.
Q Okay.
A I worked specifically on behalf of one of Cisco's patents.
Q So you construed claims that were being asserted in that case, correct?
A Yes.
Q What about the StorageTek case?
A The patents -- I worked on behalf of Cisco. The patents were StorageTek patents.
Q What about the Toshiba/Juniper case?
A Patents are held by Toshiba and I'm working on behalf of Toshiba.
Q What about the Call Wave case?
A I believe the patents -- I'm working on behalf of Call Wave and the patents are held by Catch Curve.
Q Okay. You've testified either at

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trial or by deposition in the last four years in connection with three cases, correct? I'm looking at page 50 of your report, by the way.

A There has been one deposition since that report was done. So since the report was filed, I have also been deposed in the Catch Curve v. Call Wave case.

Q When was that?

A Two weeks ago, I believe, two and a half weeks ago. I'm sorry. If I had known it mattered, I could have looked up the date.

Q It's okay. It's okay. Did you give testimony in claim construction issues?

A My report is on claims construction in that case.

Q And you were deposed?

A Yes.

Q On your report?

A Yes.

Q What about the Cisco/Alcatel case? I think you said you were deposed in connection with that case in 2003, correct?

A I was deposed actually in both 2001 and 2003. The 2001 is not mentioned because it's

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more than four years ago.

Q I'm with you.

Did either of those depositions concern claim construction issues?

A I believe so.

Q Which one?

A I don't remember. It's -- the case is too long ago and even the 2003 deposition, as I said I had forgotten it. The only reason I know it exists is I saw the cover page recently.

Q You forgot a deposition that you gave three years ago?

A Yes.

Q It must have been a non-event.

A I'll leave that to your judgment.

MR. BROWN: I'm sure the lawyer wasn't as memorable as you, Les.

Q Do you have copies of those transcripts from the Alcatel case?

A I don't believe so.

Q No trial testimony in that case, right?

A Correct.

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Q What about StorageTek v. Cisco, did you give deposition testimony and/or trial testimony?

A Both.

Q How many depositions in that case?

A I believe there was only one deposition in the case.

Q Do you have transcripts from either your deposition or trial testimony in connection with that case?

A No.

Q Do you have any deposition or trial transcripts period?

A No, not, not of my own.

Q Okay. Let's talk about Toshiba versus Juniper.

A Yes.

Q Were you deposed in that case?

A Yes.

Q How many times?

A One deposition over two days.

Q Did you give trial testimony in connection with that case?

A No, I have not.

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Q So there are three other patent cases that you've worked on or are currently working on that we haven't talked about, correct?

A I believe so.

Q Can you tell me any of those cases or not?

A I don't believe I can, I am free to do so.

Q That's because those cases are either pending or, or they're in the investigation mode, correct?

A Yes.

MR. PAYNE: Okay. Take a short five-minute break?

THE WITNESS: That would be a good idea.

THE VIDEOGRAPHER: The time is 11:08. We are off the record.

(Recess taken)

THE VIDEOGRAPHER: The time is now 11:19. We are back on the record.

BY MR. PAYNE:

Q Mr. Halpern, turn to page 2 of your report, please.

Halpern

On pages 2 and 3, you talk about the concept of compression, correct?

A Yes.

Q As we've discussed before, you mentioned both data compression and time compression, correct?

A Yes.

Q You say that data compression is a representation of a series of numbers by a reduced number of digits, correct?

A Yes.

Q That's your definition for data compression, right?

A I believe so.

Q Do you agree that the Burst patents marked as Exhibit 1 through 4 teach data compression?

MR. BROWN: Objection. Vague.

A That phrasing, it sounds like you mean something specific.

Q Let me ask it. Do the Burst patents marked as Exhibits 1 through 4 disclose data compression?

A Certainly the specification of the

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one you've got marked as Exhibit 1 which is the '995 patent includes reference to data compression and a description of it being used.

Q In fact, is it your testimony that the only form of compression disclosed in the Burst patents is data compression?

Let me see if I can shortcircuit this as you're thumbing through your reports. Okay?

You told me that the Burst patents disclose data compression, correct?

A Correct.

Q The other type of compression your report refers to is time compression, right?

A Correct.

Q Does the Burst patents describe time compression?

A The specification of the Burst patents does not describe time compression.

Q The specifications of the Burst patents do not disclose time compression, is that correct?

A They don't describe any means for performing time compression. They don't describe

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it, correct.

Q But it's your view that the claims cover time compression, correct?

A The claims are very explicit in referring to time compression.

Q In your view, the claims cover time compression, correct?

MR. BROWN: Objection. Vague.

A The claims refer to and use the term "time compression."

Q Actually they don't use the term "time compression," do they, sir?

A They use the term "time compressed."

Q They don't use the term "time compression," do they?

A They refer to the result of compression as being a time compressed entity.

Q I'm asking you a very specific question. Do the words "time compression" appear in any of the claims of the Burst patents?

A In that order as you have stated, they do not appear.

Q Thank you.

In fact, the Burst patents talk

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about data compression being one of the objectives of the invention, correct?

A I don't understand what you're asking, sir.

Q You don't understand my question?

A You're obviously referring to something. I don't know to what.

Q Well, you've read these patents, you gave a report on them, right?

A Yes.

Q Is one of the stated objectives in the patents to data compress?

(Pause)

Q Do you know, sir, or not?

A I'm trying to check the exact phrasing they used and the purpose because given the distinction between data compression and time compression, and they're different, I wanted to be careful in answering your question and looking at the abstracts, I don't see that it says that.

Q Can you turn to column 2 of the '995 patent which is marked as Exhibit 1, please. Specifically look at the sentence that begins at line 46.

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Are you there, sir?

A Yes.

Q It says, "A still further object of the invention is to provide an audio/video recorder utilizing a data compression technique for efficient storage, transmission, and reception."

Do you see that language, sir?

A Yes.

Q One of the stated objectives in the Burst patents is using data compression techniques, correct?

A Utilizing data compression techniques, yes.

Q But it's your view that the claims don't cover data compression, correct?

A Correct.

Q Are you familiar with the legal concept that claims have to be construed in light of the specification?

A Yes.

Q Have you applied that concept in connection with your claim construction opinions?

A I've applied, I believe, all of the

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relevant notions of claim construction including the fact the claims, the claim language itself must be construed and that it is construed in the light of the specification, yes.

Q You say on page 2 of your report in connection with data compression that, "Most compression is a form of data compression." Correct, sir? It's the second line.

A "Most compression is a form of data compression," yes.

Q Was that true in 1988 as well?

A Yes.

Q What do you mean by "most compression is a form of data compression"?

A Most uses of compression, both in 1988 and now, were data compression such as the algorithms described here or other algorithms. There's many, many algorithms.

Q And by "described here" you mean in the Burst patents, correct?

A No, I meant in my report.

Q Okay. So is it your view, then, that both today and in 1988 data compression was used more than your time compression?

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A Yes.

Q At the bottom of page 2, you say that, "There were many such techniques known at the time of the invention." Correct?

A Yes.

Q You're talking about data compression techniques there, correct?

A More specifically I'm referring to lossy data compression techniques for audio and video in that paragraph.

Q It's your view that in 1988, there were many lossy audio and video data compression techniques known, correct?

A Yes.

Q What about lossless audio and video data compression techniques in that time frame?

A The known general lossless data compression techniques were used in conjunction with audio and video as well and there were many known lossless data compression techniques.

Q Those video and audio data compression techniques that were known in 1988 were actually being implemented in that time frame, correct?

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A Well, I'm sure there were -- there's ongoing work. I suspect that there were techniques that were just being developed that weren't yet implemented. There were certainly techniques that were implemented.

Q For example, in 1988, was it known to use intra-frame video compression?

A There were various known techniques for intra-frame video compression known and implemented in 1988.

Q Were there also in 1988 known inter-frame, i-n-t-e-r, video compression techniques?

A I believe so.

Q Do you know?

A I believe so.

Q They were known and implemented in 1988, in your opinion?

A I believe so.

Q The same question as to audio data compression in 1988. Did such codecs exist and were implemented in that time frame?

A "Such codecs"? Can you be more specific?

Halpern

Q Audio codecs.
A There were certainly audio codecs implemented in 1988.
Q For example, DPCM audio compression existed in 1988, correct?
A You're describing a general family of algorithms there which I believe existed in 1988 and there have been -- there were some algorithms that existed then. There are other algorithms in that family that were developed later.
Q What about ADCPM in 1988?
A I don't remember when that would have been developed and implemented.
Q When you say there were many such techniques known at the time of the invention, can you describe in general terms, what techniques you're referring to?
Let me help you out here. You refer for example to the "Scene Adaptive Coder" paper, correct?
A Yes.
Q What type of compression algorithm does that paper disclose?

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A That is a lossy transform of an image to produce one that uses far fewer bits.
Q Would you call that an intra-frame algorithm?
A I believe the specific techniques used were indeed intra-frame.
Q What other techniques do you know about in 1988?
A I don't remember the details of what exact algorithms were available in 1988.
Q Let's look at Exhibit 1 which is the '995 patent, please.
At the bottom of column 4, the patent talks about using compressor/decompressor 26 to accomplish data compression. Correct?
A It refers to that, yes.
Q It then says, starting at line 65, "Various algorithms may be employed in the compression process which enable the representation of a series of numbers by a reduced number of digits." Correct?
A Correct.
Q What I just read is very consistent with your definition for data compression,

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correct?
A Correct.
Q In fact, did you get your definition of "data compression" out of the Burst patents?
A That's -- my definition was intended to be consistent with the Burst patents is probably the way to say it.
THE VIDEOGRAPHER: You have about ten minutes left of the tape.
Q The sentence that bridges columns 4 and 5 says, "As an example, compression algorithms like CCITT Group IV may be used."
Do you see that sir?
A Uh-huh.
Q What type of algorithm is CCITT Group IV?
A Well, CCITT Group IV is a large family of specifications. It is not an algorithm.
Q Do the large family of specifications refer to any data compression algorithms?
A They include data compression algorithms, yes.
Q Can you generally describe those

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data compression algorithms that are referred to in CCITT Group IV?
A They, they are lossless black and white, that is two-toned, binary sequence data compression typically used in techniques such as the Lempel techniques and they're specified as part of all of these specifications and fax. CCITT Group IV is fax.
There are also included in the family of color compression algorithms, there's single image compression techniques and there may even be some lossy ones. The primary ones I'm familiar with are lossless.
Q So CCITT includes black and white and color compression algorithms, correct?
A Well, Group IV as I said is a large family of specifications and I know that Group IV includes the transfer of color faxes.
So I haven't checked all of the compression algorithms that they have identified but I would assume that the standards, not the specific chip identified here, but the standards would reference, I know the standards reference multiple compression algorithms.

Halpern

Q Is it fair to say that the standards generally reference what one might call intra-frame data compression?

A Yes.

Q By "intra-frame," do you understand that to mean compressing based on simply the information that's in the image, correct?

A Well, yes.

Q Is that a fair statement or how would you, how would you phrase it?

A Group IV fax is a still image transfer and a still image compression. Each page is compressed on its own independently of other pages.

Q Down at column 5, starting at line 9, there is further discussion about a different data compression technique. Correct, sir?

A Yes.

Q It says, "To further reduce the amount of memory required to store the program, the compression algorithm can simply record data corresponding to only those pixels which change color from one frame to the next." Correct?

A That's what it says.

Halpern

Q Is it fair to say that portion that I've just read of the spec is describing what might be called inter-frame compression?

A It is alluding to, indicating the existence of inter-frame compression.

Q What is inter-frame compression for video in your view?

A In general, inter-frame compression techniques rely, rely for their encoding on the relationship between frames to gain efficiency.

Q Under that regime, would one compare two or more frames?

A Typically.

Q And would one code the differences between those frames?

A For some general notion of difference. The kind of coding, there's techniques, there are algorithms, but one would find some way to code the difference because that's less information.

Q The discussion in column 5 of the '995 patent goes on to reference a saving in the context of memory requirements saying that the inter-frame data compression cuts the file by

Halpern

90 percent. Correct?

A That's what it says, yes.

Q In your view, is that 90 percent figure accurate?

A I would be guessing because there's no specific algorithm described here and compression is both subject and algorithm sensitive.

Q Well, do you know in 1988 in general whether the video inter-frame compression algorithms could result in a 90 percent reduction in the file size?

A My, my understanding of techniques is based on the combination of inter- and intra-frame compression and certainly that combination resulted in a lot more than 90 percent compression.

I'm not familiar with the mathematics that says which portion of that benefit goes to which portion of the techniques in typical video.

Q So --

THE VIDEOGRAPHER: Counsel, if now is a good time --

Halpern

MR. PAYNE: Please, please.

THE VIDEOGRAPHER: The time is now 11:39. This marks the end of tape 1. We are now off the record.

(Recess taken)

THE VIDEOGRAPHER: The time is now 11:41. We are back on the record. This marks the beginning of tape 2.

BY MR. PAYNE:

Q I asked you about the 90 percent figure in connection with video inter-frame compression. I think you said you're not sure one way or the other whether that's an accurate figure for 1988 because your experience is in connection with both intra-frame and inter-frame --

A Yes.

Q -- being used, correct?

A Yes.

Q You testified that with respect to that combination, inter- and intra-frame compression, in 1988 data compression of much more than 90 percent can be achieved, correct?

A Yes.

Q Can you give me a specific

Halpern

percentage, please, for that 1988 inter plus intra-frame compression?

A I haven't attempted to form an expert opinion on just how good was video compression at that time. The number cited in the patent looks, for the combination effect, looks quite reasonable.

Q Okay. Let's move on to -- strike that.

In fact, in column 5, starting at line 18, the patent speaks to combining intra-frame techniques with inter-frame techniques, correct?

A Yes.

Q Let's move on to column 5, lines 28 through 35, please.

Are you there, sir?

A Yes.

Q That paragraph talks about audio compression, data compression techniques, correct?

A Yes.

Q It says towards the end of that paragraph that, "the audio data can be compressed with conventional algorithms, e.g., a Fibonacci

Halpern

delta compression algorithm."

Did I read that correctly, sir?

A I believe so, yes.

Q You would agree that conventional audio data compression algorithms existed back in 1988, correct?

A Yes.

Q Are you familiar with the Fibonacci delta compression algorithm?

A I'm not familiar with the details of that algorithm. I can -- I'm familiar with the notions -- I can tell from the name and from other work the general notion, but I don't know the details of that algorithm.

Q What's your understanding of the general notion of the Fibonacci delta compression algorithm that existed in 1988?

A Well, it's a delta compression algorithm and it's going to represent changes instead of representing values and it's going to collapse sizes of changes, approximate -- it's going to be a lossy compression using probably the Fibonacci sequence as the values, approximately.

I don't know, as I said, I don't

Halpern

know the details of this algorithm.

Q Do you know whether the Fibonacci delta compression algorithm in 1988 compared two or more samples?

A I presume it did being a delta compression algorithm.

Q Do you know whether it coded the differences between those samples?

A In some fashion, I would expect it to. As I said, I don't know the details of that algorithm.

Q Let's move on to page 3 of your report, please. In particular, let's talk about time compression, sir.

A Yes.

Q You say that, "Time compression is a concept associated with burst transmission and time division multiplexing." Correct?

A Yes.

Q Is time compression limited to a multiplexing context?

A No.

Q There are other types of time compression that have nothing to do with

Halpern

multiplexing?

A There are -- there are other uses of time compression than in multiplexing situations.

Q One example of time compression is time division multiplexing, correct?

A Time division multiplexing makes use of time compression.

Q Is that example of time division multiplexing one that you're familiar with?

A Yes.

Q In fact, you've worked with time division multiplexing concepts in the past, correct?

A Yes.

Q Can you explain to me how time compression works in the context of time division multiplexing?

A The general idea is to take a signal typically, an analog signal, and compress it in time with the concomitant increasing frequency and ship it and in the time division multiplexing case, this is so that some other signal can use another portion of time so you can get more data, more analog signal through the channel, through

Halpern

the communication.

Q Is time division multiplexing used for digital signals as well?

A There are digital time division multiplexing techniques as well.

Q Which, which -- strike that.

Is time division multiplexing used more often with analog signals than with digital signals?

A The question would be when.

Q 1988.

A In 1988, I don't believe it was used more often digital than analog.

Q In 1988, time division multiplexing was used more often with analog than digital, is that correct?

A I believe so.

Q How much more often? Give me your best opinion.

A I don't have the data to give you a number, sir.

Q But is it your opinion that in 1988, time division multiplexing was used with digital signals?

Halpern

A Yes.

Q You're certain of that?

A I believe it was.

Q Well, do you have any examples for me where time division multiplexing was used with digital signals?

A I haven't looked for any examples, sir.

Q So you have no examples for me today?

A Correct.

Q You're an expert in, in transmission or Network Systems, correct?

A I don't believe that's exactly what I said.

Q Okay.

A But some -- I don't believe that's exactly what I said earlier.

Q What systems used analog time division multiplexing in 1988?

A Probably the best known would have been the phone system.

Q So telephony is one example, correct?

Halpern

A Yes.

Q Do you have any other examples?

A I haven't researched all of them. I believe there were other uses.

Q Sitting here today, can you give me any other examples outside of the phone system?

A Not that I recall.

Q Your report on page 3 continues to say, "The same information is delivered in a shorter period of time." Correct?

A Yes.

Q You're talking about time compression here, correct?

A Yes.

Q By "same information," you mean, for example, in the digital context, the same bits. Correct?

A I'm not, I don't think that's a correct interpretation.

Q Why?

A Because sending the bits in shorter time periods is not time compression which means you don't increase the frequency. It's not the same kind of thing.

Halpern

I don't, I think -- I don't think it maps right.

Q On page 12 of your report you say, "The number of bits in the signal is not changed, the bits are simply put closer together in time," is that correct?

A Okay. Okay. Yes.

Q So if you're talking about time compression in connection with a digital signal, is it your testimony that at least the number of bits are not changed?

A Yes.

Q That's what you wrote in your report, correct?

A Yes. That is what I wrote in my report and I stand by it, yes.

Q And you say the bits are simply put closer together in time, correct?

A Yes.

Q So when you say the number of bits are not changed, I assume that you're excluding data compression, correct?

A Correct.

Q Because data compression of digital

Halpern

signals involves reducing the number of bits, correct?

A Yes.

Q So with respect to digital signals and time division multiplexing, are the same digital bits delivered in that context?

A If the time division multiplexing makes use of time compression, then the same additional bits will be delivered.

Q Is it your view as well that data compression cannot be performed on analog signals?

A Reducing the number of bits which is the definition of data compression is not meaningful for an analog signal.

Q Are the concepts of time compression and data compression mutually exclusive?

A They're different concepts.

Q Are they mutually exclusive?

A They are very different concepts and so I'm not sure how to answer the question the way you're asking it. In what context?

Q Well, do you ever use them together?

A It would be unusual to use them together.

Halpern

Q Do you know of any examples where they're used together?

A I haven't gone and looked for that.

Q Is the answer to my question "no"?

A Sitting here when I have not formed an expert opinion on the question of whether they are used together, I cannot give you an example of them used together.

Q We talked earlier about fixed rate communication networks that are referred to on page 3. Correct?

A Yes.

Q And you told me that it's possible that packet switched systems in 1988 can be fixed rate, is that correct?

A I believe there were certain systems that were packet switched but that delivered fixed rate communications.

Q But the most prevalent example of a fixed rate system back in 1988 in your view is the telephone system?

A Yes.

Q That's a system that you're familiar with, correct?

Halpern

A Yes.

Q On page 4, you talk about variable rate communication networks, correct?

A Yes.

Q One example would be the Internet, correct?

A That is one example.

Q Most packet switched systems are variable rate, correct?

A Yes.

Q What does "variable rate" mean?

A It means that, that if you observe the rate at which data moves through the system from a center to a receiver, that rate is not constant over time.

Q How much might it vary?

A In Internet -- in what context?

Q Let's talk about Internet technology.

A In Internet technologies, that rate can vary by several orders of magnitude.

Q So, for example, if I'm talking about transmitting over the Internet a 3-minute data compressed audio file, what variations might

Halpern

you see in transmission speeds over the Internet?

A The binary data that you ship, if you're shipping it over the Internet from two places, the speed that you will see will depend on the links to the Internet at each end, conditions on the Internet in the middle and a multiplicity of factors.

You can see a very wide range in speeds.

Q It can vary by seconds or even minutes, correct?

A The data rate varies differently. Time is not a rate.

Q Let's just talk about transmission time. Okay?

A Okay.

Q The amount of time it takes to transmit from point A to point B over the Internet. Okay?

A Uh-huh.

Q Could that transmission time vary in terms of seconds?

A The transmission time to send what size information?

Halpern

Q Well, the hypothetical was a 3 minute audio compressed file.
A How large is that compressed?
Q Let's, let's talk about an AAC file which might be compressed to 128 kilobits per second.
A So how large is that file? Do you wish me to assume that that file is 22 megabits or about 3 1/2 megabytes? Is that the size of the file?
Q That sounds reasonable to me. I haven't done the math, but it's 180 seconds in my hypothetical, right?
A I believe that's what you said.
Q Okay. So, so just tell me in general how much the transmission time might vary for that type of file?
A The transmission time for a 3 1/2 megabyte file can vary dramatically on different occasions by many minutes.
Q By minutes? Okay. By many minutes, correct?
A Many minutes.
Q Did the Lang patents disclose in the

Halpern

spec both fixed rate systems and variable rate systems?
A Systems for what?
Q Well, let's talk about the transmission of audio/video information, okay? Are you with me?
A I'm with you.
Q The Lang patents disclose transmitting audio and video information, correct?
A Yes.
Q They disclose transmitting audio and video information that has been data compressed, correct?
A Yes.
Q Okay. That type of transmission can be accomplished over a fixed rate communications network, correct?
A Yes.
Q That transmission can also be accomplished over a variable rate communications network, correct?
A Just a moment, please.
I don't believe that transmission is disclosed or described in the patent as occurring

Halpern

over a variable rate communications network.
Q You don't think the patents describe using a variable rate network to transmit the compressed audio/video information?
A That is correct.
Q Putting aside what the patents disclose or don't disclose, back in 1988, could a variable rate communications network be used to in fact transmit data compressed audio or video files?
A In the abstract notion of what someone could do, yes.
Q That type of system could be implemented, correct, back in 1988?
A Yes.
Q Why is it that you say that the Burst patents do not describe transmitting the audio/video information over a variable rate network?
A Because it, as far as I know, it doesn't.
Q They talk about using fiber optic networks, correct?
A They talk about using a fiber optic

Halpern

telephony link. That's a fixed data rate link.
Q You think the discussion of fiber optics is limited to the telephone system?
A I believe so, and the way it is used in these patents.
Q Did fiber optic networks exist back in -- strike that.
Did fiber optic networks exist back in 1988 that weren't telephone systems?
A For local computer room use, yes.
Q Those would have been packet switched systems, correct?
A Yes.
Q So back in 1988, people were using packet switched fiber optic systems outside of the telephone context, correct?
A Yes.
Q Were they using those type of systems to transmit audio or video information?
A I believe so.
Q In what context specifically?
A The FDDI standards were being implemented and were being used by many people, many companies.

Halpern

Q Why don't you think the patents are referring to that type of transmission over a packet switched fiber optic system?

A Because that's not consistent with the way it refers to them. It refers to them as a fixed data rate system.

Q The words "fixed data rate" do not appear in those patents, do they?

(Pause)

A It refers to fiber optic telephone line. Those are fixed rate surfaces.

Q The words "fixed rate" don't appear in those patents, do they?

A That is true.

Q You told me earlier that in 1983, you worked on a packet switched system, correct?

A Yes.

Q That would have been a variable rate system, correct?

A Correct.

Q So such systems existed as early as 1983, correct?

A Yes.

Q In fact, you testified they existed

Halpern

back in the 1960s, is that correct?

A Yes.

Q So they were certainly in existence when this first application was filed in 1988, correct?

A Yes.

Q And I think it's your testimony that such systems meaning variable rate systems in 1988 can be used to transmit audio and video, correct?

A Outside of the scope of these patents, such variable rate packet switched systems could be used to transfer audio and video.

Q What do you mean by outside the scope of these patents?

A It's not described in the patents.

Q Is there anything in the patents that says you cannot use a variable rate system to transmit audio/video information?

A The patents describe specific things. The question is not what do they prohibit, but what do they describe.

Q Well, that's my question. Okay? Just oblige me here. Okay? My question is a very simple question. Okay?

Halpern

Is there anything in the patents that suggest to you that Burst was excluding the use of variable rate systems to transmit audio and video?

A I'm sorry. I believe you're now getting into a set of analyses that I haven't been asked yet to perform. I haven't done the other analyses that would be needed to answer that question in a meaningful fashion.

Q Sitting here today, is there any evidence in the Burst patents that excludes the use of variable rate systems to transmit audio and video information?

A Sir, you're asking me as an expert to tell you an opinion on the scope of the applicability of the patent. I haven't done an analysis of that.

I would, therefore, be very uncomfortable telling you that it does or does not exclude something in its scope because now you're getting into a different kind of question from a claim construction question.

Q Let's talk about the specification. Okay?

Halpern

A Okay.

Q Do any of the specifications exclude the use of variable rate systems to transmit audio and video information?

A The only systems described for using it are fixed rate systems.

Q Is there any evidence in the Burst specifications that excludes the use of variable rate systems to transmit audio/video information?

A The only thing described in the specification is the use of fixed rate communication.

MR. PAYNE: Objection. Nonresponsive.

Q Mr. Halpern, you know, we're going to be here all day if you don't answer my questions so can you just oblige me, please? You know exactly what I'm asking you so can you just please answer my question? I don't want to go through this process over and over.

MR. BROWN: That's uncalled for.

MR. PAYNE: I'm sorry but really, I've asked this question four

Halpern

times now.

MR. BROWN: I think he's given you his best answer to that question. Maybe you can phrase it in a different way.

Q Show me any evidence in the specifications that excludes the use of variable rate systems to transmit audio and video information?

MR. BROWN: I think that's the same question and he's answered that question, Les.

Q Answer the question, please.

A I cannot show you any discussion of variable rate communication in the patent specifications.

Q Can you show me any evidence or discussion in the specifications that necessarily excludes the use of variable rate systems?

A What I've said is that I have not performed an analysis to answer that question so that to answer it would be inappropriate.

Q So sitting here today, you cannot show me any evidence, correct?

Halpern

A I --

MR. BROWN: Asked and answered.

A I have not performed the analysis to give you an expert answer to that question.

Q It's a "yes" or "no" question.

MR. BROWN: Les, he's answered the question.

Q Do you know of any evidence?

MR. BROWN: Objection. Asked and answered. Argumentative.

Les, you should move on. He's given you an answer to that question five times. He's told you what the evidence is. He pointed it to you in the patent. You've asked him whether there's anything that specifically excludes it --

MR. PAYNE: Don't give speaking objections. Okay? You've made your objection. I'll respect it.

MR. BROWN: Wait, no. Move on. He's answered the question five or six times.

Halpern

MR. PAYNE: Please don't give speaking objection.

MR. BROWN: Les, you've been giving speaking objections to your own questions, okay, so why don't you move on.

MR. PAYNE: I'm not going to move on until I get an answer to this question.

MR. BROWN: You've had an answer five times. It's clear from the record. Move on.

Q You don't know of any evidence, correct, sir?

MR. BROWN: Asked and answered.

A I wouldn't say that. I didn't say that.

Q Show me the evidence you know of today that would support the proposition that variable rate systems are necessarily excluded in transmitting audio/video information?

MR. BROWN: Asked and answered six times.

Halpern

A The patent describes fixed rate systems --

Q Show --

A -- only. That's all it describes.

Q Show me the evidence in the patent specifications that excludes the use of variable rate systems?

A I haven't performed the analysis to do that.

MR. BROWN: Asked and answered six times or maybe seven.

Q So you can't point to any evidence today, correct?

MR. BROWN: Mischaracterizes his testimony. Asked and answered.

He's pointed to the evidence already. We've been through this many times.

A I have not performed an expert analysis, for example, as to the question of whether the presence of specific descriptions and the absence of other descriptions constitutes exclusion or inclusion of other things.

What I can tell you is that it

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Halpern

describes only fixed rate systems.

Q So then is it accurate that sitting here today you don't have an opinion one way or the other about whether the specifications excluded the use of a variable rate system?

A I do not have an expert system, a properly formed and supported expert opinion on that question.

Q Thank you.

Does the Internet operate over the telephone at work?

A Yes.

Q Was that true back in 1988?

A Yes.

Q So when the patents describe fiber optic telephone systems, wouldn't that refer to using an Internet based system back in 1988?

A No.

Q Why not?

A Multiple reasons.

Q Start with number one, please.

A Number one, you couldn't get a fiber optic telephony link to the Internet in 1988. That's the, the first reason.

Halpern

Q The telephone fiber optic system was not connected to the Internet system in 1988?

A It was not connected to end users and in fact the Internet in 1988 did not make use of fiber optic telephony links.

Q But it does today?

A Yes.

Q When did it start making use of fiber optic telephony links?

A I haven't gone and done the research on that question. I don't know the year.

Q Let's move on to page 5 of your report, please.

Page 5 starts your opinions with respect to claim constructions, correct?

A Yes.

Q Before we get into your constructions, I want you to walk me through how your claim constructions would work, for example in connection with claim 1 of the '995 patent.

What I mean by that specifically is if you take your claim constructions and apply them to the sequence that's claimed in claim 1 of the '995, I'd like for you to just walk me through

Halpern

the process of, you know, receiving information, compressing the information, storing the information, transmitting the information.

Are you with me, sir?

A I'm with you.

Q Okay. Let's look at Figure 2 of the '995 patent, please, sir.

The first limitation in the body of claim 1 of the '995 is "input means for receiving audio/visual source information. Correct?

A Yes. I believe. Let me flip. You had me flip to Figure 2 and now I'll need to go find the claim.

Q Yes.

A Yes.

Q And Figure 2, for example, discloses several different means for receiving the audio/video source information. Correct?

A Now, I have no go --

Q I'm not going to ask you about the specific means, sir. Don't worry about that right now but would you agree with me it discloses at least one means to receive audio/video source information?

Halpern

A '995, Figure 2, yes.

Q The second limitation in claim 1 of the '995 is that compression means limitation. Correct, sir?

A That is the beginning of the second limitation.

Q And it talks about a compression means for compressing the source information into a time compressed representation having an associated time period, et cetera. Correct?

A Yes.

Q You've construed that to, for example, require the use of time compression, correct?

A Yes.

Q Okay. And you've opined in your report, I believe, that Figure 2 doesn't disclose a means for achieving time compression. Correct?

A There is no structure that is clearly linked to the function of compressing the video and audio source information into time compressed representation.

Q The answer is "yes," correct?

A Yes.

Halpern

Q What in 1988 would you include in Figure 2 to show the structures that are required to perform time compression?

A I haven't done that analysis.

Q Can you sitting here today identify any specific structures that could be used in connection with Figure 2 to perform the function of time compression?

A Not from the information I have available. I haven't tried to do research in what parts could do time compression. I haven't done the analysis. You're asking me to do something I haven't done.

Q I understand that, but you're being tendered as an expert on claim construction and you've given the opinion that Figure 2 doesn't show the time compression structure, right?

A I've given the opinion that the patent, the specification of the patent does not show it, a structure for doing this.

Q We talked about time compression being performed in the context of time division multiplexing back in 1988, correct?

A Correct.

Halpern

Q That's a concept you're familiar with, correct?

A Yes.

Q Well, if, if time compression were accomplished through time division multiplexing in this invention, where would the time division multiplexing structure be?

A I can't answer that question.

Q Why not?

A Because the invention is not structured around time division multiplexing.

Q That's a good point, sir. The invention doesn't have anything to do with time division multiplexing in your view?

A That isn't what I said.

Q Okay. Well, the specifications don't talk about time division multiplexing, do they?

A Correct.

Q There's no mention of time division multiplexing anywhere in the specifications or the claims, correct?

A Correct.

Q But you say time division

Halpern

multiplexing is something that can be used to accomplish your time compression, correct?

A That's not what I said.

Q Well, I guess I've just misunderstood you.

In 1988, time division multiplexing can be used to accomplish time compression, correct?

A That's not what I said.

Q Well, what did you say? Why am I mistaken?

A I said the time division multiplexing made use of time compression.

Q Time division multiplexing made use of time compression?

A Yes.

Q How did it make use of time compression?

A That's a very -- one of the ways of doing time compression, time division multiplexing was to time compress the signals and then multiplex the resulting shortened signals and we've discussed this earlier. That is making use of time compression as part of time division

Halpern

multiplexing.

Q In the context of the Burst patents, could one make use of time compression as part of time division multiplexing?

A I'm sorry. I didn't follow the question.

Q Okay. Well, we've talked about receiving audio/video source information which is the first element of claim 1, right?

A Yes.

Q Okay. How would one use the concept of time compression as part of time division multiplexing to operate on that audio/video source information?

A Again, I don't understand the question. I heard all the words.

Q Okay.

A I don't, I don't understand what you're asking me.

Q I'm talking about the audio/video source information that's received by the transceiver. Okay?

A Yes.

Q Could you use time compression

Halpern

techniques to operate on that audio/video source information back in 1988?

A The patent says it does.

Q The patent -- what part --

A The time compression.

Q What part of the patent, the claims?

A Yes.

Q Any other part?

A The claims say that it does time compression.

Q Is there any other part?

A The claims say it.

Q Outside of the claims, is there any other part that talks about time compression?

A I don't believe so. The file history. The file history also talks about time compression.

Q Well, how would the claims, the claimed inventions that you say cover time compression be implemented in the context of Figure 2?

A Figure 2 --

Q In other words, are they just impossible -- is it just impossible to use time

Halpern

compression as you've defined it in the context of Figure 2?

MR. BROWN: Asked and answered.

Q I mean if it is, just tell me. I'll accept that.

A I don't know. Figure 2 is not sufficiently detailed for it to either be possible or impossible.

Q Okay.

A And now I do need to take a break.

Q Oh, you do? Okay.

THE VIDEOGRAPHER: The time is now 12:27. Off the record.

(Recess taken)

THE VIDEOGRAPHER: The time is now 12:38. We are back on the record.

BY MR. PAYNE:

Q If the Lang invention were to make use of time compression as part of time division multiplexing, where would the multiplexing take place in connection with Figure 2?

A If the Lang invention -- I'm guessing because you're putting in something

Halpern

that's not here and you're asking me to guess where they would draw it.

Q Would the multiplexing take place outside of the transceiver?

A Not necessarily. I, it would depend on what they were implementing that was making use of time division multiplexing. I don't know where it would be. You're saying if this were here, where would it be. Well, it depends on what they were doing.

Q Well, under your constructions of the claims which necessarily require time compression, do you know of any way the claimed inventions could have been implemented back in 1988?

A First off, that isn't the analysis I have attempted to -- that's not the analysis I've been asked to perform. It's not the analysis I have performed. So anything would be an effort to guess at this point. I may or may not be asked to conduct such an analysis.

Q But it is your view that the claimed inventions which would require time compression aren't supported by the specification, for

Halpern

example, because time compression is not disclosed in the specification, correct?

MR. BROWN: Objection. Vague.

A Can you be more specific about what you're asking me that I, that I have asserted?

Q I'm simply asking you whether the specifications -- I'll strike that. I'll strike the question.

Let's go on to page 5 of your report. Let's talk about audio/video source information. Okay?

Are you there, sir?

A Yes.

Q You say that term means the entirety of the data intended to be transmitted and not segments of the data, correct?

A Correct.

Q That's Apple's construction, correct?

A Correct.

Q And the Burst construction is an audio and/or video work that can be received from a variety of sources and then has a temporal dimension, correct?

Halpern

A Correct.
Q You disagree with that construction, correct?
A Yes.
Q Well, would you agree that the audio and/or video information in the Burst claims has a temporal dimension?
A They are -- audio and video programs would take time.
Q So by definition, they would have a temporal dimension, correct?
A I'm not sure what you mean by the phrase "having a temporal dimension" since that's not a phrase that's been construed up to now so I'm a little concerned as to what you're trying to get at.
Q The claims cover audio/video source information, correct?
A Yes.
Q That source information would have a duration, for example, correct?
A Yes.
Q It would have a length, correct?
A Yes.

Halpern

Q Therefore, it would have some sort of time element, correct?
A It's, certainly in the claims is associated with certain kinds of time elements.
Q Okay. Is it fair to use the term "temporal dimension" to characterize the audio/video source information?
A It seems odd phrasing. I won't say it's fair or unfair. It just, it seems odd phrasing to me.
Q Why is it odd?
A Well, it --
Q I'll strike that. Do you know what "temporal dimension" means?
A I've run across that phrase in several different contexts.
Q Do you know what it means in the context of audio/video information?
A I don't quite know. I know what I would think it means but in your, in your construction but I'm not sure I'm understanding it correctly. That's why I want to be careful.
Q What do you think it means?
A I think you intend it to mean has a

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duration and has a duration is something that is, as I said before, it's in the claims.
Q Are you aware that the words "temporal dimension" appear in the file wrapper of the '705 patent for example?
A I don't remember.
Q So you're comfortable with the concept that the claimed audio/video source information has a duration, correct?
A Yes.
Q In the durations associated with time, correct?
A Yes.
Q The Burst construction also talks about the source information being at work, correct?
A I don't remember if that word appears or not.
Q Well, no. On page 5 at line 9 it says --
A Oh, the Burst?
Q We're probably not at the same page. Let me start over, okay?
A Okay.

Halpern

Q I'm talking about the Burst construction.
A Okay.
Q Part of that construction is an audio and/or visual work?
A Yes.
Q Is it fair to characterize the audio/visual source information as a work?
A If -- the problem becomes what "work" means. If "work" means the program, then if we agree that "work" means the program, then I have no problem with characterizing it that way.
Q And in that context, does the program or work suggest some sort of creative meaning?
A I don't understand the question.
Q Well, you've read Dr. Hemami's report, correct?
A Yes.
Q And she talks about the work having some sort of, kind of creative meaning. Do you remember that or not?
A I don't really remember it. I'm sorry.

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I have definitely thought about whether my claims constructions make technical sense.

Q In the context of a fully operable transceiver as claimed?

A I believe that's a different analysis.

Q And you haven't done that analysis yet?

A Correct.

Q Fair enough.

Under your claim constructions, the time compressed representation must be fully stored in random access storage before the transmission or output process begins. Correct?

A Correct.

Q Using your time compression construction, where would the time compression take place in the context of these claims?

A The time compression has to take place in the step that says compressing to a time compressed representation.

Q Okay. That's before the storage, correct?

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A Yes.

Q Okay. Is it your view that the time compressed representation, using your time compression, is stored in random access storage using the same bits as the audio/video source information?

A I'm sorry.

Q Okay. Let me start over then. That was a poor question.

You agree that claims require the storage of time representation?

A Yes.

Q When one performs time compression on the audio/video source information -- well, let me back up.

Are you saying that time compression is performed before storage in your constructions?

A The claims do require that.

Q Okay. Where is that performed?

A '995. "Compression means, coupled to said input means, for compressing said audio/visual source information into a time compressed representation thereof having an associated burst time period that is shorter than

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a time period associated with a real time representation of said audio/video source information."

That occurs after input and before storage.

Q Now, what type of time compression would create a time compressed representation before storage?

(Pause)

A Some form of time compression that produced a representation that could then be stored.

Q I want a specific type of time compression that can create a time compressed representation before storage. Can you give me one specific type?

A I'm sorry. I don't understand the question. What do you mean by type?

Q Any, any apparatus or structure in your time compression world that would create a time compressed representation for storage?

A A structure that set up the necessary components for transmitting in a shorter time period with the same bits and stored, and

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associated with it a time period would constitute such a time compressed structure.

Q Describe for me what one such structure.

A I haven't -- that wasn't, I mean -- first off, that isn't, my job wasn't to form an expert opinion as to what kind of structure they might have described that they didn't describe.

We've already discussed the fact they didn't describe the time compression. They don't give the mechanism for doing it. Assuming they did it, then they could be stored.

Q You can't give any type of structure for me today that would accomplish your time compression before storage, is that correct?

MR. BROWN: Objection. That mischaracterizes his testimony. He just did that.

A I gave you an example of something where the compression structure sets up the necessary processing so that the later transmission would be at a higher rate and stores that time period with, marks the time period with the representation so that the right time

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compressed transmission would occur later.

Q What's --

A That's a time compressed representation.

Q What structure is it though? Describe it for me.

A In some other invention, it would probably be a processor with suitable programming. I don't know what it would be. Here they didn't include the structure.

Q In your time compression world, it's the same bits that are stored, correct?

A Yes.

Q If you look at the bits that represent the audio/video source information and you compare those bits to the time compressed representation, the bits are going to be the same, correct?

A Yes.

Q So what's the difference between the audio/video source information and the time compressed representation?

A Whatever is needed to cause it to be time compressed.

Halpern

Q What is it, sir? I can't figure it out. Can you tell me, please?

A I haven't formed -- I haven't attempted to answer that question.

Q Well, the claims talk about two different things: Number one, an audio/video source information and, number 2, a time compressed preparation. Correct?

A Yes.

Q And you've told me that those two things are, quote, "the same things," correct?

A They have to contain the same bits. The time compressed representation, for example, has to also include an associated burst time duration.

Q And where would that be included? Would there be other bits?

A Yes.

Q Where would those bits be?

MR. BROWN: Objection. Incomplete hypothetical. Vague.

A I don't know.

Q You don't know?

A Because it -- they would be in some

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structure other than what's disclosed because there is no structure disclosed for this. They'd end up in the storage -- sorry.

The other answer -- maybe I misunderstood your question. I thought you meant where would they be during the compression.

In the storage, they end up in the storage of the time compressed representation which we have the structure for in the report and that, those, that information would have to be in that information.

So DRAM, SRAM, CMOS memory or optical disk memory is where that would end up along with the other stored time compressed representation.

Q So does the patent spec disclose a random access storage that actually stores the time compressed representation as claimed?

A I believe it stores structure link for storing and that if the time compression mechanism existed, if you could get a time compressed representation, then we could get to storing that.

Q In your time compression world, are

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you saying additional bits are added to the time compressed representation?

A You asked me to guess one method. One way to do it would be that.

Q Well, what would those bits designate?

MR. BROWN: Asked and answered.

Q Well, let me just walk through this because I'm confused. I'm sorry.

You've got bits that represent the source information, correct?

A Uh-huh.

Q And you're saying those same bits are also contained in the time compressed representation, correct?

A Uh-huh.

Q Okay. And then you're saying the compression step ads additional bits, is that correct?

MR. BROWN: Asked and answered.

A You have to have associated duration and you might, one hypothetical -- you asked me to

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guess how one might do this.

Having to guess here when I have not formed an expert opinion on how one should, would or could do it, but you asked me to guess, the easiest one I can come up with off the top of my head, because the question was not one I formed an expert opinion on, is I put some extra things in to control the transmission so it would go faster.

THE VIDEOGRAPHER: Ten minutes of tape left.

Q When would you put those, quote, "extra things" in?

MR. BROWN: Asked and answered.

A During the compression step.

Q And what are the extra things?

MR. BROWN: Asked and answered.

A I just told you, sir.

Q Additional bits that would relate to transmission parameters?

MR. BROWN: Mischaracterizes his testimony.

A I'm sorry. I told you it has to --

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we've already said that the claims required there be an associated time period so that would be part of or the easiest one to imagine right now, to guess, might be to store that and any extra thing so as to cause it to be transmitted faster but you're asking me to guess about how it might be constructed.

Q I'm just trying to figure out what extra things would be added to make it, quote, transmit faster. Can you give me any examples?

A Depends on the architecture of the rest of the system and details that aren't spelled out.

Q Can you give me any examples today?

MR. BROWN: Objection. Vague.

Q Or have you just not thought about that?

MR. BROWN: Same objection.

A And in a much older invention, the information in the Roberts patent that causes the radio transmitter to transmit the data much faster associated with it and causes time compression.

Q Is that before storage or after the storage has taken place, sir?

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A The information is created before storage and associated with it. It's a part of the representation.

Q You create additional information in your time compression world and add that information to the audio/video source information to make a time compressed representation, correct?

A That is one guess that I can come up with on, off the cuff because you insisted on my guessing.

Q So instead of reducing the number of bits as taught in the specification, in time compression, you're adding bits, correct?

MR. BROWN: Objection. Vague.

A Adding bits to what?

Q To the video, audio/video source information.

A You're adding bits to the storage, not necessarily the transmission.

You're asking me to guess how the thing works. There's lots of variations, mechanisms, things one can do.

Q I'm focusing on the patent right now and the patent teaches data compression which is

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reducing the number of bits of audio/visual source information, correct?

A The claims refer only to time compression.

Q I'm focusing on the spec. Don't worry about the claims right now, okay?

The spec teaches data compression which is reducing the number of bits in the source information, correct?

MR. BROWN: Objection. Vague.

A The invention is the claims, not the specification. I have to construe the claims. I don't have to construe the specification. I have to construe the claims in the light of the specification, but the claims are what matters.

Q Let's talk about the light of the specification for a minute, okay?

A Yes.

Q And that light includes data compression, right?

A They are, they mention data compression several times, yes.

Q Data compression reduces the number of bits of the audio/video source information,

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correct?

MR. BROWN: Asked and answered.

A Yes.

Q But your time compression in your claims actually adds to the number of bits, correct?

MR. BROWN: Objection. Vague.

A That, you asked me to guess at a mechanism.

Q Okay.

A The easy mechanism I could guess is to add the same kinds of headers that data compression mechanisms had but for a time compression. Data compression mechanisms enter headers of varying sizes as well.

Q You're talking now about adding headers, correct?

A As part of the stored representation.

Q Okay. So -- right. Are the bits that actually represent the source information ever manipulated in your time compression world before they're stored?

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MR. BROWN: Objection. Vague.

A Depends.

Q "Yes" or "no"?

A I'm sorry. I can't give you a "yes" or "no" answer.

Q But you've told me the same bits are stored, correct?

A That doesn't tell me without a compression means specified, without specifically a time compression means specified, whether those bits are manipulated at any point in the process.

Q The claims talk about the compression means for, quote, "compressing," correct?

A Into a time compressed representation.

Q They say "compressing."

A Yes.

Q I'm trying to figure out what the compressing is in your time compression world?

A Whatever is needed to result in it being time compressed when it is transmitted in a time less than real time which is what at the end of the claim it says matters.

Halpern

Q You've talked about adding headers to the audio/video source information as one form of compressing a time compression, correct?

A I was guessing that one might be able to do it with a representation that added a header.

Q Is there any other way to represent the time compressed data in your time compression world --

MR. BROWN: Objection. Vague.

Q -- before the storage?

MR. BROWN: Objection. Vague.

A I don't know. I haven't attempted to evaluate all the possible ways one might build these parts.

Q So if one were to look at the time compressed representation in storage and your world and compare it to the audio/video source information, how would one tell the difference?

A That would depend on the exact representation.

Q The same bits are there, correct?

A If it's digital, then the same bits have to be there.

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Q Yes. Well, if I look at the bits of the source information and compare those bits with the bits of the time compressed representation in your time compression world, how can I tell the difference?

A That would depend on the specific implementation.

Q Is there ever any difference, sir?

MR. BROWN: Asked and answered repeatedly.

A I don't know. It depends on the implementation.

THE VIDEOGRAPHER: Five minutes left.

Q You talk about -- five more minutes and we'll go to lunch, okay?

You talk about on page 7 and page 6 the program that's referred to in the spec, right?

A Yes. I see it.

Q The program would, for example, cover a movie, correct?

A Yes.

Q That's an example given the spec, right? Correct?

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you say compressor/decompressor 26 does not show data compression?

A I'm sorry. Could you please direct me to the section of my report you're referring to?

Q On page 32, for example, starting at line 5, you say, "The patent discloses that compression and decompression are performed by 'compressor/decompressor 26,'" correct?

A Uh-huh.

Q And then you say, "Block 26 would not be recognized as a structure linked to the 'time compression' function." Correct?

A Because it is not sufficient structure. Not because it's not associated with the time compression but because it's not sufficient structure.

Q You mean there's not enough detail about the structure?

A There's no description of the means it uses to accomplish the function. It's not a structure. It's some, originally something.

Q Mr. Halpern, the '995 patent talks about compressor/decompressor 26 being an A.M.D.

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data compression chip, doesn't it?

A It mentions that that is one of the ways.

Q That's one example, right?

A Uh-huh.

Q It's described as a data compression chip, correct?

A Correct.

Q Okay. But are you now saying it can also be a time compression structure?

A That isn't what I said. And that isn't what my report says, sir.

Q What do you mean by increasing the signal's frequency? Look at page 8 of your report.

Does that mean putting the bits together closer in time?

A If it's digital, yes.

Q That's what it means?

A If it's digital. For analog, you actually increase the frequency of the signal.

Q And when are the bits put closer together in time?

A Conceptually, they are put closer

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together in time when the system arranges the stored information so that they, when transmitted, will be closer in time.

Q When they're stored after the so-called compression step, during that storage, they're not put closer together in time, are they?

A If there is an associated time, Burst time period, as is required by the claims and the claim structure, then they are indeed put closer together in time.

Q If we look at the audio/video source information and we say it includes 10 megabits of data and it undergoes time compression and is stored, how many, how large is that file going to be in storage?

A With its associated burst time period and other control information? About 10 megabits.

Q So at that point, the bits have not been put closer together in time, have they?

A Assuming that they have a different associated time period than they did originally, they have actually been put closer together in time at that point.

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Q How do I know that they've been put closer together in time by looking at those bits?

A They, in order for this to apply, they have to have an associated time period.

Q How do I know that they have an associated time period?

A That depends on the exact implementation, sir.

Q Give me one example.

A There might be a stored header with that time period in it.

Q So you could put a header with, with the other bits representing the audio/video source information and that header would have some sort of associated burst time period?

A That's one way of doing it.

Q Okay. How would that header be used?

A It would be used by other parts of the system to ensure that the bits are transmitted in the way that the compressor has determined that they should be.

Q But the actual bits that represent the source information after undergoing time

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compression and being put in storage are actually identical at that point to the original bits, correct?

A Yes.

Q Okay. But they have this additional header information associated with them, right?

A They have an associated time period. One way might be a header. That's not the only way.

Q Well, give me the other ways that you can think of today?

A An association may be based on other properties of the system but it must be associated with this.

Q Now, that type of time compression is not going to result in any savings as far as storage, correct?

A It's time compression, not space compression, yes.

Q So you need the same amount of memory if not more for your time compressed representation using time compression, correct?

A Correct.

Q Okay. The spec, of course, teaches

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reducing memory requirements, right?

A As another thing one may do.

Q Right. Right. So in that regard, your construction for time compression does not take into account this other stated objective of saving memory space, correct?

A That objective wasn't claimed. The claims went for certain specific things. Many specifications have other properties that are not claimed.

Q Okay. But you agree that when you've interpreted a time compression, you're not going to have any space savings as far as memory or storage, right?

A I'm not claiming or asserting any time, any space savings.

Q When is it, Mr. Halpern, that in the time compression world, the bits will actually be put closer together?

A As I said conceptually in this invention, they're put closer together when the time compressor establishes the associated burst time period.

Q Is that what they look like when

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they're transmitted away?

MR. BROWN: Objection. Vague.

MR. PAYNE: Okay. I'll strike it.

Q Let's talk about the step of going from storage to transmission. Okay?

A Okay.

Q Something happens to the bits, your time compressed bits from storage to transmission, correct?

A They're being transmitted away.

Q Are they being put closer together in time?

A They are not put closer together in time any more than that time associated with the stored time compressed representation.

It is certainly closer together in time than in the original real time.

Q And you've talked about the bits being stored in real time and clocked out faster than real time, correct?

A Yes.

Q When are they clocked out faster than real time? Isn't that at the transmission

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stage?

A Yes.

Q Is it the clocking out faster than real time that results in compression and time?

A I believe that's the same question I just answered, sir.

Q What's the answer?

A That from the systems design point of view, the bits are compressed in time when the compressor attaches a shorter associated time period.

Q Is it possible to change the associated time period in your time compression world without recompressing?

A I don't understand the question.

Q How would you -- let me start from another angle.

How would one accomplish decompression on your time compressed representation?

A Can you be more specific because that covers a lot of things?

Q Okay. The claims talk about the time compressed representation being stored in

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A Haskell -- the information is being stored in a memory which is suitable for being read at a much higher speed as well. As such, it is being stored in a time compressed fashion.

Q Simply by virtue of the fact it can be read out faster than the speed in which it's written into memory?

A And the system is designed to do so and will do so.

Q Mr. Lang in his patents doesn't talk about a system like that, correct?

A There was some mention of it in the file history actually.

Q But in the actual specifications?

A No.

Q You go on to discuss the Arnon patent on page 10. Correct, sir?

A On page 10, I do discuss the Arnon patent.

Q In time division multiplexing or time compression multiplexing, is it the case that discrete portions of the file are read out of storage and then transmitted?

MR. BROWN: Objection. Vague.

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A I'm sorry. You've connected pieces that I, I --

Q Well, in time division multiplexing, let's just say it's an audio file, okay, that's been stored. Okay? Are you with me?

A Probably not, actually.

Q Okay. Well, let's say it's a digital audio signal. Okay?

A Say what is a digital audio signal?

Q What's being stored. Let's talk about the random access storage. Okay?

A I thought you wanted to talk about time division multiplexing.

Q Let's talk about -- well, does time division multiplexing have anything to do with the claimed random access storage?

A No. Time compression is relevant. I never, I didn't say time division multiplexing is what's claimed by the claims.

Q Is it your understanding that time division multiplexing is not claimed in the Burst patents?

MR. BROWN: Objection. Vague.

A My claims construction is not that

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any of the claims mean time division multiplexing. That's, to the extent I understand your question, that's the only meaningful answer.

Q Can you tell me what would be included in this header that's added to the source information after the source information is compressed in time?

A I can't tell you what would be in it if they implemented it.

Q Well, if you were trying to implement a header that would accomplish your time compression, what information would you put in the header?

A It might include the length of the whole content, it might include the original real time duration of the content and it might well, and particularly in the case of this, of the claims of the patent which require an associated burst time period would likely include the time, the intended, expected, compressed burst time period. That's -- otherwise you have it compressed.

Q So the information that's actually in the header would have data in it about the

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associated burst time period?

A If a header were used as the implementation technique, then I would expect it to have that. It's not. As I said, I'm speculating about how it might be built.

Q Well, that's -- the only example I think you've given me today is adding this header for time compression. If there's some other example that you can give me today, I want you to talk about it. I'm giving you an opportunity.

A It's the most obvious one.

Q Okay. You say on page, on page 13 that, "The specification provides little guidance as to the meaning of 'time compression.'" Correct?

A Yes.

Q You then say, "The specification's only express discussion of compression is a discussion of 'data compression.'" Correct?

A Correct.

Q Have you relied exclusively on information outside of the specification in support of your construction regarding time compression?

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A I primarily relied on the claims themselves and the fact of the words in the claims.

Q Did you rely on any information in the specification?

MR. BROWN: Asked and answered.

A I primarily relied on information in the claims and if there's information in the file history that's relevant.

Q But you didn't rely on any of the information in the specification, correct?

A The specification --

MR. BROWN: Objection. Vague.

A The specification does not describe or talk about time compressed representation.

Q Do any of the references that you've cited on time division multiplexing or time compression multiplexing talk about this header?

A They use actually other techniques that one can use for time compression. One could have an implicit association between the storage and the speed at which it will -- that the system is designed to clock it out so that one doesn't

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need an explicit header and that's in several of the examples including the ones shown in the figure on page 11.

Q So if you don't have an explicit header, is the information that's stored and in your world been compressed in time identical to the source information?

A Yes, at least in some implementations.

Q On page 13 of your report, you refer to the file history in support of your time compressed representation construction, correct?

A Yes.

Q You talk about the Izeki reference for example, correct?

A I talk about the Izeki reference, yes.

Q Do you pronounce that "Izeki" or "A-si-ki?"

A I believe it is "Izeki."

MR. PAYNE: Mark this as the next exhibit, please.

(Document bearing Bates Nos. APBU00000546 through 553 was marked as

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Deposition Exhibit No. 72 for identification, as of this date.)

Q You have Exhibit 72 in front of you, correct, sir?

A Yes.

Q I'll represent to you this is an office action response from the '705 file wrapper. Do you understand that?

A Yes.

Q This is actually a response that your report references, correct?

A I have that I'll have to look.

Q I'll represent to you that's the case. Sir? I'll represent to you that's the case, okay?

A I would like to check, please.

Q Okay.

(Pause)

MR. BROWN: Are you talking about the top of page 14, Les?

MR. PAYNE: I don't know. It's in here. It's on page 14, for example.

Q Dr. Halpern -- I mean Mr. Halpern.

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A Yes.

MR. BROWN: I think the page numbers don't match up anyway. Maybe I'm missing it.

MR. PAYNE: I'm sorry. What?

MR. BROWN: I see 534 and it looks like this starts at 546.

MR. PAYNE: 551.

MR. BROWN: Oh, lower down. Oh, I'm sorry. Okay. I was looking at the first number. Go ahead.

Q Mr. Halpern, let's focus on Exhibit 72. Okay?

A That's what I'm doing.

Q Let's turn to page 6, please, sir.

A Yes.

Q At the top of page 6, the applicant refers to claim 27 and underlines some of the claim language, correct?

A Yes.

Q For example, "Full motion video programs" is underlined, correct?

A Uh-huh.

Q The "Time compressed representation"

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Q So when Burst refers to the subject invention relating to a delivery technique that uses compression, are you not clear whether they're referring to data compression or time compression?

A I believe the claims refer to time compression. Therefore, compression at this point must refer to time compression.

Q So in the previous sentence, they're talking about data compression but it's your testimony that in this sentence, they've shifted gears to time compression, is that correct?

A Since the earlier systems talked about time compression, they, they threw in the reference to the specification where it talks about data compression and now they're back to time compression.

Q Would you agree with me that if Burst really wanted to distinguish Izeki on the grounds that the data claims don't cover data compression, they would have said so here?

MR. BROWN: Objection. Vague. Incomplete hypothetical.

A I don't know what they would have

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done.

MR. PAYNE: Let's mark the next exhibit, please.

(Document bearing Bates Nos. APBU00000638 through 653 was marked as Deposition Exhibit No. 74 for identification, as of this date.)

Q You have Exhibit 74, correct, sir?

A Yes.

Q This is a May 26, 1988 amendment, correct?

A May 26, 1998.

Q 1988, excuse me, amendment, correct? This is a -- strike that.

Exhibit 74 is a May 26, 1998 amendment, correct?

A That appears to be the case.

Q I'll represent to you this was filed in connection with the '705 file wrapper.

A Okay.

Q Let's turn to page 15, sir.

It says, "Although Izeki makes reference to processing video information, it is apparent based on fair reading of the

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specification that this video information represents still picture information in video form."

Do you see that sir?

A I see that line, yes.

Q Do you agree that Izeki teaches video information being represented in still picture form?

A No.

Q Do you believe Izeki teaches something other than still video representation?

(Pause)

A Could you repeat the question, please?

Q Do you believe that Izeki is not limited to still picture information?

A Izeki is not limited to still picture information.

Q Now, on the pages -- strike that.

In the sentence that bridges pages 15 and 16, Burst says, "Furthermore, since Izeki deals with still picture information, compression of the information would still not represent time compression thereof as defined in the

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specification of the application." Correct?

A That's what it says.

Q In that parenthetical which mentions the specification is necessarily referring to data compression, correct?

A The only compression described in the specification is data compression.

Q And so when Burst says "time compression thereof" and says "as defined in the specification," aren't they referring to data compression being the "time compression"?

A I'm not sure what they're referring to since Izeki is not still picture information so the whole sentence is confused.

Q It's not confusing that they're tying time compression to what's shown in the specification, correct?

A They apparently believe there is something in the specification that covers time, that describes time compression.

Q It must be the data compression, correct?

A I don't know what they thought.

Q That's the only type of compression

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that's in the specification, correct, Mr. Halpern?
A The only compression described in the specification is data compression.
Q Doesn't this show you that Burst was arguing to the Patent Office that the, quote, "time compression" is the data compression that's disclosed in the specification?
A Since they just claimed earlier the data compression as being timed compression, I have to assume they thought of something else. I don't know what they thought.
Q Let's not worry about what they said before. I want to focus on this particular document which we've marked as Exhibit 74. Okay?
A I don't believe it's sufficiently clear to know what they meant.
Q What else could they have meant in this sentence that links time compression to the specification?
A I don't know.
Q You can't think of anything else, correct?
A I don't know what they meant.
Q If they meant that time compression

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was the data compression in the specification, that would cut against your claim constructions, wouldn't it sir?
A They would be inconsistent and we would have to figure out what the claims really meant with that inconsistency. But they were not that specific.
Q Just like they weren't that specific in Exhibit 72?
MR. BROWN: Objection. Vague.
A I don't know what you're asking.
Q Well, was -- you think Exhibit 72 which contains the statement about Izeki teaching data compression is more specific than the statement we've been focused on in Exhibit 74?
A Yes.
Q Is it the case that you believe the statement we've been focusing on in Exhibit 74 is just inconsistent with the statement about Izeki in Exhibit 72?
A They may have meant some other function in the specification, for example, transmitting over a 200 megabyte per second optical link with an appropriate associated time

Halpern

period.
Q Let's look at claim 60 of Exhibit 1 which is the '995 patent.
Are you there, sir?
A Yes.
Q Let's look at column 18, line 11.
A Okay.
Q Which refers to the compressor/decompressor means, correct?
A Yes.
Q It says the compressor/decompressor means is for compressing the audio/video source information into a time compressed representation that has this associated time period that is shorter than the time period associated with the real time representation, correct?
A Well, I think all the words you just said are there. That's a long paragraph and I don't think you read all the words.
Q No, I didn't.
A So I don't know if you left out something significant but you read many of the words that are there.
Q Well, this claim, 60, in the '995

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patent is talking about a compressor/decompressor that compresses audio/video source information, correct?
A Yes.
Q And it compresses it into a timed compressed representation as set forth on lines 15 and 16, correct?
A Yes.
Q In that time compressed representation, it has an associated time period that is shorter than a time period associated with the real time representation, correct?
A Yes.
Q The compressor/decompressor that's shown in the specification and, in particular, in Figure 2 is a device that data compresses, correct?
A The only component that is identified in this specification for embodying the compressor/decompressor 26 is a data compressor.
Q So since the specification discloses a compressor/decompressor, that is, a data compressor, doesn't that disclosure tell you that what's being claimed here in claim 60 is a

Halpern

compressor/decompressor that performs data compression?

A No, that doesn't tell me that.

Q Why not?

A Because they -- for multiple reasons, the use of the term "time compressed" as opposed to "data compressed" or just "compressed" has a meaning. They're not walking away from it.

The segments we've pointed out, "time compressed" has meaning.

Q Okay. Well the only -- you've testified that the only compressor/decompressor that's specifically disclosed is the data compression chip, right?

A The only structure that is disclosed for it is that, yes.

Q And you're construing this claim language that we're talking about as excluding that data compressor/decompressor that's disclosed in the spec, correct?

A My construction is that it's talking about something else. It's talking about time compression. It's not talking about data compression.

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Q So, so the compressor/decompressor that's claimed in claim 60, for example, is just something completely different than the data compressor/decompressor disclosed in the spec, right?

A No, that's not what I said.

It may be component 26, but it is not the data compression of the identified chip.

Q So it's some other type of compressor/decompressor that's not disclosed in the spec, right?

A Yes.

Q Let's move to page 16 of your report.

You talk about the claim phrase "having an associated burst time period," correct?

A Yes.

Q You say that means "the time compressed representation has a burst transmission time of definite duration that is known at the time of compression." Correct?

A Yes.

Q If the patent claims are broad enough to cover variable rate transmission

Halpern

systems, would you agree that your definition is incorrect?

A I'm sorry. I can't connect the dots here.

Q Okay. Well, a definite duration means some precise transmission duration, correct?

A Yes.

Q Okay. And is it your testimony that the only way to get that type of precise definite duration is with a fixed rate transmission system?

A If the transmission rate is variable, then you don't know what the transmission time is.

Q Okay. I'm focused on your claim language or your claim construction regarding definite direction. Okay, sir?

A Yes.

Q Isn't it premised on the concept that the claims only cover a fixed rate transmission system?

A No. I believe it's the other way around, sir.

Q It's the other way around.

MR. BROWN: Is that a

Halpern

question?

Q What do you mean by "it's the other way around"?

A Having an associated burst time period, without any knowledge of what the technology is, requires there be an associated well-defined burst time period. That's necessary.

A likely consequence of that might be some conclusions about the behavior of the transmission system that was assumed. I'm not drawing meaning of this phrase from any assumption about the transmission system.

Q So can you have a transmission time of definite duration in a variable rate transmission system?

A There are transmission systems overlaying variable rate communications networks which have known fixed durations. There are lots of ways of producing unknown duration.

Q What do you mean by "definite duration"? Are you talking about a precise time period for transmission to the millisecond, for example?

A It has to be a precise time period.

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Halpern

The exact resolution was not something I opined on here.

Q Well, I'm trying to figure out what it means. I mean the jury is supposed to be instructed about what these claims mean. I don't know what "definite duration" means. Can you tell me what it means?

A To the resolution of the systems timing, the timing has to be known.

Q "To the resolution of the systems timing, the timing has to be known." Did I get that correct?

A That's what I just said.

Q What does that mean?

A If the system only has a clock with 1 second resolution, then it's clearly sufficient to have 1 second resolution. If the system is operating at a resolution of 30 milliseconds, then that's the accuracy you need. You have to know the associated burst time. It has to be known. It has to be a specific time, not some arbitrary undefined time.

Q Do you have to know the exact bandwidth of the transmission system to achieve a

Halpern

transmission time of definite duration?

A As I said, there are other ways one can achieve that.

Q So you don't have to know the exact bandwidth to achieve a transmission time of definite duration?

A It depends on other techniques.

Q You don't have to know it, is that correct?

A Correct.

Q Okay. So I just want to be sure that I understand your construction regarding a transmission time of definite duration.

You're saying that construction is not limited to a fixed rate transmission system, correct?

A Correct.

Q It can cover a variable rate transmission system, correct?

A It could cover a system in which the transmission would take a known time, whether the underlying transmission was variable rate or fixed rate.

Q And by "known time," you mean that

Halpern

at the time of compression, know the exact duration of the transmission, correct?

A Yes.

Q You've talked about a systems time period, is that correct?

A I don't think I used that word.

Q You talked about a resolution, right?

A Yes.

Q What is that, a resolution? What does that mean exactly?

A The units in which the system does time computation.

Q Would you agree with me that you did not cite any evidence from the specification to support your claim construction regarding having an associated burst time period?

A That is true.

Q Turn to page 17, please, of your report.

You give a definition for the word "associated," correct?

A Yes.

Q You understand that word doesn't

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appear in claim 1 of the '705 patent, correct?

A Correct.

Q So the fact that -- and the word "associated" in connection with burst time period is a basis for your construction, correct?

A It is part of the basis for the construction.

Q Right. Does the fact that the word "associated" doesn't appear in claim 1 of the '705 in connection with the burst transmission time period change your construction of claim 1 of the '705?

MR. BROWN: Objection. Vague.

Q Let me put it this way.

Do you believe that claim 1 of the '705 requires a transmission time of definite duration that is known at the time of compression?

I didn't find it in your report if that's what you're looking at.

MR. BROWN: Yes. I don't think -- I think that's true.

A I think that -- I don't think I drew a conclusion on that question in my report.

Q So --

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local technologies and the range of remote technologies has shifted over time.

In 1988, local was probably a bit closer so remote might well be outside the computer room.

I'd have to really -- to nail it down further than that, I'd have to go look at some other stuff and the general concept is that local is well-defined and remote is what is not local and it's defined by the technologies available.

Q Would you agree with me the use of the word "remote" here is vague in the sense that it's not tied to a specific distance?

A Correct.

Q And to be clear, 1988, would "remote" ever mean 'within the same room'?

A I don't believe it would mean "in the same room" correctly. I mean that's probably the best answer. People use words but in odd ways sometimes but normally, it would not mean in 1988 in the same room.

Q The word "remote" was used in different ways in 1988 in this context, correct?

Halpern

A I'm not sure I understand what you ask.

Q Well, did "remote" in 1988 have one accepted definition or were there several different definitions?

A It was a well understood term with a range of distances and generally did not include in the same room.

Q What does "local" mean?

A Generally meant local to, near, near to the device, oftentimes in the same computer room. Sometimes even closer than that. Local area networks would cover like a computer room in 1988.

Q So local in 1988, if we're focusing on, for example, a computer, could mean something actually internal to the computer, correct?

A It certainly could.

Q And is it also your testimony that it could mean something external to the computer?

A Yes. A local storage device, an interface to a local storage device might have a cable of 10 meters, 20 meters connecting them but it was still a local storage device.

Halpern

Q Where do you draw the line in the sand as far as distance?

MR. BROWN: Asked and answered.

A As I said, typically the computer room would be a good measure. It didn't, but disk drives were not frequently inside the computer enclosure. They were connected by cables. Sometimes across a computer room but that was still local.

Q So a 10-foot cable from a computer to some sort of device would be local?

A Yes.

Q Because it's in the same room?

A No, because it was local communication, it was communication designed to be used locally.

Q As opposed to remotely?

A Yes.

Q So in your mind, local and remote are opposites?

A Roughly, yes.

Q Okay. You've quoted a passage from the '705 file wrapper that is talking about Izeki,

Halpern

in particular, you quote language, "nothing more than an interface to a storage device," correct? Look at line 14 at page 19, Mr. Halpern.

A Yes.

Q Do you see that?

A Yes.

Q The word "local" doesn't appear in your quote, does it?

A Correct.

Q That's something you've added on your own, correct?

A Yes.

Q Is there any support in the specification for adding the word "local"? I'm talking about the specification of the Burst patents. Or are you just relying on this statement in the file wrapper?

MR. BROWN: Objection. Vague.

Q Do you understand that question, Mr. Halpern?

A Not really.

Q Well, I'm just trying to find out what evidence you're relying on to support your definition that says rather than transferring

Halpern
port, though, correct?
A On what?
Q On a computer, for example -- strike that.
Were there computers in 1988 that had ethernet ports?
A Yes.
Q What differentiates a port that receives uncompressed data versus one that receives compressed data?
A Ports are differentiated by a lot of electrical and protocol properties and what the systems that work with them that are prepared to receive and send over them.
Q Would a port that can receive uncompressed data necessarily be able to receive compressed data?
A It depends on the what the processing logic was connecting to the port.
Q If it was a digital signal, wouldn't a port like is shown on 17 that could receive an uncompressed digital signal also be able to receive a compressed digital signal?
A Not necessarily.

Halpern
Q And it couldn't, it wouldn't necessarily receive a signal that's been data compressed?
A It depends very much on the logic structure, whether it can receive data compressed signal, whether it can receive a time compressed signal or only a uncompressed audio/video signal and I'd like to take a brief break.
Q Sure. Sure.
THE VIDEOGRAPHER: The time is now 4:55. We are off the record.
(Recess taken)
MR. PAYNE: The time is now 5:04. We are back on the record.
BY MR. PAYNE:
Q Let's move to page 28 of your report, please. This page concerns your compression means construction, correct?
A Yes.
Q You use the phrase "compression means for compressing said audio/video source information into a time compressed representation thereof."
I didn't see a definition for

Halpern
compressing or the word compressor in your record.
What does "compressing" mean in the context of this claim language?
A In the context of this claim language, when it refers to time compression, it refers to making smaller in time.
Q Compress --
A The construction is for the phrase as a whole.
Q But the word "compressing" in this phrase means making smaller in time?
A I'm rendering a construction of the whole phrase. I'm not sure how to answer the question.
Q Well, for example, are you, you know -- Burst construed the word "compressing." You're aware of that, right?
A I believe I've seen that.
Q Something to that effect reducing the number of bits, correct?
A I believe that that is how you construed it, yes.
Q But you disagreed with that construction?

Halpern
A That refers specifically to data compression. This is time compression.
Q In your view for time compression, the act of compressing is, for example, adding a header, correct?
A Associating, arranging for it to be associated with a shorter time period causing it to have a shorter time period.
Q What actual process is used to, quote, you know, "compress"?
A In what?
Q In your time compression world.
MR. BROWN: Asked and answered repeatedly this morning and this afternoon.
A In what -- I've given you several examples. There are examples in my report. We've discussed another hypothetical example. There are different ways of doing time compression.
Q Is it your testimony that all of the time compression examples that you've given in your report from the prior art references fall within the scope of the claims?
MR. BROWN: Objection.

Halpern

A Yes.

Q Would one of ordinary skill in 1988 look at the compressor/decompressor 26 and understand it could be a CPU executing a compression software algorithm?

Let me, let me -- I didn't phrase that properly so I'll strike it.

In 1988, would one of ordinary skill look at the compressor/decompressor 26 and understand that it could be a CPU executing a data compression software algorithm?

A Not in the patent, not in the specification of these patents with the claims.

Q Let's not worry about the claims right now. You know, the spec talks about data compression, right? We've gone over that?

A Yes.

Q I think you told me that compressor/decompressor 26 could perform certain data compression, right?

A Yes.

Q Okay. So my question is in 1988, would one of ordinary skill look at the compressor/decompressor 26 and understand that it

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could be a CPU executing a data compression software algorithm?

A I don't believe so.

Q Why is that?

A As I say in my report, there's multiple reasons. The patent specifically refers to the compression as occurring in 26 which is specifically identified as a separate structure from the CPUs that are discussed, CPU28 and CPU31.

Neither the CPU -- the CPUs that are identified aren't identified as doing compression. Similarly, given the performance requirements, a general purpose processor in 1988 simply couldn't do the job.

Q What performance requirements are you talking about?

A Having an effective solution that can cope with the media.

Q Can you be more specific?

A Well, the easiest analysis is to merely keep up with real time from the source and you can't even come close to keeping up with real time with any compression algorithm, any data compression algorithm at all in 1988 running on a

Halpern

general purpose processor, a CPU such as they refer to for other CPU functions in this patent.

Q You don't believe in 19 -- well, let's back up.

Where does the patent say that there's a requirement for real time compression?

A There are implications in the structure that suggested it would be likely to be built with the real time because there's only two pages, two video frames of RAM in the processing.

Also, if you're talking about 2 hour programs, it's not, it's not an effective device if it takes hours and hours and days to perform its job.

Very strange to have a device that takes days to compress something so that I can ship it faster than real time. I'm sorry. It doesn't make sense.

Q Is there some language in the specification in particular that would support a conclusion that real time compression is required by the invention?

A No.

MR. BROWN: Asked and

Halpern

answered.

A That's not what I said. I didn't say it was required.

Q Okay.

A But it would be, it's what one -- it's the order of that performance one would expect from the system and there are implications, not explicit language, but implications that lead one to that conclusion.

Q I want to be very clear about this. Is there a requirement with respect to the claimed inventions?

A There is an explicit requirement on the decompressor.

Q Of what?

A That it be able to function in real time.

Q I'm talking about the compression that was found.

A I believe it was implicit that it either be real time or at least near real time for the nature of the invention.

Q In 1988, is it your testimony that real time or near real time data compression could

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not take place in a CPU?
A Real time data compression of this volume of data, of this kind of data, could not be done in this kind of general purpose micro processor.
Q Let's talk about audio data, okay?
A I was focused on video data.
Q Well, let's talk about audio data.
A Audio data might be possible.
Q Could audio data be compressed, data compressed in real time in 1988?
A What data rate audio rate?
Q Pick any data rate that was used back then.
A I don't know of it being done but the invention clearly describes a compressor capable of dealing with video and video just plain can't be done.
Q Is it accurate, Mr. Halpern, that you don't know one way or another whether a CPU in 1988 could data compress audio information real time?
A A general purpose microprocessor such as envisioned for other uses of CPU here -- I

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want to be careful about the meanings of the terms -- I can't be sure one way or the other but for video, it could not be done.
Q So it's your testimony that for video data back in 1988, the available CPUs could not data compress that video in real time, correct?
A Correct.
Q I asked you whether there's any specific language in the specifications of the Burst patents that require that video be compressed in real time and I want to be clear on whether you think there's any such language.
A I do not recall specific language that explicitly requires that.
Q Okay. But you think it's some sort of -- strike that.
You think the real time video data compression concept is, is, quote, "implicit" in the invention described in the specification, is that correct?
A In trying to understand this, the natural understanding would be that one was looking at something doing real time data

Halpern

compression of audio and video.
Q But it's an implicit understanding as opposed to an explicit understanding based on explicit evidence. Correct?
A It's not based on explicit words, yes.
Q You say on page 29 that the A.M.D. 7971 chip would not have worked to data compress full motion video, correct?
A Correct.
Q Have you actually tested that chip to figure out whether it would data compress full motion video?
A I've looked at the specs for that -- I've looked at the description of that chip, not the full specifications, and it was a black and white fax compression chip.
Q But you're not a data compression expert, are you, sir?
A I believe we discussed that earlier. I am expert in building solutions that make use of data compression and data compression technologies.
Q Would it surprise to you learn that

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the A.M.D. chip could, in fact, perform data compression on full motion video?
A Yes.
Q Would you necessarily rule out that possibility sitting here today?
A To the best of my knowledge, it could not do so.
Q That knowledge is based on your review of the A.M.D. spec sheet?
A Yes.
Q Did you think about whether that A.M.D. data chip could compress, data compress audio information?
A I didn't analyze that question.
Q Well, you say, "It could not have compressed audio signals" in your report on page 29, correct?
Mr. Halpern, lines 19 and 20. "It could not" --
A You're right. I had forgotten. I did think about it and I didn't think it could.
Q So do you want to revise your testimony?
A Yes.

Halpern

Q Why don't you take a few minutes and look through there and let me know when you're done.

(Pause)

A There is an indication of real time decompression in column 10 in the first paragraph.

Q Implication meaning no express language that requires real time decompression?

A I don't know any way to do what it says without doing real time decompression.

Q What specifically in the first paragraph of column 10?

A You have the stored compressed, time compressed program and then you are viewing it directly from memory, directly from the memory storing the time compressed program.

To do that, the decompression has to be in real time.

Q What decompression, the data?

A The decompression that is done by the device to get from the time compressed representation of the claims to the real time display to the user.

Q Well, I guess that can be done in

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your time compression world, right?

A And if in your construction that stored image was data compressed, that would require in your world that the data decompression in your world be done in real time.

Q Okay. The reason you say that is because you talk about, because column 10 talks about viewing directly from memory, correct?

A Yes.

Q In 1988, was technology in existence to decompress audio files that had been data compressed in real time -- let me strike it.

With respect to audio files that had been data compressed, in 1988, did the technology exist to decompress those files in real time?

A Yes.

Q Was that hardware technology or -- what technology existed?

A I believe there were custom chips and that one could for audio files use a CPU if one had a sufficiently powerful computer.

Q To decompress?

A To decompress.

Q In real time?

Halpern

A In real time.

Q What about data compressed video files in 1988, could those types of files be decompressed in real time?

A I believe there was hardware that can do that.

Q You need special circuitry?

A Special circuitry.

Q Could a CPU executing a decompression software algorithm also decompress in real time in 1988?

A I don't believe in 1988 micro processors such as are described as CPUs in the specifications could do decompression of video content, real time video content in real time.

Q Are you, are you limiting your answer to the CPUs or general purpose processors as disclosed in the spec or are all technology that was in existence in 1988? I just want to make sure.

A I'm trying to be careful of the phrase "CPU." A super computer could probably decompress video images in real time in software, but that's not what's described at all in this

Halpern

invention. We're talking about embedded CPUs and they give examples of what they mean.

Q Okay.

A You could accomplish a lot in 1988.

Q I'm talking about a CPU that might be used in connection with a computer, personal computer, for example, in 1988.

A That's what I was referring to.

Q So that type of CPU, a microprocessor executing a decompression software algorithm, decompress in real time with respect to video?

A I don't believe so.

Q But you're not sure one way or the other?

A With video such as is described in this, it couldn't do it.

Q Are there any claims that you think required real time decompression?

A I believe there are.

Q Do you know what those claims are?

A I'd have to go look.

Q Let's talk about claim 20 of the '995 patent. Okay?

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storage but you need plus function.

Q I want to be clear about this.

A Not -- to be precise, it's random access storage for storing the time in the preparation.

Q So what's the functional claim language? Isn't it storing the time compressed representation?

A It's the whole -- as far as I can tell reading this, the entire phrase describes the function to be performed and not the structure to do it. The random access storage is not some specific structure. That's a general class of structure. It's not sufficiently specific.

Q Right. Random access storage is a close of structure, correct?

A It's a kind of a thing.

THE VIDEOGRAPHER: Ten minutes of tape left.

MR. PAYNE: Thank you.

Q It's a structure, it's a class of structure that stores information, correct?

A But it's a class with many, many different kinds of things in it and in different

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contexts, different sub groups are meant by that.

Q Okay. I just want to be clear on how you construed this claim because I'm hearing something that I didn't understand before.

You know, I've always thought of the claim function in this limitation as being storing the time compress representation but that's not your opinion, correct?

A As I aid, the phrase random access storage is generic and function. The claims function. Yes.

Q So even though the words "random access storage" appear before the word "means," it's your view that random access storage is part of the claim function?

A That's what I said and that's what I meant.

Q That's your statement?

What about for the storage means that appears on page 36, is the word "storage" part of the claim function?

A As I said here on line, things got offset, 15 1/2, storage is generic and functional language. It's functional. It doesn't tell you

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what the structure is.

Q Is the word "storage" in the context of the "storage means" language part of the claim function?

A Yes.

Q Do you understand that in a means plus function claims you have a means portion and a functional portion, is that correct?

MR. BROWN: Objection. Vague. Maybe I'll say objection, extremely vague.

MR. PAYNE: Okay.

A One would like to see an explicit means and an explicit function. That doesn't mean that's what the patent drafter wrote.

In this case, what they wrote was just components of the function without giving the structure but saying it was a means to do something.

Q So what if the words "random access storage" were used as, you know, essentially a structure or noun to describe a specific nature. Would that change your view about whether those three words were functional in nature?

Halpern

A I guess that would depend on how one arrived at the conclusion you hypothesized about the way the words were being used.

Q Okay. Let's look at Exhibit 75 which is a March 12, 1990 office action response. Correct?

A Yes.

Q Let's look at pages 18 through 20, sir.

For example, at the bottom of page 18, do you see the words four lines up, excuse me, five lines up, "random access storage," correct? Correct, sir?

A Yes. I --

Q Okay. And three lines up, you see those same three words, "random access storage," correct?

A Yes.

Q Page 19, first paragraph at the end of the paragraph, "random access storage" is mentioned another two times, correct?

A Yes.

Q The following paragraph, it's mentioned again in the middle of the paragraph,

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right?
A Yes.
Q Now, I've counted over ten times in this document alone where the words "random access storage" are used without the word "means."
A Yes.
Q Does that have any impact on your view about whether random access storage connotes structure as opposed to what you're calling functional language?
A When I read the claims and the specification and this material, it doesn't seem to be calling out a clear and associated structure except that it does in the specification identify certain specific structures which is what I then identified. DRAM, SRAM, CMOS memory and optical disk memory.
Those are structures that are called out to fill the role of random access storage.
Q Let's talk about the use of the words "random access storage" on page 18. It says, "Store the time compressed representation of the audio and video source information in a random

Halpern

access storage."
Do you see that language, sir?
A Yes.
Q It's talking about storing data in a random access storage, correct?
A Those are the words it uses.
Q "Random access storage" in that context must mean structure, correct?
MR. BROWN: Objection. Vague.
A I'm not sure I know what you're, what you're getting at. It must mean something.
Q It must be something that can store the time compressed representation, correct?
Is that correct, Mr. Halpern?
A But that doesn't make it structure for a means plus structure.
Q I want to know if my statement is correct, sir.
A I would tend to conclude that the inventors in writing this paragraph meant something by "random access storage," yes, something in which they would store this.
Q A type of storage, namely random access storage, would be used to store the time

Halpern

compressed representation according to the statement I read, correct?
A Yes.
Q They're not using in this office action response the words "random access storage" in a functional manner, are they?
MR. BROWN: Objection. Vague.
A There's a very fine line there because it's a very vague term.
Without the references to DRAM, SRAM, CMOS memory and optical disk memory that make it very clear what you can use for storing the time compressed representation, one could argue that albeit clearly on thinking of some place to store it, it may well be that all they're telling me is the function that it must be able to perform, namely providing random access storage.
Q When they say "in a random access storage," you think they may just be telling you --
A In --
MR. BROWN: Let him finish.
Q -- that there's a function?
MR. BROWN: Is that the end?

Halpern

MR. PAYNE: Yes.
MR. BROWN: Asked and answered I believe. Go ahead.
A They may be because it's very unclear what is meant throughout the specification and the specific structures called out in the specification.
Q Well, you've talked about random access storage being magnetic disks, optical disk, RAM, ROM, right?
A For different claims where there are random access storage for storing.
Q Is there any other structure that you can think of that has the random access storage capability that would be used in connection with storing the time compressed representation?
MR. BROWN: Objection. Vague.
A I'm sorry. I don't understand what you're asking.
Q Well, you've mentioned a few examples of random access storage. Correct?
A Uh-huh.
Q Can you give me other examples that

Halpern
would have existed in 1988 that would have performed what you call a function of random access storage?
A Well, for storing what?
Q Mr. Halpern, we're talking about storing the time compressed representation.
A Well --
Q What's your confusion?
A Well, it is, there are items listed in the '705 patent that are not listed in the '995 patent. I list the ones that the patents identified and I don't believe either patent identifies all imaginable random access storage.
Q Do you know of other random access storage that existed in 1988 that wasn't disclosed in the Burst patents?
A In which patent?
Q In any of them that can store audio and video information?
A I haven't done the -- I don't remember. It's -- I'm --
Q I just want to know, you've referenced a bunch of different random access storage structures that you believe were disclosed

Halpern
in the Burst patents, correct?
A Yes.
Q I just want to know if you know of any other random access storage structures that existed in 1988.
MR. BROWN: Asked and answered quite clearly 30 seconds ago.
A There are structures called out in the '705 that are not called out in the '995, for example. There are, I believe, other structures. I'm not going to try to remember all of the ways of storing random access data in 1988.
Q Can you just list for me one type of random access storage structure that existed in 1988 that isn't disclosed in the Burst patents? Can you give me just one?
A I know there were others. I'm sorry. I cannot remember the terminology for them at this time.
MR. PAYNE: Let's change the tape, please.
THE VIDEOGRAPHER: The time is now 5:55. That marks the end of tape number 4.

Halpern
(Recess taken)
THE VIDEOGRAPHER: Back on the record. The time is now 5:59. This marks the beginning of tape 5.
BY MR. PAYNE:
Q Mr. Halpern, in the event that the court decides that random access storage means is not subject to 112.6, would you agree with Burst's definition for that term?
A Would you tell me what that definition is?
Q Sure.
MR. BROWN: Exhibit U.
Q Yes, it's back in U. I'll just read it to you but if you need to go back to U, that's fine.
The Burst definition for "random access storage means" is as follows. "Storage that provides for random access to any given segment of stored audio/video source information."
A That does not -- even if it was not 112.6, that doesn't sound quite right since we're talking about the random access storage for timed compressed representation so I'm not, there's some

Halpern
subtleties in there that seem a little off.
I don't know. I haven't attempted to analyze -- I haven't attempted to form an expert on it on what it would mean if it was not 112.6 so I want to be a little careful but roughly, that sounds just a little off because it has to be something that construed the time compression preparation.
Q So would you agree with a definition of storage that provides random access to any given segment of the stored time compressed representation?
A That sounds close. I don't want to say I will agree because I haven't done the analysis but it sounds closer.
Q Let's talk about your view on page 34 that there are no structures clearly linked to the function of storing a time compressed representation.
Do you see that, sir?
A Yes.
Q That's because you say the specs in the Burst patents don't contain any reference to time compression or storing time compressed

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that. I'm comfortable with those positions because that's what I've described in my report and subject to the typos that you've managed to find is what I believe they mean in the light of all of the evidence available.

Q In your other cases, have you ever construed claim language to cover things that aren't supported in the specification or is this just a unique situation for you?

MR. BROWN: Objection. Vague.

A I, I don't remember all my claims constructions.

Q If the word "time" in connection with "time compressed representation" were not in the claims, would that change your view on how to construe these claims?

A That would depend on what happened to the file history as well as, I think, since the word appears in several places, not just the claims but there's discussion of it in and the use of that term in the file history as well.

Q Well, if the claims just said a "compressed representation" instead of a "timed compressed representation," does that change your

Halpern

constructions or do you know?

A As I say, it would depend on what happened, what else, what happened in the file history that references those same words.

Q Nothing else changes.

MR. BROWN: Objection. Vague.

A I'd be very confused, I guess, because the file history would refer to something as part of the patent that wouldn't be in the claims. I don't know what I would conclude from such a thing.

Q The file history would --

A Time compression, time compressed representations appear in the file history or are discussed in the file history.

Q But in my hypothetical, it's not in the claims, right?

A And I asked you what happened to the file history.

Q So it's important that the word "time" is in the claims, though, correct?

A I have been taught that I'm supposed to pay attention to the words that are in the claim and not ignore them.

Halpern

Q But you didn't worry about the word "microwave" being missing from the '932 claims when you construed that it needs to be limited to a microwave transceiver, correct?

A That was based on the file histories.

Q Not the claim language, right?

A In addition to the claim language. I did not read out any words -- I did not remove any words from the claims.

Q Let's go to page 43 of your report, please. Let's look at claim 2 of the '995 patent, please, which talks about editing.

Claim 2 talks about having an editing means for editing the time compressed representation that's stored in the random access storage means, correct?

A Yes.

Q In your time compression world, how would this editing take place?

A One would presumably give the user information about the content of the time compressed representation and allow them to manipulate it.

Halpern

Q Claim 2 talks about editing the time compressed representation. Correct?

A Yes.

Q But in the time compression world that you're living in, wouldn't one be editing the source information that's stored in the random access storage?

A Given that, the information stored in the random access storage has an associated burst time period, it would be the time compressed representation and so that is what we would be editing.

Q We've talked about the bits associated with the source information being stored in storage in your time compression world in the same manner that they appear in the source information. Correct?

A Yes.

Q Okay. So in the editing context, are you talking about editing the header information or the bits associated with the source information?

A You're editing the audio/video information in its time compressed representation.

Halpern

Q What specifically are you editing in your time compression world? Is it the header information or is it the bits associated with the source information or is it both? What is it?

MR. BROWN: Objection. Vague. Incomplete hypothetical.

A You're editing according to this the time compressed representation of the audio/video program.

Q Okay. But what part of it are you going to edit? Is it the header information?

MR. BROWN: Objection. Vague. Incomplete hypothetical. Asked and answered.

A I can give you the same answer again. You're editing the time compressed --

Q I just want to understand if one edits the header information in the examples you've given today, does that qualify as editing the time compressed representation that's stored in random access storage?

MR. BROWN: Objection. Vague.

A It would depend, I guess, on the exact information. It's certainly --

Halpern

Q You gave me an implementation where you add a header to the source information bits, right?

A I would not expect that editing, that one would edit those bits to edit the time compressed representation.

Q Well, I'm sorry. You are going to have to run that by me again. You would not expect --

A I would not expect that when editing the time compressed representation of the audio/video program -- yes. I would not expect when editing the time compressed representation of said audio/video source information to be editing header bits that describe the degree of time compression, for example.

I would expect to be editing bits from the audio/video source program.

Q So merely editing the header information is not sufficient to qualify as editing in the context of claim 2?

A Given the way claim 2 is worded, I believe so but, you know, we're compounding hypotheticals here.

Halpern

Q In the example you've given me today, you talked about the time compressed representation that's stored being composed of essentially two things, one, the original source bits and, two, some header information, correct?

A That was one of the examples I gave you.

Q I think that was the only example but that is at least an example you've given me, correct?

MR. BROWN: That misstates his testimony, correct.

Q Is that correct?

A That is an example we have discussed.

Q I'm trying to find out in the context of claim 2 where it calls for editing the time compressed representation if it's sufficient to edit the header information alone.

MR. BROWN: Asked and answered.

A I don't believe so.

Q You believe the actual source bits have to be edited?

Halpern

MR. BROWN: Objection. Vague.

A I believe that the bits in the time compressed representation which represent the audio/video source information must be edited to be editing the representation of the audio/video source information.

Q You say that the editing means must necessarily include the ROM, correct?

A That's what, yes, I say that.

Q Okay. Does the ROM actually do any of the editing per se?

A The ROM is called out as part of the digital control unit. It is responsible for controlling the editing.

Q I'm sorry. What was that?

A The ROM is part of the digital control unit and is identified as such in the patent specification.

Q But there's no editing taking place in the ROM, correct?

A I'm not sure what you're asking.

Q Well, what's edit -- doesn't editing mean modifying?

A Yes.

Halpern

Q Okay. Is there any modifying of the time compressed representation in the ROM?

A No.

Q Okay. Well, let's -- I want to go back to, you know, the editing questions that we were talking about before.

You've told me that merely editing or modifying the header is not sufficient that qualifies the claim having editing, correct?

A Correct.

Q If the header information were deleted, would the remaining information still qualify as a time compressed representation?

MR. BROWN: Objection. Vague. Incomplete hypothetical.

A That would depend on how it got deleted, why it got deleted.

I don't know what it would mean. It might be random bits at that point. I don't know.

Q What do you mean it might be random bits? It would be the original source bits, right?

A The header information affects the way the device in the hypothetical that we

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created -- and this is just a hypothetical, it's not the only way it can be done -- but in the hypothetical, if the header was deleted, it isn't clear what the system would make of the contents without the header since the system would be built around the headers.

So I don't know what it would do. It might try to read the first part of the source as the header.

Q The claim construction you've offered also talks about "user interface control panel, light pen or mouse," correct?

A Yes.

Q Did those devices actually modify the time compressed representation?

A Those are part of the means for editing, the means for modifying the time compressed representation.

Q But the actual modification takes place in the CPU running the stored software, correct?

A I believe that the process of modifying the stored time compressed representation is certainly mediated by the CPU.

Halpern

The CPU doesn't change it without the user instruction nor does it change it without the software stored in the ROM.

Q Well, it doesn't change it unless you have an input means to receive the information either, does it?

A That doesn't follow.

Q Well, if you don't get the information somehow, then the information, there's no information to edit, right?

A That's, that leaves a lot of things to be specified.

Q Now, are you aware that the Apple construction for editing means attempts to exclude creating a play list?

A Yes.

Q I noticed that -- actually. I misspoke.

The construction that Apple's offered for editing says that editing does not include the function of creating a play list. Are you aware of that?

A Yes.

Q I noticed that your construction in

Halpern

your report doesn't include an opinion about excluding or including a play list. Correct?

A I believe I wasn't asked to opine on the specific meaning of editing by itself as posed to the means plus function issues.

Q Well, you've, you've cited on page 44 a definition for "edit," correct?

A Yes.

Q It says, "to modify the form or format of an output or input," correct?

A Yes.

Q So do you have an opinion one way or the other whether Apple is correct that editing does not include the function of creating a play list?

MR. BROWN: Objection. Vague.

MR. PAYNE: Why is that vague, Nick?

MR. BROWN: Because you're asking it divorced from the context of the claims and unclear about whether you're asking it in the context of the claims or not. That's quintessentially vague.